"I want to get better, but…": Identifying the perceptions and experiences of people who inject drugs with respect to evolving hepatitis C virus treatments

Authors: Trevor Goodyear [1,2], Helen Brown [1], Annette J. Browne [1], Peter Hoong [2], Lianping Ti [2,3], Rod Knight [2,3]§*

1. School of Nursing, University of British Columbia, Vancouver, Canada
2. British Columbia Centre on Substance Use, Vancouver, Canada
3. Department of Medicine, University of British Columbia, Vancouver, Canada

Authorship order to be determined by RK based on contributions.

This document is based on the Uniform Requirements for Manuscripts Submitted to Biomedical Journals. Click here for more information regarding the ICMJE requirements.

§ Corresponding Author: Rod Knight, PhD

British Columbia Centre on Substance Use

400-1045 Howe St, Vancouver, BC V6Z 2A9

Email: bccsu-rk@bccsu.ubc.ca

Journal: International Journal for Equity in Health

Word Count: 6,875

Manuscript Version: 20201016

ABSTRACT

Abstract Word Count (Limit: 350): 331

Background: The advent of highly tolerable and efficacious direct-acting antiviral (DAA) medications has transformed the hepatitis C virus (HCV) treatment landscape. Yet, people who inject drugs (PWID) – a population with inequitably high rates of HCV and who face significant socio-structural barriers to healthcare access – continue to have disproportionately low rates of DAA uptake. The objective of this study is to explore how PWID with lived experience of HCV perceive and experience DAA treatment, in a setting with universal coverage of these medications since 2018. **Methods:** Informed by a critical interpretive framework, we thematically analyze data from in-depth, semi-structured interviews conducted between January and June 2018 in Vancouver, Canada, with a purposive sample (n=56) of PWID at various stages (e.g., pre, peri, post) of DAA treatment. **Results:** The analysis yielded three key themes: (i) life with HCV, (ii) experiences with and perceptions of evolving HCV treatments, and (iii) substance use and the uptake of DAA treatments. First, participants described how health and healthcare conditions, such as the deprioritizing of HCV (e.g., due to being asymptomatic, healthcare provider inaction, gatekeeping) and catalysts to care (e.g., symptom onset, treatment for co-morbidities) shaped DAA treatment motivation and access. Second, participants described how individual and community-level accounts of evolving HCV treatments, including skepticism following negative experiences with interferon-based treatment and uncertainty regarding treatment eligibility negatively, influenced willingness and opportunities to access DAAs. Concurrently, participants described how peer and community endorsement of DAAs was positively associated with treatment uptake. Third, participants favoured HCV care that was

grounded in harm reduction, which included the integration of DAAs with other substance use-related services (e.g., opioid agonist therapy, HIV care), and which was often contrasted against abstinence-focused care wherein substance use is framed as a contraindication to HCV treatment access. **Conclusions:** These findings underscore several equity-oriented healthcare service delivery and clinician adaptations that are required to scale up DAAs among PWID living with HCV, including the provision of harm reduction-focused, non-stigmatizing, integrated, and peer-led care that responds to power differentials.

Keywords (3-10): Hepatitis C, Direct-acting antivirals, Treatment, People who inject drugs, Substance use, Harm reduction, Qualitative research, Equity, Ethics, Health services.

"I want to get better, but…": Identifying the perceptions and experiences of people who inject drugs with respect to evolving hepatitis C virus treatments

Introduction

Hepatitis C virus (HCV) infection remains a major contributor to worldwide morbidity and mortality, as the vast majority (~80%) of individuals who acquire HCV go on to develop chronic infection (1). Left untreated, HCV infection frequently leads to severe and potentially fatal complications, including cirrhosis, hepatic encephalopathy, and hepatocellular carcinoma (2). While potentially curative (i.e., to a point of sustained virologic response, wherein HCV is no longer detected in the blood) regimens of HCV treatments have been available for nearly two decades, the previous and longstanding generation of Interferon-based treatments demonstrated limited effectiveness (~50% cured), had prolonged treatment durations of up to 48 weeks, and were accompanied by a series of adverse side effects (e.g., flu-like symptoms, vomiting, diarrhea, insomnia, impaired mood) (3). As such, rates of Interferon-based treatment uptake have been as low as 15% among people living with HCV (4), and even lower within key populations who are most marginalized with respect to treatment access, including people who inject drugs (PWID) (5, 6). Within this context, the recent advent of all-oral direct-acting antiviral (DAA) HCV treatments has renewed optimism for transforming and improving the global HCV treatment landscape. Indeed, since DAAs have minimal side effects and contraindications and are highly effective in achieving HCV cure, they are poised to significantly facilitate efforts to treat and cure people living with HCV (7, 8). The scale-up of DAA treatments – with priority to populations who face inequities related to HCV prevalence, incidence, and healthcare access – is

thus a critical component underlying the World Health Organization's goal to eliminate HCV as a major public health threat by 2030 (9).

To achieve global HCV elimination targets, it has been postulated that a concerted focus on scaling up equitable DAA treatment provision to PWID is required – particularly in countries and regions wherein HCV rates among this population remain high (10-13). Due, in part, to the sharing of injection drug equipment (e.g., needles, syringes, filters, cookers) and the lack of high-quality, effective, and accessible harm reduction services (e.g., supervised consumption sites, needle and syringe distribution programs, opioid agonist therapy [OAT]) in various settings, PWID are inequitably impacted by blood-borne infections, including HCV and human immunodeficiency virus (HIV) (14, 15). Indeed, PWID are estimated to comprise 6.1 million (8.5%) of the 71.1 million prevalent chronic HCV cases worldwide, with 25 countries (the majority of which are in North America, Eastern Europe, and East and Southeast Asia) being home to an estimated 82% of the global population of PWID living with HCV (10, 16). For instance, as of 2015, in Canada, where injection drug use is the principal route of incident HCV transmission (17), approximately 53% of PWID are estimated to be living with HCV (10).

While Interferon-free HCV therapies represent a "game changer" for PWID living with HCV, a series of barriers to equitable access to HCV care remain. For instance, at a healthcare system and provider level, recent studies have described key DAA implementation challenges related to specialist-centered models of care, limited healthcare provider training in substance use and/or HCV care, lack of on-site phlebotomy services, finite resources to develop a comprehensive HCV cascade of care, and onerous diagnostic and prescription-related eligibility requirements for accessing DAAs (18-20). A small but growing body of empirical evidence with PWID

111 participants also has identified the ways in which individual and socio-contextual factors
112 influence DAA treatment access and uptake. For example, previous qualitative studies – few of
113 which are from the current DAA treatment era – have examined how perceptions and knowledge
114 levels related to various aspects of HCV and its management (e.g., disease transmission and
115 progression, medication side effects, treatment eligibility and conditions, potential re-infection)
116 are important determinants of HCV treatment uptake (21-24). More generally, disinclination to
117 undergo DAA treatment among PWID can stem from being asymptomatic of HCV, poor vein
118 health (i.e., which inhibits testing and diagnosis), the prioritization of other health and social
119 issues (e.g., co-morbidities, housing, childcare), and experiences of stigma and discrimination
120 when accessing services (21, 25, 26). Of particular concern, available evidence indicates that
121 healthcare providers tend to view active substance use as a contraindication to DAA treatment
122 eligibility, including due to a presumed lack of stability and/or capacity for PWID to adhere to
123 treatment regimens, and the anticipated potential for sustained liver damage irrespective of HCV
124 cure (i.e., because of HCV re-infection and/or the potentially damaging and lasting hepatic
125 effects of excessive alcohol use) (27-29).

126 Taken as a whole, despite the potential promise granted by the advent of DAA therapies, PWID
127 continue to face a set of interconnected challenges that restrict access to HCV care. As a
128 consequence of these healthcare access inequities, PWID populations experience low rates of
129 DAA treatment uptake, despite paradoxically experiencing both a high prevalence of HCV and a
130 well-documented willingness to undergo treatment (9, 15, 30). To address this noteworthy gap in
131 equitable health and healthcare access among PWID living with HCV, there is a need for
132 knowledge about how PWID's experiences are unfolding within and influenced by evolving
133 HCV care landscapes. The objective of this study is therefore to explore how PWID with lived

experience of HCV perceive and experience DAA treatments, in a setting with universal coverage of these medications since 2018.

