



Life projects: the transformative potential of direct-acting antiviral treatment for hepatitis C among people who inject drugs

Beth E. Williams^{a,*}, Devynne Nelons^b, Andrew Seaman^c, Martyna Witkowska^a, Wren Ronan^d, Haven Wheelock^d, Atif Zaman^c, Jonathan Garcia^b

^a Central City Concern, 232 NW 6th Ave., Portland, OR, 97209, United States

^b Oregon State University, 2520 SW Campus Way, 118C Milam Hall, Corvallis, OR, 97331, United States

^c Oregon Health and Science University, 3181 Sam Jackson Park Rd., Portland, OR, 97239, United States

^d Outside In, 1132 SW 13th Ave., Portland, OR, 97205, United States

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ABSTRACT

Background and objectives: People who inject drugs (PWID) are disproportionately affected by chronic hepatitis C (HCV) in high-income countries. The advent of direct-acting antivirals (DAAs) makes treatment of this underserved population more possible than ever. The dearth of programs adapted to the needs of PWID and stigma associated with drug use and chronic HCV pose significant barriers to the effective uptake of treatment among this population. We employed “life projects” as a conceptual framework to examine the social incentives of PWID being treated for HCV. This study advances the existing literature on the transformative potential of HCV treatment among PWID, explores how these transformations may affect treatment success, and discusses implications for decisions around whether and when to treat PWID.

Methods: We conducted in-depth interviews with participants of a pilot clinical trial testing the effective delivery of DAA treatment to PWID within two healthcare for the homeless clinic settings – one group receiving opioid agonist therapy (OAT) and another group frequenting a needle and syringe exchange program (NSP). A purposive sample of 27 participants was selected based on place of care. Interviews were transcribed, coded, and analysed for patterns using a priori domains and emergent themes.

Results: Participants in both treatment groups described significant life projects that motivated them to complete HCV treatment. These projects included social redemption, strengthening of relationships, pursuit of abstinence from substance use, and harm reduction. These themes were consistent between treatment groups, though more participants in the syringe exchange group relied on harm reduction than on pursuing abstinence to prevent reinfection after achieving virologic cure.

Conclusion: Understanding the incentives that propel PWID to complete HCV treatment could help to enhance treatment uptake and adherence through dedicated programs that address current barriers to care.

Background

In high-income countries, chronic hepatitis C (HCV) disproportionately affects people who inject drugs (PWID). Incident hepatitis C infection is on the rise in the U.S. with an estimated 2967 new cases annually, or approximately 1 per 100,000 people (Centers for Disease Control & Prevention, 2018). Injection drug use (IDU) is the most prominent means of HCV transmission, with 73% of new infections associated with IDU (MMWR, 2015; Zibbell et al., 2018). In Oregon, 1.6% of the adult population is estimated to be HCV RNA positive, the fourth highest rate in the nation (Rosenberg et al., 2018). From 2010–2015, the proportion of newly reported HCV cases in

Oregonians under the age of 35 increased by 60%, which likely represents new infections due to risk behaviours including IDU (OHA, 2017). The recent adoption of the highly efficacious and well-tolerated direct-acting antivirals (DAAs) presents an opportunity to increase treatment rollout among this underserved population.

Historically, treating PWID has been subject for debate. Concerns held by medical providers treating PWID with older interferon-based regimens include questions of adherence, efficacy, and risk of reinfection (Bruggmann & Grebely, 2015). However, modelling based even on inferior cure-rates of pre-DAA regimens demonstrated treatment of PWID to be cost-effective (Martin et al., 2016). DAA regimens are highly efficacious among PWID, but treatment uptake is lacking (Bajis

* Corresponding author.

E-mail address: beth.williams2@va.gov (B. E. Williams).

