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Research paper

Knowledge of hepatitis C and treatment willingness amongst people who inject drugs in an era of direct acting antivirals

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ABSTRACT

Background: Knowledge of hepatitis C virus (HCV) is believed to be important in altering risk behaviour, improving engagement in care, and promoting willingness to initiate HCV treatment. We assessed factors associated with HCV knowledge and treatment willingness amongst people who inject drugs (PWID) in an era of direct acting antivirals.

Methods: Data were derived from three prospective cohort studies of PWID in Vancouver, Canada, between June 2014 and May 2015. HCV knowledge and treatment willingness were assessed using a Likert scale. Multivariable linear regression identified factors associated with higher HCV knowledge and treatment willingness.

Results: Amongst 630 participants, mean scores for HCV knowledge and treatment willingness were 25.41 (standard deviation [SD]: 2.52) out of 30, and 6.83 (SD: 1.83) out of 10, respectively. In multivariable analyses, Caucasian ancestry (adjusted linear regression model estimate [β] 0.50; 95% confidence interval [CI] 0.17, 0.82), employment (β 0.76; 95% CI: 0.38, 1.13), diagnosed mental health disorder (β 0.44; 95% CI: 0.11, 0.78) and previous HCV treatment (β 0.94; 95% CI: 0.46, 1.43) were independently associated with higher knowledge. Downtown Eastside (DTES) residence (i.e., epicenter of Vancouver's drug scene) was independently associated with lower knowledge (β −0.48; 95% CI: −0.81, −0.15). Greater HCV knowledge (β 0.12; 95% CI: 0.07, 0.17) was independently associated with higher HCV treatment willingness. DTES residence (β −0.31; 95% CI: −0.56, −0.06) and daily crack cocaine smoking (β −0.52; 95% CI: −0.92, −0.13) were independently associated with lower treatment willingness.

Conclusion: Socioeconomic factors, such as neighborhood residence and employment, were associated with HCV knowledge. Higher HCV knowledge was associated with more HCV treatment willingness. Our findings suggest that increasing HCV knowledge amongst PWID may be an integral component of the HCV cascade of care and that efforts might be best targeted to individuals with greater socioeconomic disadvantage.

Introduction

Chronic hepatitis C virus (HCV) infection is a leading cause of end-stage liver disease in North America (Kim et al., 2015). People who inject drugs (PWID) compose a large subset of individuals infected with HCV (Hajarizadeh, Grebely, & Dore, 2013). Among PWID, up to 90% of individuals may be HCV-seropositive (Ng et al., 2013). PWID populations face multiple barriers to accessing treatment, with treatment uptake rates ranging from 1.5% to 2.0% per year (Alavi et al., 2014; Iversen et al., 2014). Barriers to care are multifactorial at the patient, provider, treatment regimen, and health care system levels. Until recently, complex therapy based on interferon and ribavirin have presented a significant barrier to treatment. These medications have been associated with multiple toxicities and side effects, while associated with low rates of cure (Ray & Thomas, 2015).

Knowledge of HCV transmission, natural history and treatment is believed to be an important step in altering transmission risk

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behaviour, enhancing health maintenance and increasing engagement with HCV treatment (Kwiatkowski, Fortuin Corsi, & Booth, 2002). Studies have shown that lower HCV knowledge amongst PWID, is linked to socioeconomic factors such as lower levels of formal education and non-Caucasian ancestry (Surjadi, Torruellas, Ayala, Yee, & Khalili, 2011; Treloar et al., 2011). Conversely, factors associated with increased healthcare exposure such as opioid agonist treatment (OAT) and more frequent visits to general practitioners have been associated with increased HCV knowledge (Dunn et al., 2013; Treloar et al., 2011). An important finding for treatment programs is that willingness to undergo HCV therapy has been associated with higher baseline HCV knowledge (Surjadi et al., 2011; Zeremski et al., 2014). Understanding which factors are associated with HCV knowledge levels enables development of targeted interventions to enhance HCV knowledge with the ultimate goal of increasing treatment uptake and completion.

Much of the literature to date has examined factors associated with HCV knowledge and treatment willingness prior to the current direct acting antiviral (DAA) era. Interventions tailored to the needs of PWID will be an important component of efforts to roll out HCV treatment and prevention programs. As Interferon sparing DAA-based therapies became widely available in Vancouver, Canada beginning in the spring/summer of 2014, the objective of this study was to assess HCV knowledge in a cohort of PWID in this setting, between June 2014 and May 2015. We aimed to identify factors that were associated with greater HCV knowledge as well as a greater willingness to undergo HCV treatment in the current DAA era in order to better inform future education and treatment efforts.

