Drug and Alcohol Dependence 137 (2014) 121–128

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Correlates of drug use cessation among participants in the Canadian HIV–HCV Co-infection Cohort

Joseph Cox[a,b,c,d,*], Emilie Maurais[c], Lina Hu[a], Erica E.M. Moodie[a], Stephanie Law[a], Nikki Bozinoff[b], Martin Potter[a,b], Kathleen Rollet[b], Mark Hull[d,e], Mark Tyndall[d,f], Curtis Cooper[d,f], John Gill[d,g], Sahar Saeed[b], Marina B. Klein[b,d], The Canadian Co-infection Cohort (CTN 222)

[a] Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Purvis Hall, 1020 Pine Avenue West, Montreal, Quebec, Canada H3A 1A2
[b] Chronic Viral Illness Service, McGill University Health Centre, 3650 Saint Urbain, Montreal, Quebec, Canada H2X 2P4
[c] Public Health Department, Montreal Health and Social Services Agency, 1301 Sherbrooke Street East, Montreal, Quebec, Canada H2L 1M3
[d] CIHR Canadian HIV Trials Network, 588-1081 Burrard Street, Vancouver, British Columbia, Canada V6B 3E6
[e] BC Centre for Excellence in HIV/AIDS, 608-1081 Burrard Street, Vancouver, British Columbia, Canada V6Z 1Y6
[f] Department of Medicine, Infectious Diseases Division, University of Ottawa, 501 Smyth Road, Ottawa, Ontario, Canada K1H 8L6
[g] Southern Alberta HIV Clinic, 1213 4 Street SW, Calgary, Alberta, Canada T2R 0X7

ARTICLE INFO

Article history:
Received 2 August 2013
Received in revised form 21 January 2014
Accepted 22 January 2014
Available online 30 January 2014

Keywords:
Injection drug use cessation
Crack cessation
HIV–HCV co-infection
Determinants of health

ABSTRACT

Background: Ongoing drug use remains a barrier to HIV and HCV treatment. We examined the occurrence and correlates of drug use cessation among HIV–HCV co-infected drug users participating in HIV care.
Methods: Participants from the Canadian Co-infection Cohort reporting drug use (injecting drugs and/or smoking crack) with at least two follow-up visits were included ($n = 521$ (43%), 1832 visits). Socio-demographics, behavioural, and health information were collected at each six-month visit. Associations with cessation (no drug use since last visit) were examined using non-linear mixed effects logistic regression models with random intercepts.
Results: During follow-up, 361 (69%) participants ceased using drugs. Having a fixed address (aOR [adjusted odds ratio] 1.73, CI [95% confidence interval] 1.02–2.96) and smoking crack without injecting drugs (aOR 3.10, CI 2.05–4.71) were positively associated. Living alone (aOR 0.47, CI 0.35–0.63), current tobacco use (aOR 0.41, CI 0.26–0.64), hazardous alcohol drinking (aOR 0.67, CI 0.49–0.91), snorting drugs (aOR 0.52, CI 0.37–0.74), having a greater exposure to addiction programmes (aOR 0.88, CI 0.81–0.94), having been recruited in Quebec or Nova Scotia (aOR 0.41, CI 0.25–0.66), and British Columbia or Alberta (aOR 0.51, CI 0.32–0.82) were negatively associated. Various socio-demographic (age, education) and health-related (HIV duration, care adherence) factors were not associated.
Conclusion: Drug use cessation among HIV–HCV co-infected persons is relatively common in this cohort. Stable housing and supportive living situations seem to be important facilitators for drug use cessation in this population. Greater efforts should be made to retain patients in addiction treatment programmes.

1. Introduction

Following the introduction of combination anti-retroviral therapy (cART) in the industrialized world, HCV infection emerged as an important co-morbidity among people living with HIV. While AIDS-related mortality has fallen more than 90-fold, the proportion of deaths due to liver disease has increased eight to tenfold in the post-cART era (Hogg et al., 1999; Krentz et al., 2005; Ly et al., 2012; Palella et al., 1998). Owing to shared routes of transmission, greater than 30% of people living with HIV in industrialized countries are co-infected with HCV (Public Health Agency of Canada, 2007; Shepard et al., 2005). Injection drug use (IDU) is the primary mode of HCV transmission (responsible for 70–80% of infections) and is an important risk for HIV infection, accounting for an estimated 308–562 new HIV infections in Canada in 2011 (Public Health Agency of Canada, 2011).