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et al., 2017; Bruggmann & Grebely, 2015; Grebely & Dore, 2014). Lack of treatment among this group is in part impacted by intentional or unintentional treatment prioritization that often excludes PWID (Alavi et al., 2014; Grebely, Dalgard et al., 2017; Grebely, Hajarizadeh, & Dore, 2017). Barriers to treatment access among PWID include a dearth of programs tailored to the needs and life experiences of PWID, state-level restrictions on access for PWID (NVHR, 2017), and requirements that treatment be administered in a sub-specialty setting (Bruggmann & Litwin, 2013).

Stigma associated with chronic HCV constitutes an important barrier to care. This stigma plays out during interactions with the health care system and providers, or as internalized stigma that affects whether HCV-positive individuals seek treatment (Day, Ross, & Dolan, 2003; Evon, Golin, Fried, & Keefe, 2013; Fraser & Treloar, 2006; Harris & Rhodes, 2013; Swan et al., 2010; Treloar, Rance, & Backmund, 2013). These barriers persist despite modelling showing that treatment scale-up among PWID could greatly reduce long-term HCV prevalence and transmission rates (Martin et al., 2013). To overcome structural barriers, population-specific interventions must be employed at every stage of the HCV treatment cascade (Meyer et al., 2015).

A social approach to HCV treatment access is necessary to address social and structural barriers, such as stigma and discrimination. In this paper, we employ “life projects” as a conceptual framework (Kondo, 1990; Wikan, 1995) that situates the therapeutic experience within broader life goals, survival strategies, and cultural practices that matter to those grappling with both HCV infection and drug use. Life projects lay out a “rubric within which to explore the culturally variable and socially-structured nature of what people want, and what others expect them to achieve, from their lives” (Garcia, Colson, Parker, & Hirsch, 2015: p. 245). This framework has been used to understand alcohol and drug use in the context of adolescent rites of passage (Beccaria & Sande, 2003), short and long-term incentives for HIV treatment adherence (Gore-Felton et al., 2005; Smith & Mbakwem, 2007, 2010), and uptake of pre-exposure prophylaxis (Garcia et al., 2015) in a number of global settings.

Multiple studies have reported transformations in the lives of those who have undergone HCV treatment, which include improved self-efficacy and a return to “normalcy” (Batchelder, Peyser, Nahvi, Arnsten, & Litwin, 2015; Clark & Gifford, 2014; Harris, 2017). These studies have focused primarily on positive individual-level behaviour change as accompanying treatment, including increased self-care and reduction in drug use (Artenie et al., 2017; Batchelder et al., 2015). In one prospective study, Alavi et al. (2015) note a significant reduction in sharing of drug paraphernalia between participants pre- and post-HCV treatment, highlighting that treatment provides an important opportunity to educate participants on strategies to reduce their future risk of reinfection. Harris (2017), observing the shifting public discourse around HCV treatment prioritization with the advent of DAAs, notes the vast social benefits that can accompany treatment. Nonetheless, she also cautions that the current optimism surrounding treatment is not always realized: that for some, “mental scarring” (p.165) and a sense of disorientation can follow viral clearance. Decisions about where to allocate scarce treatment resources must consider these significant social benefits to patients alongside individual, physical, and financial considerations that determine treatment criteria. Using life projects as an analytical framework allows us to see how PWID’s social experiences are shaped by DAA treatment for HCV, what motivates them to achieve and maintain individual viral clearance, and where ancillary services may provide important support.

In this article, we use the concept of life projects to identify the social experiences and motivations of PWID being treated for HCV within two healthcare for the homeless clinics – one group receiving opioid agonist therapy (OAT), and another group frequenting a needle and syringe exchange program (NSP). Drawing on qualitative interviews, we seek to advance the existing literature on the transformative potential of DAA treatment for HCV among PWID, explore how social

transformations may affect treatment success, and discuss implications for decisions around whether and when to treat PWID. Advancing our understanding of these social transformations as part of PWID’s life projects will inform treatment programs and mitigate social vulnerability to reinfection.