Methods

Study overview

For the reader, it is helpful to consider our motivations for pursuing this research. The goal of this qualitative study is to center and interpret the lived experiences of HCV among PWID, with a view to inform decisions that have the potential to enhance the equitable provision of DAA treatments and broader health services to this population. To do so, we draw on a critical interpretive framework informed by values of health equity and social justice (31, 32), as well as a thematic analysis approach within social constructivist epistemology (e.g., that includes: participant-researcher co-construction of findings, attention to socio-contextual influences on participant experiences and researcher interpretations, theoretically- and axiologically-driven analysis) (33, 34). This study design facilitates the exploration of how DAA treatment needs, experiences, and perceptions are embedded within the socio-structural conditions of PWID's lives. Through this lens, we analyze the lived experiences of HCV among PWID to identify strengths-based and contextually-informed strategies for promoting equitable outcomes with respect to HCV and wellbeing more generally for this priority population.

Study setting

This research was conducted in Metro Vancouver, British Columbia (BC), Canada, a metropolitan area with an approximate population of 2,463,431 people (35). In Canada, the

majority of healthcare services, including those under the umbrella of HCV care, are publicly funded and universally offered. Importantly, however, Canada does not have a federal pharma-care program, so publicly funded medication coverage, when available, is determined at the provincial level. In 2018, the province of BC removed restrictions from the BC PharmaCare program to DAA access and approved the universal coverage of several DAA treatment formulations for all British Columbians living with HCV (36). This policy change expanded treatment access to the 53,441 HCV-diagnosed-individuals living in BC in 2018, among whom 18,609 (34.8%) reported current or past injection drug use (37). However, also in 2018, only 5,200 (27.9%) individuals within this population of PWID living with HCV were able to access and begin treatment (with either DAAs or Interferon-based therapies), signaling an ongoing gap in the HCV cascade of care for this priority population (37).

Given the colonial context of Canada, it is important to understand the structurally-embedded nature of the inequities experienced by Indigenous PWID living with HCV, broadly, as well as the overrepresentation of Indigenous[1] Peoples within the current study, specifically. Across Canada, Indigenous Peoples are inequitably impacted by substance use and HCV. As described in detail elsewhere (e.g., 26, 38, 39), colonial policies and institutions in Canada (e.g., the Indian Act, Indian Residential Schools and Hospitals, the current child welfare and criminal justice systems, ongoing treaty violations) have disrupted the wellbeing, rights, and self-determination of Indigenous Peoples. Concomitantly, these and other forms of structural violence have created and sustained the conditions in which Indigenous Peoples in Canada face barriers to

1 The term "Indigenous" refers to first peoples internationally. I use this term to broadly refer to the diverse First Nations, Métis, Inuit, and other Indigenous Peoples living in Canada.

174 determinants of good health, thereby contributing to significantly higher morbidity and mortality
175 rates among Indigenous Peoples relative to non-Indigenous people (40, 41). Within this context,
176 systemic racism – including in healthcare settings – has exacerbated the harms experienced by
177 Indigenous Peoples who use/inject drugs, as evidenced by inequitable rates of HCV, HIV,
178 overdoses, and criminalization related to drug offences (26, 42-45). As one example, recent
179 public health surveillance data from the Canadian provinces of Saskatchewan and Ontario
180 estimated that HCV rates are 6-11 times higher among First Nations Peoples relative to non-
181 Indigenous people (26, 46, 47). Further still, recent research has demonstrated that Indigenous
182 Peoples in Canada are up to 50% less likely than non-Indigenous people to be able to access and
183 begin HCV treatment (48, 49), and three times more likely to die without ever having accessed
184 HCV care (26, 50, 51). It is in this context of ongoing and systemic harms associated with
185 colonization that the current study is situated.

186 ***Sampling and recruitment procedures***

187 Drawing on a stratified purposive sampling strategy (52), we led targeted recruitment of specific
188 participant subgroups (i.e., stratified by gender identity, HIV serostatus, and stage of HCV
189 treatment) from three large prospective cohort studies in Metro Vancouver: the Vancouver
190 Injection Drug Users Study (VIDUS), the AIDS Care Cohort to Evaluate access to Survival
191 Services (ACCESS) study, and the Preservation of Sustained Virologic Response (Per-SVR)
192 study. As described in detail elsewhere (53), VIDUS and ACCESS are open community-
193 recruited prospective cohort studies that, since 1996 and 2005, respectively, have conducted
194 research (e.g., through baseline and semi-annual interviewer-administered questionnaires, testing
195 for HCV and other blood-borne infections, and clinical monitoring) with HIV-negative (VIDUS)

196 and HIV-positive (ACCESS) people who use/inject drugs. Similarly, initiated in 2017, the Per-
197 SVR study (54) is a prospective longitudinal cohort of people with lived experience of HCV and
198 who have completed or who are currently undergoing treatment with DAAs.

199 VIDUS, ACCESS, and Per-SVR research staff identified prospective participants by querying
200 their respective cohort study databases. During baseline and follow-up visits for their respective
201 studies, research staff informed prospective participants about an additional qualitative study
202 related to how PWID with lived experience of HCV experience DAA treatment. After
203 participants contacted our research team, we provided additional study information, confirmed
204 eligibility, and scheduled interviews. Participants were eligible for inclusion if they lived within
205 Metro Vancouver, were 19 years of age or older, were fluent in English, reported past or current
206 injection drug use, and had lived experience with HCV and were either (1) considering DAA
207 treatment access, (2) presently receiving treatment with DAAs, or (3) had recently completed
208 DAA treatment. Participants provided written informed consent prior to data collection activities
209 and were remunerated with a CDN $30 honorarium. Ethics approval was obtained from the
210 University of British Columbia Behavioural Research Ethics Board (#H16-02943).

211 ***Data collection***

212 Between January and June of 2018, we conducted 56 in-depth, semi-structured interviews that
213 lasted 30-60 minutes. We held interviews at our research offices in Vancouver's Downtown
214 Eastside. We designed the interview guide to elicit comprehensive discussions about
215 participants' perceptions and experiences with DAA treatments, HCV care, and healthcare more
216 generally. Our interview questions related generally to how participants had become aware of

and informed about DAA treatments. In addition, we asked participants to describe the circumstances and contexts in which they had accessed (or had not been able to access) DAA treatments. At this point in time, we prompted participants to elaborate on how various individual and relational (e.g., provider-patient dynamics; apprehensions related to previous experiences with Interferon-based therapies and concerns about potential side effects) influenced their experiences and perspectives related to DAA therapies. In addition, we encouraged participants to discuss how broader contextual features of their lives influenced their experiences with HCV and wellbeing more generally; in doing so, we sought to elicit discussion of how socio-structural factors (e.g., features of healthcare delivery systems, peer and community supports, treatment eligibility criteria, marginalization, stigma) influence opportunities to access, adhere to, and complete DAA regimens. Participants also filled out an 8-item socio-demographic questionnaire, which included items related to age, ethnicity, HIV serostatus, HCV treatment status, and sexual and gender identity.