Crack use has been reported to be increasing (Adlaf et al., 2005; Roy et al., 2012; van Ameijden and Coutinho, 2001); in fact, an

* Corresponding author at: Public Health Department, Montreal Health and Social Services Agency, 1301 Sherbrooke Street East, Montreal, Quebec, Canada H2L 1M3. Tel.: +1 514 528 2400 3630; fax: +1 514 528 2452.
E-mail address: joseph.cox@mcgill.ca (J. Cox).

0376-8716/$ – see front matter © 2014 Elsevier Ireland Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.drugalcdep.2014.01.014

estimated 65% of people who inject drugs (PWID) in Canada smoke crack (Public Health Agency of Canada, 2006). This is important, as smoking crack may be an independent risk factor for the transmission of HIV and HCV (DeBeck et al., 2009; Jauffret-Roustide et al., 2009; Macias et al., 2008; McMahon and Tortu, 2003; Tortu et al., 2004) and an important contributing factor in the sexual and parenteral transmission of these pathogens (Booth et al., 2000; DeBeck et al., 2009; Word and Bowser, 1997). Evidence suggests that smoking crack is as destabilizing as IDU. It allows cocaine to be absorbed more quickly than when snorted and the acute impact on neurocognitive functioning renders crack smokers more at risk in regards to sexual and drug use behaviours (DeBeck et al., 2009; Hoff et al., 1996).

Ongoing drug use remains a barrier to HCV treatment among PWID (Fleming et al., 2003; McGowan and Fried, 2012; McLaren et al., 2008; Potter et al., 2009; Stoove et al., 2005). Studies that include PWID show that 1–33% of participants initiate HCV treatment, depending on patient willingness and various treatment eligibility criteria (e.g., adherence to clinical follow-up, absence of active psychiatric illness, absence of on-going alcohol use; Grebely et al., 2009; McLaren et al., 2008; Mehta et al., 2008). Also, some healthcare practitioners are reluctant to treat HCV in PWID due to the risk of re-infection (Davis and Rodrigue, 2001; Fischer et al., 2004; Grebely et al., 2013), or because of perceived higher risks for treatment-related adverse events and non-adherence (Davis and Rodrigue, 2001; Grebely et al., 2013). In HIV-positive patients, continuing drug use influences access to and delays in the initiation of c-ART (Carrieri et al., 1999; Celentano et al., 2001; Ding et al., 2005; Metsch et al., 2001), retention in care (Marx et al., 2011), and treatment adherence (Arnsten et al., 2002; Palepu et al., 2011); these concerns may be similar for HCV treatment. From the patient perspective, ongoing drug use is also often perceived as counter to initiating HCV treatment (Bova et al., 2010; Grebely et al., 2008; Osilla et al., 2009; Swan et al., 2010). This decrease in willingness is related to uncontrolled drug use and reflects a desire to deal with addiction first and become sober.

Thus, drug use cessation may be important for both patients and healthcare providers when making decisions regarding HCV care and treatment. Cessation may have implications on the health and social stability of patients, and may reduce drug use related morbidity and mortality (Klein et al., 2013). Studies with HIV- and HCV-negative or HIV mono-infected PWID have shown that socio-demographic characteristics (e.g., housing (Mackesy-Amiti et al., 2011; Mehta et al., 2012; Shah et al., 2006), employment (Steensma et al., 2005)), risk behaviours (e.g., use of other substances, inconsistent condom use (Bouhnik et al., 2004)), and health information (e.g., AIDS diagnosis (van Ameijden and Coutinho, 2001), addiction therapy (Deren et al., 2007; Evans et al., 2009; Mackesy-Amiti et al., 2011; Shah et al., 2006)) were associated with cessation. None have examined correlates among HIV–HCV co-infected individuals in Canada. As HCV-related liver disease continues to be an important co-morbidity in this population, understanding factors associated with drug use cessation may be one step towards facilitating better care and access to HCV and HIV treatment. Studying drug use cessation in the Canadian Co-infection Cohort (CCC) is important as co-infected individuals are more likely to have been injecting for longer periods of time compared to mono-infected or uninfected PWID (Bouhnik et al., 2004). It is known that the probability of cessation declines as the number of years spent injecting increases (Bruneau et al., 2004; Steensma et al., 2005; van Ameijden and Coutinho, 2001).