Methods

In-depth interviews were conducted between August 2017 and April 2018 with a subset of the participants of a pilot clinical trial testing the effective delivery of DAA treatment to PWID. The clinical trial enrolled 50 non-cirrhotic patients recruited from two healthcare for the homeless clinics. Both sites are multi-disciplinary primary care clinics that employ a patient-centred medical home model. Site 1 serves over 4900 homeless and low-income adults living with a broad range of social, behavioural, and medical conditions; it has an OAT program that offers buprenorphine in conjunction with mandatory group and individual counselling sessions. Site 2 provides care in both a fixed location and from outreach medical vans throughout the metropolitan region. This site is home to the United States’ first publicly funded NSP, which serves over 4500 unique clients annually. Trial participants were followed by a care team comprised of a medical provider and pharmacist at each care site within their own medical home environment. The inclusion criteria for participating in the clinical trial were: 1) Genotype 1b and genotype 1a without baseline NS5A resistance or Genotype 4; 2) APRI Score < 0.7 or Fibrosure or Fibroscan score of F2 or less, plus no clinical or laboratory evidence of cirrhosis; 3) Readiness for treatment based on ability to make > 2/3 sequential office visits; 4) Patients’ ability to have decision-making capacity, be capable of consenting, and not be displaying evidence of overt intoxication.

A purposive sample (Patton, 2002) of 27 participants was selected from the 50 clinical trial participants based on treatment site with an effort to enrol an equal number of participants from the OAT (n = 16) and NSP (n = 11) programs. We sampled from these two sites with the strategic goal of engaging participants with the intention of abstaining from substance use and those reporting substance use in the past week. As noted in Table 1, of the qualitative study participants, 50% (n = 8) participants recruited from the OAT program had abstained from substance use for at least 12 months, 31.3% (n = 5) had used in the last 12 months, and 18.8% (n = 3) had used substances in the past week. Of those recruited from the NSP, 100% reported having used substances in the past week. Table 1 describes the demographic characteristics of the total clinical trial sample and the qualitative study subsample.

Interviewers invited participants to reflect on their experiences during DAA treatment. Participants were invited to participate during the intake appointment, after the initial screening process for the clinical trial. The consent form was provided prior to the appointment so participants had time to read over it and highlight any questions or concerns. Patients with low self-reported reading literacy had the consent form read to them with a teach-back to confirm understanding. Participants who had indicated consent to participate in an interview at enrolment were contacted at week 10 of their 12-week treatment course. Interviews were offered as participants progressed through treatment and recruitment was completed when thematic data saturation was reached (i.e., no new themes were emerging from conducting additional interviews) within each site-specific recruitment category. The face-to-face interviews lasted 45–60 min each. Participants received a \$25 gift card.

Our qualitative approach was informed by modified grounded theory (Corbin & Strauss, 1990). In line with a grounded theory approach, we conducted iterative data collection and data analysis; our coding structure followed grouping more granular coding (emergent, open codes) into thematic categories; patterns and variations were noted in analytic memos. Our approach diverges from grounded theory because our interview guide included some degree of a priori theoretical orientation from past studies (Garcia et al., 2015; Harris & Rhodes,

Table 1
Characteristics of Participants at Baseline (Qualitative subsample, n = 27).

Characteristic, n (%)	Clinical Trial Total Sample	Qualitative Subsample	OAT ^a Group	NSP ^b Group
Total participants	50	27	16 (59.2)	11 (40.7)
Mean age in years (SD) ^c	43 (11.15)	44 (9.9)	42 (9.2)	46 (10.2)
Gender				
Female	20 (40.0)	9 (33.3)	7 (43.8)	2 (18.2)
Male	30 (60.0)	18 (66.7)	9 (56.2)	9 (81.8)
Other	0	0	0	0
Education				
High school or less	34 (68.0)	19 (70.4)	12 (75.0)	7 (63.6)
B.A./Trade School	16 (32.0)	8 (29.6)	4 (25.0)	4 (36.4)
Housing status				
Housed	29 (58.0)	15 (55.6)	10 (62.5)	5 (45.5)
Transitional Housing	9 (18.0)	5 (18.5)	3 (18.8)	2 (18.2)
Unstable housing/homeless	12 (24.0)	7(25.9)	3 (18.8)	4 (36.3)
Drug of choice				
Heroin	39 (78.0)	20 (74.1)	15 (93.8)	5 (45.5)
Methamphetamine	9 (18.0)	6 (22.2)	0 (0.0)	6 (54.5)
Alcohol	1 (2.0)	1 (3.7%)	1 (6.3)	0
Cannabis	1 (2.0)	0	0	0
Time of last drug use				
Last week	30 (60.0)	14 (51.9)	3 (18.8)	11 (100.0)
Past 12 months	9 (18.0)	5 (18.5)	5 (31.3)	0
> 12 months	11 (22.0)	8 (29.6)	8 (50.0)	0