Data analysis

Interviews were audio-recorded, transcribed verbatim, accuracy checked, anonymized, and securely and digitally stored with identifying details removed. We uploaded the interview data to NVivo 12 software, which we then used to manage the analysis. At early stages of the analysis, we read and re-read the accounts of PWID in the study sample, and organized the data into patterns, which we then assigned substantive open codes (e.g., related to: background participant information, experiences living with HCV, experiences and perceptions of DAAs, barriers and facilitators associated with DAA treatment access and uptake) (34). We then conducted axial coding (33, 34), wherein we organized initial codes into “trees” that represented groups of

related concepts and categories, which provided a foundational schematic for the analysis. In doing so, we used constant comparative techniques (33) to further distil the ways and contexts in which emerging themes manifested. Throughout data analysis, we explored each key theme more fully by asking pertinent analytic questions, including: (i) How do perceptions about HCV and its treatments (i.e., both historical and current) shape PWID's attitudes and experiences with DAAs? (ii) What key considerations and socio-contextual factors influence opportunities to access and complete DAA treatment? (iii) Under what conditions and in which contexts is equitable access to DAAs and wellbeing more generally for PWID realized? As the analysis proceeded, we addressed discrepancies between emergent themes through debriefing processes at team meetings. In addition, we employed a series of additional inductive approaches (e.g., returning to the data for nuance and context, iteratively contrasting emerging themes against what is already documented in related empirical and theoretical literature bases) to identify and refine central themes, which we present below.

Results

For this study, we interviewed a total of 56 PWID with lived experience of HCV. Table 1 provides an overview of the socio-demographic characteristics of this sample. In addition, although not explicitly asked in our socio-demographic questionnaire, our interviews surfaced that many participants had experienced – and, in most cases, were still experiencing – significant socio-economic hardship, including living on very low incomes and in inadequate housing situations (e.g., couch surfing, shelters, outside). The social context of participants' lives is surfaced throughout the analysis below, where we offer the findings in three thematic sections: (i) life with HCV, (ii) experiences with and perceptions of evolving HCV treatments, and (iii)

substance use and the uptake of DAA treatments. Each participant quotation is accompanied by a brief description of the participant's socio-demographic profile and a researcher-assigned numerical identifier.

Table 1: Characteristics of participants

Participants	**56**
Age (average, range)	**49** (31-66) Years
Ethnocultural identity	
First Nations	**28** (50%)
Métis	**3** (5.4%)
Black	**1** (1.8%)
White	**19** (33.9%)
Declined to answer	**5** (8.9%)
HCV treatment status	
Pre-treatment[1]	**25** (44.6%)
Peri-treatment	**12** (21.4%)
Post-treatment	**19** (33.9%)
HIV serostatus	
Positive	**27** (48.2%)
Negative	**29** (51.8%)
Sexual identity	
Heterosexual/straight	**42** (75%)

Bisexual/bicurious	**4** (7.1%)
Lesbian	**1** (1.8%)
Gay	**1** (1.8%)
Two-Spirit[2]	**2** (3.6%)
Other[3]	**2** (3.6%)
Declined to answer	**4** (7.1%)
Gender identity	
Man[4]	**29** (51.8%)
Woman[5]	**26** (55.4%)
Two-Spirit[2]	**1** (1.8%)

[1]This category includes one participant whose DAA treatment regimen was unsuccessful at achieving cure, one participant who prematurely ceased DAA treatment due to adverse side effects, and one participant who re-acquired HCV following successful treatment with Interferon-based therapies. All of these participants expressed intent to (re)access DAA treatment.

[2]"Two-Spirit" is an umbrella term intended to encapsulate a range of Indigenous gender diverse and non-normative sexual orientations (55). There is no singular definition of this term, as its use varies across and within Indigenous Peoples and communities. Two participants in this study described their sexual identities as Two-Spirit, whereas another participant used this term to refer to their gender identity.

[3]In this category, one participant identified as transgender and another participant identified as androgynous. Although we associate these terms with gender identity and expression, this table presents the sexual identities indicated by participants themselves.

[4]All men who participated in this study identified as cisgender.

[5]One woman who participated in this study identified as transgender, whereas the remaining women identified as cisgender.

Life with HCV: "We're not really given all the information"

As the interviews began, participants reported having variable and sometimes limited amounts of clinical information related to HCV and its treatments. Among participants who had not yet accessed DAA treatment, in particular, several described experiences in which they had not been adequately informed by their healthcare providers about the meaning and potential impact of HCV (e.g., symptoms, transmissibility, prognosis, treatment options). Indeed, some of these participants even indicated that, through the interview questions and prompts regarding DAA treatments for the present study, they were being informed of DAAs for the very first time. Here, a subset of participants also described how the prevalent and often asymptomatic nature of HCV within their communities had led to HCV care being conventionalized and deprioritized by some healthcare providers. These participants further postulated that this "downplaying" of HCV had inadvertently affected the amount of HCV-related information they had been given and the extent to which they had been engaged by their healthcare providers in HCV care. One 53-year-old woman who had not yet been able to access HCV treatment described this critical information gap when outlining her experience of being diagnosed with HCV by her family physician:

> *Hep C is the least of the dangers [compared to other illnesses], but it doesn't mean it's not dangerous. And we're not really given all the information about what organ it [HCV]*

hurts, what exemplifies it, or what could help on a daily basis to avoid it. Like, is it a growth, is it a, you know, a virus, like a liquid, or is it hardening or, you know, I don't know any of those things (Participant_17).

Conversely, a subset of participants described healthcare interactions in which they had been "overloaded" with information related to HCV and other aspects of their health, including, in particular, substance use and HIV. These participants described instances in which they had been unsatisfactorily supported by their healthcare providers and how, within this context, the shock of being diagnosed with HCV – and, in many cases, also HIV – had caused them to "close down" and not retain important information related to their illness and/or potential treatment options. More generally, several participants described how their previous negative experiences within clinical encounters had impacted their subsequent experiences and trajectories of care. For example, participants described highly dehumanizing clinical encounters (i.e., that lacked respect, empathy, and recognition of client choice) with healthcare providers, which they tended to associate with their ongoing mistrust of some healthcare providers. As such, participants emphasized that these previous negative experiences with healthcare providers were strongly tied to a deep hesitancy they have around seeking follow-up HCV care, including DAA treatment. One 55-year-old woman, who was receiving HCV treatment, recounted the context in which, while in her 30s, she and her newborn son had both been tested for HCV and HIV:

I found out about my hepatitis C when I found out I had HIV. [. . .] I went and seen him [the physician], and he tested my son, he tested me. He said, "Come back in two weeks." And when that two weeks came by, I went and seen him [again]. He goes, "Well, I've got some good news and I've got some bad news." And I said, "What's that?". He says, "Well,

first of all, you have hep C." I said, "Okay." And he goes, "And your son's gonna live, but you, you're gonna die." I said, "What?" [laughs]. He goes, "Because you have HIV." I said, "Okay." And then, when he said I was gonna die, I just closed right down. . . I didn't hear a word what he said (Participant_10).

As participants' stories further unfolded, a subset described how, despite having lived with HCV for years or even for decades, they had largely been asymptomatic of HCV, and therefore had tended to de-prioritize seeking HCV-related information and/or treatment. Some of these participants described how they had nonetheless begun treatment after being approached to do so by their healthcare providers during hospitalization or while accessing community-based healthcare for other co-morbidities. In describing how she had lived with HCV for more than 20 years, one person reflected:

"I wasn't really worried about it [HCV] because I was young and still healthy" (Participant_19; 46-year-old woman, also living with HIV, completed HCV treatment).

Meanwhile, however, the majority of participants described how aging, the intensifying burden of late-onset and chronic HCV symptoms (e.g., fatigue, insomnia, depression, pain, jaundice), and, in many cases, the increasing toll and stress of living on a low income and/or in substandard housing had shaped a set of conditions in which they felt they needed to access HCV treatment. Here, one 45-year-old man, who had been living with HCV for more than 20 years prior and who had not yet been able to access treatment, described the subtle but gradual and regressive nature of HCV disease progression, which reinforced his motivation to seek medical attention:

> *I just kind of [thought], like, "Oh, I'm young, you know. I'll ignore it [HCV]. I'll be alright and I'll fight it off. I'll be alright, you know. Now, I'm kind of wanting to [learn more about it], because I'm not getting frigging younger here, right? [Laughs]. So, it's actually kind of starting to kick in now. And it's kind of frigging bothering me now (Participant_04).*

In summary, participants described how their healthcare interactions and the timing and impact of their symptoms while living with HCV impacted their knowledge, motivations, and experiences with HCV care access, including DAAs. In considering participants' portrayals of life with HCV, we continue the analysis below by explicitly identifying participants' perceptions and experiences related to HCV treatments.