The objective of the present analysis is to examine the occurrence of drug use cessation and its correlates in a Canadian cohort of HIV–HCV co-infection.

2. Methods

2.1. Study population

The CCC is a prospective open cohort of HIV–HCV co-infected individuals recruiting from 18 centres across Canada since April 2003. As of July 2013, 1208 participants (73% men; median age at cohort entry 45 years) were enrolled; there was a refusal rate of approximately 2.5% based on information from the first recruiting sites. Of these, 213 (18%) were lost to-follow-up, 94 (8%) withdrew and 145 (12%) were deceased. Participants are identified from existing clinic populations at university-based HIV clinics, and urban and semi-urban clinics providing services to HIV-infected persons (Klein et al., 2010). These centres routinely screen all HIV-infected individuals for HCV infection. Eligible participants are 16 years of age and older with documented HIV infection (ELISA with western blot confirmation) and chronic HCV infection or evidence of HCV exposure (e.g., HCV-seropositive by ELISA with RIBA II or EIA confirmation, or if serologically false negative, HCV RNA positive); all eligible individuals are invited to participate to avoid selection bias. The cohort study was approved by the research ethics boards of the participating institutions and the community advisory committee of the CIHR Canadian HIV Trials Network. Participants consent to their data being used to answer other research questions consistent with the cohort aims.

2.2. Study procedure

After informed consent, participants were evaluated at study entry, followed by study visits approximately every six months (plus or minus 3 months). Socio-demographic, risk behaviours and health information were collected using questionnaires (self-administered or completed with the aid of a research coordinator) as previously described (Klein et al., 2010). The time reference for most questions was the past six months at study entry and since last study visit during follow-up. When the period between two consecutive visits exceeds the acceptable window period, it is cohort policy to ask participants to refer to the past six months as the time frame for questions. Supplementary information was abstracted from medical records and laboratory reports. Blood tests were performed at each visit.

2.3. Study sample

Inclusion criteria for this analysis were: (1) reporting IDU and/or smoking crack, and (2) having at least one study visit following the visit in which injection drug use or smoking crack was reported. Of the 1208 participants, 554 used drugs at some point and were selected. Of these, 521 (43%) met the second criterion and were included in the analytic sample. At baseline, the median age was 44 years (min 22; max 76) and 69% were male. Study visits until July 2013, death or last visit when lost to follow-up were included if the participant was eligible to experience the outcome (i.e., still injecting drugs or smoking crack). A total of 1832 visits were analyzed. Of the 521 participants in the study sample, 171 (33%) were lost to-follow-up, 26 (5%) withdrew and 52 (10%) were deceased as of July 2013. The median follow-up time in the cohort for the study sample is 3.0 years ($Q1 = 1.4$, $Q3 = 4.1$), and the median time between two consecutive visits is 6.2 months ($Q1 = 5.5$, $Q3 = 7.6$).

2.4. Outcomes

Our primary outcome of interest was any episode of drug use cessation (e.g., first occurrence or following any relapse). Drug use cessation was a repeated dichotomous variable where each participant's self-reported drug use status was assessed longitudinally. If a participant reported no IDU and no crack use since last visit, an event was recorded. An additional event could only occur if drug use was resumed.

2.5. Covariates

Covariates were self-reported unless stated otherwise. Baseline characteristics include age, sex, education (less than high school vs. high school or more), ethnicity (white, aboriginal or other), region where recruited (administrative information), duration of HIV infection (year at cohort entry – year of HIV seroconversion or, when year of seroconversion is unknown, year at cohort entry – year of first HIV positive test), duration of HCV infection (year at cohort entry – year of HCV seroconversion or, when year of seroconversion is unknown, year at cohort entry – year of first injection drug use or year of first positive HCV test), and duration of injection (age–age at first injection). Time-varying information measured at the time of study visit (current status) includes gross monthly income (less than or equal to vs. greater than $1000CAD), employment status, having a fixed address (a personal address where mail can be delivered), living alone, smoking cigarettes, visit adherence (number of kept cohort visits divided by the number of scheduled visits; administrative information), time since last visit (administrative information) and cumulative exposure to addiction therapy since cohort entry (cumulative number of visits where attendance to at least one addiction therapy programme since last visit is reported). Time-varying information measured in the past six months at cohort entry and since last visit during follow-up includes type of drug used before cessation (injection drugs only, crack smoking only or both), incarceration, hazardous alcohol drinking (more than two drinks on a typical drinking day; based on