^a Opioid Agonist Therapy (OAT).

^b Needle and Syringe Exchange Program (NSP).

^c Standard Deviation.

2013), as well as from the experience of study personnel treating hepatitis C within this population. The theoretical argument that emerges from our analysis results from both an inductive and a deductive approach. Interviews explored participants' motivations for seeking and completing HCV treatment and probed these motivations at the individual, social, cultural, and financial levels. The domains included in the guide were 1) background about their social networks and sources of positive and negative support, 2) prior experience with medical care, 3) social history of drug use, 4) stigma surrounding hepatitis C, 5) and experiences with DAA treatment.

Interviews were conducted at the two clinical sites where the participant was recruited by four study personnel (J.G., B.W., M.W., W.R.) and transcribed verbatim. Three study personnel (J.G., B.W., D.N.) trained in qualitative methodology developed an initial codebook based on a priori domains and emergent codes (e.g., hepatitis C community perceptions). First, all three researchers co-coded 10% of the interviews, discussed emergent codes during the iterative process of data collection and data analysis, cross-checked the codebook for parsimony, and validated the content captured by codes through iterative coding of a subset of interviews. The resulting codebook was used to code the entire dataset using Dedoose software (Dedoose, 2018); coders subdivided the data set and held weekly meetings to discuss analytic memos and emergent themes. The codes were modified when necessary as new themes emerged. Coded text was then analysed for thematic patterns, which involved grouping similar concepts (e.g., varying meanings ascribed to abstaining from substance use, varying strategies used and goals set to avoid reinfection while intending to continue substance use) into selective coding categories (e.g., life projects to redefine the self, reinforcement of social relationships, intentions to abstain from substances, and intention to continue substance use while avoiding reinfection). We contextualize narrative excerpts by describing participant age, program where they were recruited, and the reported time of last substance use.

All procedures described here were approved by the Oregon Health and Science University and Oregon State University institutional review boards.

Results

Twenty-seven participants completed interviews. The mean age of participants was 44. Two-thirds of participants (n = 18) were male. Participants were predominantly Caucasian (n = 26), with one participant identifying as American Indian and one as mixed Caucasian-Asian/Pacific-Islander. Fifty-nine percent (n = 16) of participants were recruited from the OAT program for opioid use disorder. The larger number of interviews from the OAT group is due to the ease of recruitment among this group compared with the syringe exchange group for both the larger treatment study and our qualitative sub-study. While this difference is important, it is beyond the scope of this sub-study to explore these group differences in recruitment. The majority of our participants (51.8%, n = 14) reported substance use within the past week at baseline. Many participants (46.1%, n = 12) were either homeless or in transitional housing.