Methods

Study design

The Vancouver Injection Drug Users Study (VIDUS), AIDS Care Cohort to Evaluate exposure to Survival Services (ACCESS) and At-Risk Youth Study (ARYS) are open prospective cohorts of drug users in Vancouver, Canada. These cohorts, including detailed sampling and recruitment procedures, have been described elsewhere (Strathdee et al., 1998; Tyndall et al., 2003; Wood, Stoltz, Montaner, & Kerr, 2006). VIDUS enrolls human immunodeficiency virus (HIV)-negative adults (≥18 years of age) who injected drugs in the month prior to enrolment; ACCESS enrolls HIV-positive adults (≥18 years of age) who used illicit drugs (other than or in addition to cannabis) in the month prior to enrolment; and ARYS enrolls street-involved youth aged 14–26 years who used illicit drugs in the previous month. The primary modes of recruitment in all cohorts are self-referral, word of mouth, and street outreach. Participants are required to reside in the Greater Vancouver region at enrolment and provide written informed consent.

The follow-up procedures for these studies were harmonized to allow for analyses of merged data. At baseline and semi-annually thereafter, participants completed an interviewer-administered questionnaire collecting data on demographics, drug use patterns, healthcare access, and other exposures. Venous blood samples were drawn at each visit for HCV and HIV serologic testing and HIV disease monitoring as appropriate. Referral for free HIV/AIDS care was provided to those found to be HIV positive, and these individuals were subsequently followed in ACCESS. In addition, a complete HIV-related clinical profile, including exposure to antiretroviral agents, was obtained for all ACCESS participants through a confidential linkage with the provincial Drug Treatment Program (Hogg et al., 1998, 2001). Participants were given a stipend ($40 CDN) at each study visit. The cohort studies have received annual approval from the University of British Columbia/Providence Healthcare Research Ethics Board.

Participants and HCV knowledge and willingness assessment

For this analysis, questionnaire responses collected from June 1, 2014 to May 30, 2015 were queried for all cohort participants who self-reported ever testing positive for HCV. Those who did not report a history of injection drug use or who reported being HCV-seronegative were excluded. Self-report was used for exclusion as only those respondents who self-reported being HCV-positive were asked specific HCV knowledge and treatment willingness questionnaire items.

HCV knowledge and treatment willingness were assessed with a series of questions (14 items) pertaining to HCV transmission, natural history and treatment willingness. These questions were developed by local healthcare providers who are involved in the treatment of individuals with HCV. Responses were recorded using a Likert scale from 1 (“strongly disagree”) to 5 (“strongly agree”) with most questions worded such that a higher score reflected a greater level of HCV knowledge or willingness to participate in HCV therapy. Questions that were worded such that a lower numeric response reflected more knowledge or willingness were imputed with a reversed scale to allow comparison between questions. Respondents were also permitted to decline answering a questionnaire component or to answer “not applicable” or “I do not know.”

For the assessment of factors associated with HCV knowledge and treatment willingness, participants were excluded if they had missing or inadequate responses (responding “not applicable”, “I do not know” or declining to respond) for at least one question, due to inability to calculate consistent total knowledge scores with these responses. For the assessment of factors associated with treatment willingness, individuals who had been successfully treated or who were on treatment at the time of the questionnaire were also excluded from further analysis. If a participant completed two study visits during the study period, we used the most recent observation only.

Study variables

The primary outcomes of interest were the composite scores for knowledge and treatment willingness, respectively, based on the summation of responses to the remaining questionnaire items following a factor analysis (Table 2).

We considered a range of explanatory variables. Sociodemographic characteristics included age (per year older), sex (male vs. female), Caucasian ancestry, ≥high school completion, homelessness, Downtown Eastside (DTES) residence, and employment. The DTES is an area in Vancouver with an increased density of poverty and illicit substance use. Drug use behaviours included ≥daily heroin injection, ≥daily cocaine injection, ≥daily crack smoking, years of injecting (per year longer), and heavy alcohol use as defined by the National Institute for Alcohol Abuse and Alcoholism (National Institutes of Health, 2015). Variables assessing healthcare access included receipt of OAT, accessing any health or social service, HIV coinfection (stratified by ≥95% or <95% antiretroviral adherence, as in previous studies) (Milloy et al., 2016), ever diagnosed with a mental health disorder, and ever taking HCV treatment. HCV knowledge scores were added to the analysis of treatment willingness. All behavioural variables referred to the past 6 months and were dichotomized as yes vs. no unless otherwise stated.

We also assessed attitudes towards HCV treatment by asking participants “Which is more important to you if you were to consider treatment?” with response options of “How long it lasts” or “Types of side effects”.