Experiences with and perceptions of evolving HCV treatments: "The new one is way better than the old one"

The majority of participants described how, within the last 1-2 years (i.e., contemporaneously with the introduction of universal access to DAAs in BC, in 2018), they had become aware of DAA treatments through discussions with members of their peer and healthcare networks. Yet, several participants described uncertainty as to whether or not they were eligible for DAA treatments – particularly, if they had previously been denied Interferon- and/or DAA-based HCV treatments. At the same time, several participants described a sense of ambiguity related to where, when, and how they could access DAA treatment. Amidst these descriptions, many participants' stories chronicled the challenge of identifying and accessing healthcare services and

providers with whom they could potentially begin DAA treatment regimens. For example, the above participant further explained:

> *I don't know where to get it [DAAs], or if there's any out there, or if we're eligible for it, or… There's not too much information about it, it seems like, you know? I want to get better, but there's not too many places. And then you have to like wait so long before you get any help from [healthcare providers], and it's kind of like, "My God, man. What will it take?" (Participant_04).*

Similarly, several participants – namely, those who themselves had undergone Interferon-based treatments but who continued to be living with HCV – expressed ongoing apprehension about accessing DAA therapies, as they anticipated that the side effects would not be tolerable. During these discussions, it became apparent that participants had not received accurate information related to DAAs, as some were unaware that many of the side effects associated with Interferon-based treatments did not apply to DAA regimens. One 41-year-old woman described her deliberation about whether or not to access treatment with DAAs, which, at the time of the interview, she was about to begin:

> *"I was thinking about the side effects. Yeah, what with… like, I want to know what… if I took it [DAAs], what's the side effects is, I guess. Yeah. I wouldn't know, because I don't know what kind of side effects it would affect on me, right? About taking the [DAA] pill" (Participant_03).*

In a subset of interviews, participants described a sense of mistrust and skepticism toward the interests and motivations of HCV-related public-health and pharmaceutical-research officials. By association, these participants expressed significant caution and hesitancy regarding the safety of DAA treatments. Among these participants, some expressed skepticism that they might be treated as "guinea pigs" for experimental HCV treatments, which, in some cases, contributed to hesitancy to "take up" DAAs. For instance, while being prompted about DAAs by the interviewer, one woman, who was receiving HCV treatment and who opted not to disclose her sociodemographic data, described:

> *[DAAs] cost so much money. Now, why is it 700 dollars a pill now? This is what I was trying to find out, too: is this to cover the cost of the research before they can make the generic pills? Or, how come it costs so much money right now? [. . .] Was it tested on animals? [. . .] So, there was people that actually used this medication before people like us got it? [. . .] I don't want to be a guinea pig. I mean, I know I am a guinea pig, kind of, because… how long have people been taking this [DAA treatment] now? Two years? (Participant_52).*

Nonetheless, amidst descriptions of learning about DAAs, several participants expressed excitement and interest in novel HCV treatment regimens, which, as participants further described, had often been presented to them (i.e., by peers, healthcare providers, and online resources) as more tolerable and more effective than Interferon-based therapies. Often, participants contrasted the perceived opportunities presented by DAA treatment regimens with their previous experiences with and perceptions of Interferon-based therapies. In doing so, participants frequently characterized negative attributes of Interferon-based therapies, including

their adverse side effects, prolonged treatment durations, and relative ineffectiveness when compared to DAA treatments. For instance, one 47-year-old man, who had not yet been able to access HCV treatment, described how:

> *I know that there was a lot of side effects to it [Interferon-based treatments]. That's what I heard about it. But the new one [DAAs] just kind of got me right off of it [referring to symptoms of low energy]. A lot of people are finding themselves getting treated of it [HCV], get cured of it, like, real quick. So yeah, the new one is way better than the old one, as far as from what I hear (Participant_07).*

Concerns related to treatment side effects were further described by another participant who had not yet been able to access HCV treatment:

> *I was really scared because my friend did the [Interferon-based] treatment and he did not look the same. I thought he was going to die. I thought, because he didn't look the same, it looked really scary to me and I didn't even recognize him on the street. I thought he was an old man. And he told me that the [Interferon-based] Hep C treatment wasn't very good. [. . .] That scared me, and I said I wasn't going to do it [treatment], until now I heard about the [DAA] treatments now, that they're a little bit… you don't get no side effects, so I'm really looking forward to that, kind of thing (Participant _048; 42-year-old Two-Spirit person).*

In considering participants' accounts of their histories with HCV and Interferon-based treatments, the data highlighted how the implementation of DAAs represents both a pivotal

opportunity and a significant period of adjustment and uncertainty (e.g., related to treatment eligibility, side effects, access, and potential outcomes) for PWID living with HCV. Specifically, perceptions of DAA treatments and uptake of DAAs are deeply shaped by an array of experiential factors, including individual, interpersonal (e.g., peer influences), and community experiences with HCV and its treatments.

Substance use and the uptake of DAA treatments: "You don't have to quit using now, but you can't miss any doses once you start treatment"

Almost all participants described the ways in which their substance use, including alcohol, and related engagement with primary care and harm reduction services could be both a potential barrier and/or facilitator to equitable DAA treatment access. For example, in recounting their experiences across both Interferon- and DAA-based treatment eras, several participants described instances in which their substance use had been characterized by health care providers as a contraindication to HCV treatment eligibility, despite this not being a policy-mandated contraindication. Indeed, the majority of participants described experiences wherein their physicians had either explicitly withheld HCV treatment, or recommended that participants stop or greatly reduce their substance use prior to accessing treatment. This denial of access to HCV treatments was described by one participant:

> *He [the physician] just wanted me to quit drinking [before I could start treatment], that's all. And I could see his point. Yeah, but to force me to quit drinking and then say you'll help me, that's not right. I was living in squalor. I was couch surfing and everything and I said I want to get my own place, and he wouldn't help me. [. . .] Then I moved to [name of*

another physician], and he got me right on it [DAA treatment], and then he cured me. So, big difference of doctors, isn't it!? (Participant_50; 52-year-old woman, completed HCV treatment).

As illustrated above, several participants described how they responded to healthcare provider gatekeeping of DAAs by seeking out more person-centered, equity-oriented, and power-balanced sources of HCV care. Participants' accounts of navigating HCV services therefore highlighted their resiliency and determination in finding service providers who did not reproduce systemic barriers to safe, nonjudgmental, and high-quality healthcare. For example, participants described how they valued healthcare providers whose approaches to HCV care were supportive and grounded in harm reduction, as opposed to abstinence-based approaches. One 47-year-old man, who had not yet been able to access HCV treatment, explained:

[When I was diagnosed with HCV, six years ago], they [the healthcare providers] told me that it is treatable, right? But you have to be willing to stop doing this and stop doing that. I'm like, "I'm not willing to stop anything." Like, using heroin and crack and coke and all of that B.S [bullshit]. But now that I cut myself down off of everything else, and I just stick to one dope now, which is heroin, [my current physician] said, "You don't have to quit using now. You could still take your pill while you're doing whatever it is you're doing. But you can't miss any doses once you start," right? (Participant_07).