Life projects and HCV treatment

Redefining the self

Social redemption was a key life project motivating all participants in our study to complete treatment. Many participants described ridding themselves of a stigmatized virus as part of a complete transition away from a former self. The journey towards a healthier self-concept included goals around improving diet, exercise, and engagement in leisure activities; goals previously perceived out of reach were now deemed possible. One 34-year-old female on OAT reflected on her healthy living goals:

[My concept of health] changed all throughout treatment. Like before I ate a lot of unhealthy food. I wouldn't really take care of my body as good. I also just made my first counselling appointment for my mental health, and I'm trying to get in for a psych eval, and so I think I changed a lot. I don't know why it's really strange it just happened to be the timing. I feel like okay now I'm getting my health going, and I think it motivated me to want to do more especially when you guys said that the first time my blood work came back,

and the virus it wasn't detectable. It just motivated me to become a way healthier person. (> 12 months since last use)

Redefinitions of self often included striving for material and social stability. For participants, this included attaining stable housing and employment, which were frequently co-occurring life projects alongside treatment completion. As one 47-year-old male participant on OAT described how life had changed since completing treatment, “Yeah, [life] is better. And I got rid of hepatitis C, I got my own place to live, I'm going to start moving forward. Get a job and all that” (< 12 months since last use). Many participants described the supportive nature of the clinical settings where the study took place as critical for redefining the self. Support included resources offered through clinics' case management to secure housing, food, and employment. Participants like one 45-year-old female reported feeling “shame” due to homelessness, being “not worthy of taking care” of themselves, and “like I'm bothering people” (NSP client, < 1 week since last use).

In addition, participants reported that patient-centred services offered during the study promoted the development of a “caring” provider-client relationship, as evident in the following narratives.

I feel like it would have been less personal if I would have stopped at just some random [doctor's] office where I didn't know anybody...It would have been more like open and shut like okay you're here, here you go. I don't think it would have been so - in a set up to where it's so caring and individualized and compassionate and I think that I liked how everything was at this office honestly. They pull up my doctor charts they know everything that's going on. I can kind of address everything at the appointments here regarding also other medical concerns and that would be wrote up in the notes and gotten to my doctor immediately. (34-year-old female, on OAT, > 12 months since last use)

You guys were really supportive. It was easy. Everyone seemed like they wanted to help me and were - I felt - this was a joy coming for this. Having things right there - I didn't have to run to pharmacies or other places to get blood draws. Yeah. I can't speak highly enough of you guys with this and thank you guys enough. (45-year-old male, NSP client, < 1 week since last use)

Overall, participants reported perceiving greater self-worth and ability to care for themselves as a result of completing DAA treatment. The material resources and attention given to the participants during the trial seemed to reinforce the development of a positive self-concept.

Strengthening relationships

The life project of maintaining and strengthening their romantic and family relationships often coincided with and reinforced participants' desire to complete HCV treatment. In our sample, 20 of 27 participants described romantic partnerships as significant life projects. HCV treatment was often a life project pursued together by partners and their significant others. Multiple interviewees reported that their partner was also HCV positive and had received or was receiving treatment. A 47-year-old male participant on OAT described referring his girlfriend for treatment. “She wanted to know about [the treatment study], and then I got her into it. And then, when I got rid of it, she was happy. She got rid of it first.” (> 12 months since last use)

From a practical standpoint, for some partners, being treated together overcame the difficulty of being in a serodiscordant relationship; partner treatment was one strategy used to avoid reinfection. A 45-year-old female NSP client explained why she felt it was so important both she and her partner be treated:

I didn't want to contract it again. Because living with somebody... whatever he has, I'm gonna have. It's just inevitable, especially being with somebody for 18 years. It's just the way it is. And I didn't wanna be responsible for that. I wanted to be able to continue to just be the way I was and not worry about my razor - that kind of stuff. (< 1 week since last use)

Multiple participants also reported feeling guilt or stigma with relation to being HCV positive within their sexual partnership, and as detailed above, sought to resolve those feelings by way of treatment. Feelings of guilt often sprang from perceiving having been the one in a relationship to transmit the virus. One 34-year-old female on OAT expressed her guilt at having infected her partner through needle sharing.

It felt pretty good to be put on [treatment] because I felt really guilty, and then it would have sucked to have her get cured and me still have it, or vice versa, and give it back to her through fingernail clippers or something. The fact is we're going to be cured, and she's clean and sober right now. We're doing that together. It's really nice that we're both clear of hepatitis C. It weighed on me heavy. (> 12 months since last use)

In many cases, treatment achieved the life project of fortifying existing relationships. Many participants cited concern for family or significant others as motivating them to complete treatment. A 53-year-old male on OAT described being generally hesitant to disclose his HCV status to friends or intimate partners, but his mother served as an important source of support and enthusiasm throughout his treatment:

[My mother] told me not very long ago, ‘I thought you were just gonna end up getting sick, your liver failing, and you were just gonna die in another five or ten years.’ So yeah, her and my sister are really stoked. (> 12 months since last use)

Similarly, a 44-year-old male NSP participant reported telling friends and family that he was undergoing HCV treatment and valuing their ongoing support. “My mother's ecstatic...everybody's pretty ecstatic. People who know, my friends who know are very excited that I've had negative tests thus far.” (< 1 week since last use)

As represented by these narratives, the life project of maintaining romantic and family relationships was a prominent finding that emerged organically from the data. This finding was consistently present in the narratives of participants across recruitment sites and with a wide range of time since last substance use.

Pursuit of abstinence from substance use as life project

Most of our sample (21 of 27 participants) pursued abstinence from substance use as a life project, which mutually reinforced their desire to complete HCV treatment. In our cohort of 27, 16 were actively engaged in a substance use treatment program and on OAT. Participants ascribed a range of meanings to abstaining from substance use as a life project. Some held “sobriety” and “staying clean” as goals, with support from 12-step programs, sponsors (e.g., peer mentors in 12-step programs), and home groups where they developed personal relationships with others in the programs, which signalled their intention to abstain from substances and alcohol. When others referred to “recovery,” they also included supporting abstinence with use of opioid agonist therapy. In the following example, a 31-year-old female on OAT recounts her process of becoming “sober”:

I was homeless for a couple of years, off and on. And I got to stay at a shelter, which is where I'd started being clean and sober...from there, like I got a sponsor, I started going through [an outpatient program], started doing the clean and sober life, and then we moved in with her dad because he saw that we were being clean and sober. (< 12 months since last use)

Fifteen of the 16 participants on OAT reported that hepatitis C treatment reinforced their intention to abstain from substance use, with the one remaining participant stating that their resolve to “stay clean” was already strong with or without being treated for HCV. In the words of a 61-year-old male on OAT reflecting on treatment:

It gives me a reason to stay right. You know what I mean? Another reason other than the others, you name it. There's all kinds of

reasons not to use or drink and stuff. But being given like the second chance, you know what I mean? (> 12 months since last use)

This reinforcing relationship between abstinence and HCV treatment was bidirectional. Many participants considered abstinence a central strategy in their plans to avoid reinfection. One 31-year-old female participant on OAT had been in recovery for three years and, when asked how HCV treatment affected her resolve to maintain abstinence, she stated, “It’s stayed the same. Now, I’m just more motivated just to stay clean and healthy. Now that I’ve gotten rid of [HCV], I have to make sure I keep rid of it.” (< 12 months since last use)

Another 53-year-old male on OAT explained how after years of using heroin and buying Suboxone off the street, he had worked his way through the Self-Management and Recovery program and initiated OAT through an outpatient program. He recounted, “I went through their program and did very well, and graduated. And I’ve just been doing what I need to do to stay where I’m at. It escalated to where I was actually able to get treatment on my liver, too” (> 12 months since last use).