Several participants postulated that being able to have transparent and supportive discussions about their substance use facilitated open communication and the development of individualized HCV treatment plans. Participants further described how they had planned and implemented

strategies for making HCV treatment more accessible and thereby more effective collaboratively with their harm reduction-oriented healthcare providers. These plans frequently included the integration of DAA treatments with other substance use-related services (e.g., OAT, HIV care, outreach and in-reach harm reduction services). Here, while a subset of participants described how their inclination to integrate DAAs with existing services stemmed from their concerns that they might otherwise forget to take their doses (and thereby risk making the treatments ineffective), the majority described how integrated services were simply a matter of convenience. One participant described how DAAs were incorporated into her daily routine of acquiring OAT (in her case, methadone) from her pharmacist:

> *Well, you just give it [DAAs] to them at the pharmacy then. Mine [i.e., my treatment] was taken every day at the pharmacy. It's what I asked of them [my physician], "When I go get my methadone, just give it to me with that." You go and get your methadone every day, right, if you're on methadone (Participant_24; 54-year-old woman, completed HCV treatment).*

A subset of participants described how their treatment plans were made even more comprehensive through the involvement of multiple supports and services, including peers, partners, family, and housing and outreach workers. This support network was described as a sort of "safety net," who, if needed, could remind participants to take their DAA doses. Similarly, some participants described how logistical and organizational features of support services (e.g., extended and weekend hours of operation, the potential to carry take-home doses of DAAs from pharmacies) could serve to promote treatment accessibility and adherence. At

times when they were holistically supported, participants described feeling confident and optimistic about their experiences with DAAs:

> *I never forget [to take my DAAs], now. So, knock on wood. [Laughs]. Yeah. And, hopefully, I will never forget, because forgetting is like a no-no. You cannot forget to take your medication, because you have to take it every day. [. . .] That's what I've heard from my doctor. So, I'm very vigilant now. I get up in the morning times, so I'm vigil[ant], so I know what I'm doing. And I'm… I've already woken up. I've had my three cups of coffee, and I'm open to go and see the pharmacist to get my medication. But forgetting, no, I can't do that. And, plus, the pharmacy's aware of my situation, and knows that they have to phone me at a certain time to remind me that I have to come in. And, I'm grateful for that. Plus, I have the people at my apartment building [i.e., outreach workers] – they're aware of my situation now, too. So, they come and do an eight o'clock wake-up call with me, to remind me to take my medication. So, I've got it down (Participant_05; 53-year-old woman, undergoing HCV treatment).*

Across these findings, participants described how various features of the healthcare system and provider-patient interactions could reduce barriers and thereby promote opportunities for equitable DAA access and uptake. In particular, participants described the diverging ways in which their healthcare providers had framed their substance use as either a barrier or, through harm reduction-oriented approaches, a potential avenue for engaging participants in HCV care, including DAA treatments.

Discussion

The introduction of universal DAA coverage in many settings, including BC, Canada, has transformed the HCV treatment landscape and has expanded opportunities to treat priority populations, including PWID. Yet, as these findings highlight, significant social and structural barriers to DAA treatments for PWID remain heretofore unaddressed. Drawing from participants' extensive experiences with HCV and related healthcare system engagement, findings from this study underscore how health and healthcare practices and policies, such as the deprioritizing of HCV (e.g., due to being asymptomatic, healthcare provider gatekeeping) and catalysts to care (e.g., symptom onset and burden, treatment for co-morbidities), shaped experiences with and access to DAAs. More broadly, participants described how experiences with evolving HCV treatments (e.g. [in]eligibility, side effects, skepticism) and overarching approaches to care (e.g., abstinence-based, harm reduction-oriented, integrated) influenced motivations and opportunities related to DAA treatment access.

Findings from this study indicate that HCV-related care trajectories and clinical encounters are often fraught with uncertainty and misinformation. These findings identified how poor healthcare-provider engagement and support can lead to gaps in people's knowledge about HCV, particularly with regard to potential consequences (e.g., symptoms, impacts on quality of life), as well as its treatment. Furthermore, these data underscore the extent to which stigmatizing and dehumanizing approaches to care, characterized by a lack empathy and respect, also prevented opportunities to acquire HCV-related information. The pronounced provider-client power imbalances as the context within which information gaps are occurring represent significant deterrents to the delivery of good care, as HCV illness- and treatment-related knowledge deficits

represent key barriers to DAA treatment uptake (25, 56). To strengthen access to equitable healthcare information and treatment, it has been extensively argued that clinicians must continuously attend to power differentials and meaninfully engage clients as active participatns in care (57, 58). Findings from this study indicate that clinicians involved in HCV care must adopt equity-oriented and history-informed approaches that recognize and address the common concerns PWID may have related to HCV treatments (e.g., previous adverse experiences with Interferon-based therapies, concerns about DAA treatment side effects, confusion related to treatment eligibility). Unfortunately, however, previous research has indicated that specialist and primary care providers often feel they are inadequately trained to provide care that aligns with equity-oriented approaches, and are therefore insufficiently prepared to provide HCV and substance use-related care (59, 60). To comprehensively address this provider- and patient-level knowledge gap, we call for expanded advocacy and educational efforts to promote clinician capacity to provide equitable and effective care to PWID living with HCV. Indeed, these findings identify the extent to which healthcare providers need to better mitigate unequal provider-client power relations and the corresponding impacts on health and healthcare access for PWID.

Relatedly, these findings provide a critical glimpse into how structural barriers, including substance use stigma, restrict opportunities for DAA treatment uptake among PWID. For example, participants in the current study generally described how HCV care had tended to be deprioritized by healthcare providers on the basis of active substance use. In addition, findings from this study surfaced other clinical experiences in which guiding ethical principles of care were not followed (e.g., clinicians coldly framing HCV/HIV as a “death sentence” at the time of diagnosis). In considering these challenges, findings from this study further illustrate that the

remaining barriers to HCV care identified herein (e.g., misinformation, gatekeeping) are entwined with stigmatization and mistreatment, which are well-documented determinants of HCV-related and other health and social inequities among PWID (8, 27, 30, 61-64). These findings are consistent with previous research suggesting that PWID, including those living with HCV, tend to be treated as passive recipients of care, not meaningfully consulted in discussions surrounding their health and wellbeing, and labelled and stigmatized within healthcare settings – and that their living circumstances (e.g., related to: substance use, income, housing) are often framed as contraindications to care, rather than carefully considered within person-centered care strategies/plans (7, 65-68). Findings from this study therefore underscore the need for healthcare providers – particularly, those with prescriptive authorities for DAAs (e.g., physicians, nurse practitioners) – to treat PWID according to fundamental ethical principles (e.g., compassion, dignity, respect for persons) underpinning clinician codes of ethics for socially just clinical practice (e.g., 69, 70). Further, these findings highlight the importance of facilitating access to HCV care while taking seriously the need for larger scale system-level and structural changes and "upstream" policy responses (e.g., safe housing for everyone).

Acknowledging the colonial context in BC, the perspectives of Indigenous Peoples in this study sample, and the harmful clinical encounters described herein, findings from this study also align with a growing body of Canadian and international empirical evidence highlighting how HCV-affected Indigenous Peoples are distinctly and inequitably mistreated within healthcare settings (26, 71-73). For Indigenous Peoples, including those who use substances and who face substance use stigma, historical and ongoing contexts of systemic racism and colonialism are known to create barriers to safe, effective, and timely healthcare (57, 74). To mitigate ongoing health inequities, including those stemming from structural barriers to clinical care, HCV treatment

providers must take meaningful action to create and maintain relationships that are safe and trauma- and history-informed, and that promote equitable access to care, information, and treatment for Indigenous and other PWID living with HCV. Here, there is a critical need for culturally safe approaches that foreground social justice goals in HCV care provision and that include clinician "critical self-refection of biases, acknowledgement of power imbalances, and conviction to uphold Indigenous [and non-Indigenous] patient self-determination at every step of the HCV cascade of care" (26p60), along with structural interventions to redress inequities related to HCV treatment, care and outcomes.

To further optimize DAA treatment experiences among PWID, these findings also indicate the need for system-level changes, including the provision of low-barrier, integrated, and peer-led services. For example, participants emphasized how their relationships with harm reduction-oriented healthcare providers facilitated opportunities to develop comprehensive HCV treatment plans, which included linking DAAs with existing services that many PWID already access – the feasibility and effectiveness of which has documented elsewhere, such as in the contexts of HIV care (75, 76) and OAT provision (18, 77-81). In addition, participants described how efforts from community members and housing-support workers to facilitate and uphold DAA treatments plans (e.g., through "check-ins" and reminders to take medications) further contributed to the consistent and successful uptake of DAA treatments. The importance of peer and social supports was further echoed in participants' descriptions of community members as trusted sources of knowledge who essentially vouched for DAAs, such as by alleviating potential concerns (e.g., related to side effects and eligibility) and by substantiating the safety and effectiveness of novel treatments. These findings align with recent research underscoring the influence of peers (i.e., other PWID with lived experience of HCV) on health seeking behaviours and the spread of

health information, particularly in regard to DAA treatments (20, 82-84). To further promote linkages to HCV care and the equitable scale-up of DAAs among PWID, additional public health efforts to implement and optimize peer-driven and network-based interventions are warranted.