A number of participants mentioned specific strategies they were using to maintain abstinence, for instance a 61-year-old male on OAT who sought out a “sober living community” (> 12 months since last use), or a 47-year-old male on OAT who credited his support system:

There’s a lot to lose. I like my life; I like how I’m living, and I’m going to continue doing it this way. I could fall off, but I’m trying not to. I’ve got a supportive system. I’ve got a sponsor, I’ve got people all around me that care. (< 12 months since last use)

As exemplified by these narratives, the participants’ pursuit of abstinence preceded HCV treatment and then served to reinforce “staying virus free.” In other cases, HCV treatment was one factor motivating individuals to seek abstinence. One 48-year-old male NSP client recounted that he had stopped by a local drug treatment centre the day prior to inquire about support groups. When asked what motivated him, he explained:

I think once you go through the [DAA HCV] treatment, and you realize that this is a pretty expensive treatment, you might want to stay clean afterwards... it’s just a matter of time before you get reinfected again if you’re out there, especially on the streets, you’re gonna get reinfected again if you keep using. (< 1 week since last use)

Five of the eleven participants recruited from the NSP reported similar preparations for future abstinence, though not always explicitly linked to HCV treatment. For instance, one 58-year-old NSP participant described himself as becoming very irritable on heroin, and finally considering the feedback from those around him:

I’m starting to actually think about [abstaining from drugs], let some of that creep in there, whereas before I never even thought of any of it...some people do it quickly. I do it at my own pace because I think eventually I will get it done. I will change. (< 1 week since last use)

For the majority of participants, pursuing abstinence as a life project structured their health-seeking strategies and social support systems (e.g., 12 step programs, sponsors, homegroups, drug treatment support groups). However, participants’ life projects relative to substance use often vacillated between abstinence and harm reduction strategies.

Harm reduction as life project

For many participants, harm reduction emerged as an important life project alongside HCV treatment. Participants described a variety of strategies to safeguard their health and avoid HCV reinfection while continuing to use substances. Not sharing drug paraphernalia including needles and cookers was the most common strategy. Other methods included inhaling or snorting drugs instead of injecting, planning ahead

to have opioids on hand in order to avoid withdrawal, and utilizing the syringe exchange to procure clean needles. For some, OAT also served as a harm reduction method that enabled participants to more easily avoid behaviours that would put them at risk for reinfection. In the setting of known HCV infection prior to treatment, participants reported sharing of drug paraphernalia among those infected with HCV. This risk behaviour was often prompted by the urgent need to get “well,” or avoid withdrawal symptoms with timely use of opiates. This is demonstrated by the following quote by a 55-year-old female on OAT:

What I hear on the street, people that I used with, it was just like a given, ‘Oh, you have Hep C too? Oh, okay.’ Then you just go around and share the same. If you have Hep C and I have Hep C, just use the same stuff. ‘Oh, okay. Here’s my dirty.’ (> 12 months since last use)

Once treated, this acceptance of sharing drug paraphernalia was replaced with harm reduction strategies to reduce risk of reinfection. This was particularly prominent among participants recruited from the NSP: 10 of the 11 participants recruited through the NSP mentioned specific harm reduction behaviours they intended to or had already employed. These behaviours often demonstrated future planning to avoid taking risks that could result in reinfection. A 23-year-old male NSP client described this shift:

Trying my hardest to use clean needles. Cause before, when I had Hep C, I just did not give a shit, because I was like, ‘Whatever. I have Hep C, so it doesn’t matter.’ But when I got my Hep C treated, then it was like, ‘Okay. Well now, I actually need clean needles.’ (< 1 week since last use)

Similarly, in the following quote, a 28-year-old male NSP client in a serodiscordant intimate partner relationship explained how he will prevent reinfection once treated for HCV: “[After treatment] I’m really careful, I don’t even mix our dirty rigs together anymore, mine are separate from hers. I always make sure I get to the exchange, pour it right out, and all those things” (< 1 week since last use). This narrative represents the theoretical intersection of life projects to maintain romantic relationships with a variety of harm reduction strategies. Rather than being distinct, we found these broader life projects were mutually reinforcing.

These accounts demonstrate that abstinence from substances is not the only life project that participants used to avoid reinfection; for participants who are not currently abstaining from substance use, their resolve may be equally as strong to avoid reinfection via harm reduction methods. One 45-year-old male NSP participant explained that he had been seeking abstinence on methadone previously, but had slowly tapered himself off of it as he did not like the way he was treated at the methadone clinic and the daily clinic visits made it difficult to hold down a job. He admitted, “I have a habit, totally,” as he and his girlfriend used heroin daily, but adamantly avoided needle sharing outside of their partnership. They utilized the NSP and planned ahead to always have enough of the drug on hand to avoid withdrawal. They “don’t buy more to get wasted” but instead to “get right” (manage withdrawal symptoms).