This study has several strengths and limitations. The large and diverse sample of PWID who have lived experience with HCV yielded highly-contextualized descriptions of HCV care across both Interferon- and DAA-based treatment eras. Nevertheless, we acknowledge that the perspectives of other stakeholders in HCV care (e.g., peers, family members, clinicians, policymakers) were beyond the scope of this research. In addition, given limitations in the study design and the specificity of the research questions, we did not focus on investigating how perceptions and experiences with DAAs vary across and within subpopulations of PWID (e.g., across axes of ethnocultural identity, sexuality, gender identity, and HIV serostatus; across participants' "types" and contexts of substance use). While this study offered some critical analysis into how features of healthcare and social environments shape DAA uptake for PWID, further research is needed to explicate ways in which access to DAA treatment is embedded within intersecting socio-structural contexts.

Conclusion

The introduction of novel DAA treatments and the subsequent removal of regulatory barriers to access these medications in many settings, including BC, Canada, has renewed optimism for expanding HCV treatment efforts. To further promote the equitable scale-up of DAAs among PWID, comprehensive approaches that account for the socio-structural and historical factors that have influenced HCV-related health and healthcare access for this population are required.

Findings from this study underscore several healthcare and service delivery transformations that are required to meaningfully facilitate PWID's access to DAA treatments, including the scale-up of integrated services and peer- and community-based interventions and supports, alongside the championing of equity-oriented clinician approaches to care that are attentive to power differentials and the social contexts of people's lives, culturally safe and non-stigmatizing, and grounded in harm reduction.

Declarations

Ethics approval and consent to participate

Ethics approval for this study was obtained from the University of British Columbia Behavioural Research Ethics Board (#H16-02943). Participants provided written informed consent.

Consent for publication

Not applicable.

Availability of data and materials

The data analyzed during the current study are not publicly available because they contain information that could compromise research participant privacy and consent, but are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

This study was funded by the Canadian Institutes of Health Research (Grant PJT-148922). TG receives trainee support through the Canadian Nurses Foundation and the US National Institute of Drug Abuse (Grant R25-DA033756). RK and LT are supported by Scholar Awards from the Michael Smith Foundation for Health Research.

Authors' contributions

TG led the analysis of data and conceptualized, wrote, and revised the manuscript. RK conceptualized the study, obtained study funding, contributed to data collection and analysis, and provided mentorship in writing this manuscript. HB and AJB contributed to data analysis and provided mentorship in conceptualizing, writing, and revising the manuscript. PH led data collection and contributed to data analysis and manuscript revision. LT contributed to data analysis and offered critical revisions to the manuscript. All authors read and approved the final manuscript.

Acknowledgements

We are thankful to the people who shared their time and stories for this research. We are also thankful to Nahal Torabi for completing much of the initial coding of the data.

List of abbreviations

BC: British Columbia; DAA: direct-acting antiviral; HCV: hepatitis C virus; HIV: human immunodeficiency virus; PWID: people who inject drugs; OAT: opioid agonist therapy.

References

1. World Health Organization. Guidelines for the care and treatment of persons diagnosed with chronic hepatitis C virus infection. Geneva, Switzerland: World Health Organization; 2018.

2. Botterill G. Increasing treatment uptake to eradicate hepatitis C infection. Nursing Times. 2018;114(6):38-42.

3. Chou R, Hartung D, Rahman B, Wasson N, Cottrell EB, Fu R. Comparative effectiveness of antiviral treatment for hepatitis C virus infection in adults: A systematic review. Annals of internal medicine. 2013;158(2):114.

4. Janjua NZ, Islam N, Wong J, Yoshida EM, Ramji A, Samji H, et al. Shift in disparities in hepatitis C treatment from interferon to DAA era: A population-based cohort study. Journal of Viral Hepatitis. 2017;24(8):624-30.

5. Aspinall EJ, Corson S, Doyle JS, Grebely J, Hutchinson SJ, Dore GJ, et al. Treatment of hepatitis C virus infection among people who are actively injecting drugs: A systematic review and meta-analysis. Clinical Infectious Diseases. 2013;57(suppl_2):S80-S9.

6. Janjua NZ, Kuo M, Yu A, Alvarez M, Wong S, Cook D, et al. The population level cascade of care for hepatitis C in British Columbia, Canada: The BC Hepatitis Testers Cohort (BC-HTC). EBioMedicine. 2016;12:189-95.

7. Heffernan A, Cooke GS, Nayagam S, Thursz M, Hallett TB. Scaling up prevention and treatment towards the elimination of hepatitis C: a global mathematical model. The Lancet. 2019;393(10178):1319-29.

8. Ford N, Wiktor S, Kaplan K, Andrieux-Meyer I, Hill A, Radhakrishnan P, et al. Ten priorities for expanding access to HCV treatment for people who inject drugs in low- and middle-income countries. Int J Drug Policy. 2015;26(11):1088-93.

9. World Health Organization. Global health sector strategy on viral hepatitis 2016-2021: Towards ending viral hepatitis. Geneva, Switzerland: World Health Organization; 2016.

10. Grebely J, Larney S, Peacock A, Colledge S, Leung J, Hickman M, et al. Global, regional, and country-level estimates of hepatitis C infection among people who have recently injected drugs. Addiction. 2019;114(1):150-66.

11. Knight R, Ti L. The successful scale-up of direct-acting antiviral hepatitis C treatments will benefit from concerted investments in implementation science. Can J Public Health. 2019;110(3):376-9.

12. Trickey A, Fraser H, Lim AG, Peacock A, Colledge S, Walker JG, et al. The contribution of injection drug use to hepatitis C virus transmission globally, regionally, and at country level: A modelling study. The Lancet Gastroenterology & Hepatology. 2019;4(6):435-44.

13. Bird K, Socías ME, Ti L. Integrating hepatitis C and addiction care for people who inject drugs in the era of direct-acting antiviral therapy. International Journal of Drug Policy. 2018;59:1-2.

14. Degenhardt L, Peacock A, Colledge S, Leung J, Grebely J, Vickerman P, et al. Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: A multistage systematic review. The Lancet Global Health. 2017;5(12):e1192-e207.

15. Socías ME, Ti L, Dong H, Shoveller J, Kerr T, Montaner J, et al. High prevalence of willingness to use direct-acting antiviral-based regimens for hepatitis C virus (HCV) infection among HIV/HCV coinfected people who use drugs. HIV Medicine. 2017;18(9):647-54.

16. Blach S, Zeuzem S, Manns M, Altraif I, Duberg A-S, Muljono DH, et al. Global prevalence and genotype distribution of hepatitis C virus infection in 2015: a modelling study. 2017.

17. Ha S, Totten S, Pogany L, Wu J, Gale-Rowe M. Hepatitis C in Canada and the importance of risk-based screening. Can Comm Dis Rep. 2016;42(11):57-62.

18. Litwin AH, Drolet M, Nwankwo C, Torrens M, Kastelic A, Walcher S, et al. Perceived barriers related to testing, management and treatment of HCV infection among physicians prescribing opioid agonist therapy: The C-SCOPE Study. Journal of Viral Hepatitis. 2019;26(9):1094-104.

19. Marshall AD, Grebely J, Dore GJ, Treloar C. Barriers and facilitators to engaging in hepatitis C management and DAA therapy among general practitioners and drug and alcohol specialists—The practitioner experience. Drug and Alcohol Dependence. 2020;206:107705.

20. Goodyear T, Ti L, Carrieri P, Small W, Knight R. “Everybody living with a chronic disease is entitled to be cured”: Challenges and opportunities in scaling up access to direct-acting antiviral hepatitis C virus treatment among people who inject drugs. International Journal of Drug Policy. 2020;81:102766.

21. Skeer MR, Ladin K, Wilkins LE, Landy DM, Stopka TJ. 'Hep C's like the common cold': Understanding barriers along the HCV care continuum among young people who inject drugs. Drug Alcohol Depend. 2018;190:246-54.

22. Clark JA, Gifford AL. Resolute efforts to cure hepatitis C: Understanding patients' reasons for completing antiviral treatment. Health. 2015;19(5):473-89.

23. Rhodes T, Harris M, Martin A. Negotiating access to medical treatment and the making of patient citizenship: the case of hepatitis C treatment. Sociol Health Illn. 2013;35(7):1023-44.

706 24. Jordan AE, Masson CL, Mateu-Gelabert P, McKnight C, Pepper N, Bouche K, et al.
707 Perceptions of drug users regarding hepatitis C screening and care: A qualitative study. Harm
708 reduction journal. 2013;10(1):10-.
709 25. Madden A, Hopwood M, Neale J, Treloar C. Beyond interferon side effects: What
710 residual barriers exist to DAA hepatitis C treatment for people who inject drugs? PloS one.
711 2018;13(11):e0207226.
712 26. Pearce ME, Jongbloed K, Demerais L, MacDonald H, Christian WM, Sharma R, et al.
713 "Another thing to live for": Supporting HCV treatment and cure among Indigenous people
714 impacted by substance use in Canadian cities. International Journal of Drug Policy. 2019;74:52-
715 61.
716 27. Grebely J, Bruneau J, Bruggmann P, Harris M, Hickman M, Rhodes T, et al. Elimination
717 of hepatitis C virus infection among PWID: The beginning of a new era of interferon-free DAA
718 therapy. Int J Drug Policy. 2017;47:26-33.
719 28. Sims OT, Guo Y, Shoreibah MG, Venkata K, Fitzmorris P, Kommineni V, et al. Short
720 article: Alcohol and substance use, race, and insurance status predict nontreatment for hepatitis C
721 virus in the era of direct acting antivirals: A retrospective study in a large urban tertiary center.
722 Eur J Gastroenterol Hepatol. 2017;29(11):1219-22.
723 29. Asher AK, Portillo CJ, Cooper BA, Dawson-Rose C, Vlahov D, Page KA. Clinicians'
724 views of hepatitis C virus treatment candidacy with direct-acting antiviral regimens for people
725 who inect drugs. Subst Use Misuse. 2016;51(9):1218-23.
726 30. Mah A, Hull MW, DeBeck K, Milloy MJ, Dobrer S, Nosova E, et al. Knowledge of
727 hepatitis C and treatment willingness amongst people who inject drugs in an era of direct acting
728 antivirals. Int J Drug Policy. 2017;47:137-43.

729 31. Browne AJ, Reimer-Kirkham S. Problematizing social justice discourses in nursing. In:
730 Varcoe C, Browne AJ, Cender LM, editors. Philosophies and practices of emancipatory nursing:
731 Social justice as praxis 1ed. New York, NY: Routledge; 2014. p. 21-38.
732 32. Varcoe C, Browne AJ, Cender L. Promoting social justice and equity by practicing
733 nursing to address structural inequities and structural violence. In: Kagan P, Smith M, Chinn P,
734 editors. Philosophies and practices of emancipatory nursing: Social justice as praxis New York,
735 NY: Routledge; 2014. p. 266-84.
736 33. Charmaz K. Constructing grounded theory. 2 ed. Thousand Oaks, CA: Sage; 2014.
737 34. Creswell JW, Poth CN. Data analysis and representation. Qualitative inquiry and
738 research design: Choosing among five approaches. 4 ed. Thousand Oaks, California: SAGE
739 Publicatoins, Inc.; 2018. p. 181-224.
740 35. Statistics Canada. Population and dwelling count highlight tables: 2016 Census: Statistics
741 Canada; 2016 [updated 2019-02-20. Available from: https://www12.statcan.gc.ca/census-
742 recensement/2016/dp-pd/hlt-fst/pd-
743 pl/Table.cfm?Lang=Eng&T=701&SR=1&S=3&O=D&RPP=9999&PR=59.
744 36. Lazatin, Little S. B.C. expands drug coverage to anyone suffering from chronic hepatitis
745 C. 2018 March 13.
746 37. Bartlett SR, Yu A, Chapinal N, Rossi C, Butt Z, Wong S, et al. The population level care
747 cascade for hepatitis C in British Columbia, Canada as of 2018: Impact of direct acting
748 antivirals. Liver International. 2019;39(12):2261-72.
749 38. Truth and Reconciliation Commission of Canada. Honouring the truth, reconciling for the
750 future: Summary of the final report of the Truth and Reconciliation Commission of Canada.

751 Winnipeg, MB; 2014. Report No.: 145941067X;1459410688;9781459410688;9781459410671;
752 Contract No.: Book, Whole.
753 39. National Inquiry into Missing and Murdered Indigenous Women and Girls. Reclaiming
754 power and place: Final report of the National Inquiry into Missing and Murdered Indigenous
755 Women and Girls: Privy Council Office U6; 2019.
756 40. Browne AJ. Moving beyond description: Closing the health equity gap by redressing
757 racism impacting Indigenous populations. Social Science & Medicine. 2017;184:23-6.
758 41. Greenwood M, De Leeuw S, Lindsay NM. Determinants of Indigenous peoples' health:
759 Beyond the social. Second ed. Toronto: Canadian Scholars; 2018.
760 42. Marshall SG. Canadian drug policy and the reproduction of Indigenous inequities.
761 International Indigenous Policy Journal. 2015;6(1).
762 43. de Leeuw S, Greenwood M, Cameron E. Deviant constructions: How governments
763 preserve colonial narratives of addictions and poor mental health to intervene into the lives of
764 Indigenous children and families in Canada. International Journal of Mental Health and
765 Addiction. 2010;8(2):282-95.
766 44. Boucher R, King A, Lavand D, Nicholson V, Ryan C, Denys RS, et al. Policy brief:
767 Indigenous harm reduction = reducing harms of colonialism. 2019.
768 45. McKenzie HA, Dell CA, Fornssler B. Understanding addictions among Indigenous
769 people through social determinants of health frameworks and strength-based approaches: A
770 review of the research lterature from 2013 to 2016. Current Addiction Reports. 2016;3(4):378-
771 86.

772 46. Skinner S, Cote G, Khan I. Hepatitis C virus infection in Saskatchewan First Nations
773 communities: Challenges and innovations. Canada communicable disease report = Releve des
774 maladies transmissibles au Canada. 2018;44(7-8):173-8.
775 47. Gordon J, Bocking N, Pouteau K, Farrell T, Ryan G, Kelly L. First Nations hepatitis C
776 virus infections: Six-year retrospective study of on-reserve rates of newly reported infections in
777 northwestern Ontario. Canadian family physician Medecin de famille canadien.
778 2017;63(11):e488-e94.
779 48. Nitulescu R, Young J, Saeed S, Cooper C, Cox J, Martel-Laferriere V, et al. Variation in
780 hepatitis C virus treatment uptake between Canadian centres in the era of direct-acting antivirals.
781 International Journal of Drug Policy. 2019;65:41-9.
782 49. Saeed S, Strumpf EC, Moodie EEM, Young J, Nitulescu R, Cox J, et al. Disparities in
783 direct acting antivirals uptake in HIV-hepatitis C co-infected populations in Canada. Journal of
784 the International AIDS Society. 2017;20(3):e25013-n/a.
785 50. Rempel JD, Uhanova J. Hepatitis C virus in American Indian/Alaskan Native and
786 Aboriginal peoples of North America. Viruses. 2012;4(12):3912-31.
787 51. Jongbloed K, Pearce ME, Pooyak S, Zamar D, Thomas V, Demerais L, et al. The Cedar
788 Project: Mortality among young Indigenous people who use drugs in British Columbia. CMAJ :
789 Canadian Medical Association journal = journal de l'Association medicale canadienne.
790 2017;189(44):E1352-E9.
791 52. Palinkas LA, Horwitz SM, Green CA, Wisdom JP, Duan N, Hoagwood K. Purposeful
792 sampling for qualitative data collection and analysis in mixed method implementation research.
793 Adm Policy Ment Health. 2015;42(5):533-44.

794 53. Kennedy MC, Hayashi K, Milloy MJ, Boyd J, Wood E, Kerr T. Supervised injection
795 facility use and exposure to violence among a cohort of people who inject drugs: A gender-based
796 analysis. International Journal of Drug Policy. 2020;78:102692.
797 54. British Columbia Centre for Excellence in HIV/AIDS. Per-SVR 2020 [Available from:
798 http://cfenet.ubc.ca/research/epidemiology-population-health/hepatitis-c-research-program/svr.
799 55. Carrier L, Dame J, Lane J. Two-Spirit identity and Indigenous conceptualization of
800 gender and sexuality: Implications for nursing practice. Creative Nursing. 2020;26(2):96-100.
801 56. Marshall AD, Micallef M, Erratt A, Telenta J, Treloar C, Everingham H, et al. Liver
802 disease knowledge and acceptability of non-invasive liver fibrosis assessment among people who
803 inject drugs in the drug and alcohol setting: The LiveRLife Study. International Journal of Drug
804 Policy. 2015;26(10):984-91.
805 57. Browne AJ, Varcoe C, Lavoie J, Smye V, Wong ST, Krause M, et al. Enhancing health
806 care equity with Indigenous populations: evidence-based strategies from an ethnographic study.
807 BMC health services research. 2016;16(1):544.
808 58. Pauly B. Shifting moral values to enhance access to health care: Harm reduction as a
809 context for ethical nursing practice. International Journal of Drug Policy. 2008;19(3):195-204.
810 59. Chan J, Young J, Cox J, Nitulescu R, Klein MB. Patterns of practice and barriers to care
811 for hepatitis C in the direct-acting antiviral (DAA) era: A national survey of Canadian infectious
812 diseases physicians. Canadian Liver Journal. 2018;1(4):231-9.
813 60. Myers RP, Shah H, Burak KW, Cooper C, Feld JJ. An update on the management of
814 chronic hepatitis C: 2015 Consensus guidelines from the Canadian Association for the Study of
815 the Liver. Canadian Journal of Gastroenterology and Hepatology. 2015;29(1):19-34.

816 61. Crowley D, Van Hout MC, Lambert JS, Kelly E, Murphy C, Cullen W. Barriers and
817 facilitators to hepatitis C (HCV) screening and treatment-a description of prisoners' perspective.
818 Harm Reduct J. 2018;15(1):62.
819 62. Harris M, Rhodes T, Martin A. Taming systems to create enabling environments for
820 HCV treatment: Negotiating trust in the drug and alcohol setting. Soc Sci Med. 2013;83:19-26.
821 63. Neale J. Homelessness, drug use and hepatitis C: A complex problem explored within the
822 context of social exclusion. Int J Drug Policy. 2008;19(6):429-35.
823 64. Stone J, Martin NK, Hickman M, Hutchinson SJ, Aspinall E, Taylor A, et al. Modelling
824 the impact of incarceration and prison-based hepatitis C virus (HCV) treatment on HCV
825 transmission among people who inject drugs in Scotland. Addiction. 2017;112(7):1302-14.
826 65. Simha A, Maria Webb C, Prasad R, Kolb NR, Veldkamp PJ. Moral distress with
827 obstacles to hepatitis C treatment: A Council of Academic Family Medicine Educational
828 Research Alliance (CERA) study of family medicine program directors. J Am Board Fam Med.
829 2018;31(2):286-91.
830 66. Rossi C, Butt ZA, Wong S, Buxton JA, Islam N, Yu A, et al. Hepatitis C virus reinfection
831 after successful treatment with direct-acting antiviral therapy in a large population-based cohort.
832 Journal of Hepatology. 2018;69(5):1007-14.
833 67. Brener L, Resnick I, Ellard J, Treloar C, Bryant J. Exploring the role of consumer
834 participation in drug treatment. Drug and Alcohol Dependence. 2009;105(1):172-5.
835 68. Harris M, Rhodes T. Hepatitis C treatment access and uptake for people who inject drugs:
836 A review mapping the role of social factors. Harm Reduction Journal. 2013;10(1):1-11.
837 69. Canadian Nurses Association. Code of ethics for registered nurses. Ottawa, ON; 2017.
838 Report No.: 9781551194417.

70. Canadian Medical Association. CMA code of ethics and professionalism. 2018.

71. Treloar C, Jackson LC, Gray R, Newland J, Wilson H, Saunders V, et al. Multiple stigmas, shame and historical trauma compound the experience of Aboriginal Australians living with hepatitis C. Health Sociology Review. 2016;25(1):18-32.

72. Brener L, Wilson H, Jackson LC, Johnson P, Saunders V, Treloar C. The role of Aboriginal community attachment in promoting lifestyle changes after hepatitis C diagnosis. Health psychology open. 2015;2(2):2055102915601581.

73. Brener L, Wilson H, Jackson LC, Johnson P, Saunders V, Treloar C. Experiences of diagnosis, care and treatment among Aboriginal people living with hepatitis C. Australian and New Zealand Journal of Public Health. 2016;40(S1):S59-S64.

74. Public Health Agency of Canada. Addressing stigma: Towards a more inclusive health system. The Chief Public Health Officer's report on the state of public health in Canada 2019. . Ottawa, ON: Public Health Agency of Canada; 2019.

75. Chuah FLH, Haldane VE, Cervero-Liceras F, Ong SE, Sigfrid LA, Murphy G, et al. Interventions and approaches to integrating HIV and mental health services: a systematic review. Health Policy Plan. 2017;32(suppl_4):iv27-iv47.

76. Falade-Nwulia O, Sutcliffe C, Moon J, Chander G, Wansom T, Keruly J, et al. High hepatitis C cure rates among black and nonblack human immunodeficiency virus-infected adults in an urban center. Hepatology. 2017;66(5):1402-12.

77. Butner JL, Gupta N, Fabian C, Henry S, Shi JM, Tetrault JM. Onsite treatment of HCV infection with direct acting antivirals within an opioid treatment program. J Subst Abuse Treat. 2017;75:49-53.

78. Christensen S, Buggisch P, Mauss S, Boker KHW, Schott E, Klinker H, et al. Direct-acting antiviral treatment of chronic HCV-infected patients on opioid substitution therapy: Still a concern in clinical practice? Addiction. 2018;113(5):868-82.

79. Panagiotoglou D, Krebs E, Min JE, Olding M, Ahamad K, Ti L, et al. Initiating HCV treatment with direct acting agents in opioid agonist treatment: When to start for people co-infected with HIV? Int J Drug Policy. 2017;47:169-76.

80. Cousien A, Leclerc P, Morissette C, Bruneau J, Roy E, Tran VC, et al. The need for treatment scale-up to impact HCV transmission in people who inject drugs in Montreal, Canada: a modelling study. BMC Infect Dis. 2017;17(1):162.

81. Talal AH, Thomas DL, Reynolds JL, Khalsa JH. Toward optimal control of hepatitis C virus infection in persons with substance use disorders. Ann Intern Med. 2017;166(12):897-8.

82. Falade-Nwulia O, Sacamano P, McCormick SD, Yang C, Kirk G, Thomas D, et al. Individual and network factors associated with HCV treatment uptake among people who inject drugs. International Journal of Drug Policy. 2020;78:102714.

83. Falade-Nwulia O, Ward KM, McCormick S, Mehta SH, Pitts SR, Katz S, et al. Network-based recruitment of people who inject drugs for hepatitis C testing and linkage to care. Journal of viral hepatitis. 2020.

84. Jacob J, Ti L, Knight R. Will peer-based interventions improve hepatitis C virus treatment uptake among young people who inject drugs? Canadian Journal of Public Health. 2020.