Another participant, a 44-year-old male NSP client, recounted that he began using drugs at age 12. Apart from two years of abstinence, he used heroin daily, with no intention of ceasing use in the near future. He recounted contracting HCV in a moment of desperation when withdrawing from heroin, and how his behaviour is different now that he was treated:

I do a lotta things differently. I’m very clean about what’s going on because I don’t wanna do that to myself again. The idea of doing something like that to myself again – I can’t fathom it. I’d have so much self-hatred that I’d probably become suicidal. How could you let this go? How could you be so stupid? (< 1 week since last use)

Some participants on OAT also viewed agonist therapy as a method

of harm reduction. As one 30-year-old female on OAT explained:

Methadone and Suboxone are harm reduction. People are still using sporadically on them, especially in the beginning. I know a lot of people at the clinics that are still using on and off and still putting themselves at risk a lot. I don't know how safe they're being about it. I can't tell what other people are doing, but I know when I was still using on methadone, I tried being safer, but not always. Not always...Just 'cause you're not as sick. So, you can go a little longer and look harder for cleaner syringes. (> 12 months since last use)

This exemplifies how OAT can be interchangeably used as harm reduction to avoid reinfection by helping to reduce risk behaviour, or to support abstinence as previously discussed. The particular use may fluctuate in accordance with changing life projects across the life course. In a similar way, a 45-year-old female NSP participant explained how she considered methadone to be harm reduction.

I couldn't think about abstinence. It was too overwhelming. It would make me wanna use. In those programs, there's a whole hierarchy type. And lots of judgment...I didn't fit in at all with that. And I really got the harm reduction – when I got on methadone, the whole harm reduction philosophy is just the best. (< 1 week since last use)

These quotes demonstrate that, although participants may continue to use substances once treated for HCV, harm reduction strategies help them to avoid withdrawal and protect themselves from future reinfection. Harm reduction stands as an important life project towards protecting their long-term health.

Discussion

In our sample of 27 participants receiving DAA treatment for HCV in healthcare for the homeless clinical settings, we found that treatment served both as motivation for and reinforcement of concurrent life projects. Relief from social stigma and redemption from a discredited former self emerged as important life projects for participants from both the OAT and NSP programs. This supports previous findings citing reduced social stigma as a result of HCV treatment (Batchelder et al., 2015; Clark & Gifford, 2014; Harris, 2017; Harris & Rhodes, 2013; Madden et al., 2018).

Harris and Rhodes (2013) used the construct of “therapeutic citizenship” to examine understanding the self in relation to the HCV treatment process in a sample of 35 individuals from two London sites. While participants in the London study received interferon-containing treatment regimens that necessitated a more arduous clinical course highly focused on the patient-provider relationship, we found similarities in the process and outcomes of therapeutic citizenship in our DAA-era study. Due to significant psychosocial needs, PWID continue to benefit from support beyond dispensing of medication and occasional monitoring with newer DAA medications (Whiteley, Whittaker, Elliott, & Cunningham-Burley, 2016). Our study supports that, rather than viewing the benefits of a pill-per-day regimen in isolation, the medicine should be accompanied by a clinical and social environment that accounts for the whole individual. The comprehensive health and social services offered within our clinical settings may have played a key role in reinforcing patient-provider relationships that facilitated social redemption. These findings may help address concerns that in the DAA era PWID will not receive the same social benefits from HCV treatment accrued incidentally in the interferon-era when close patient-provider relationships developed by virtue of the long and arduous nature of interferon-based treatment (Harris & Rhodes, 2018). A life projects approach will help to identify where support is needed, and facilitate referrals to ancillary services such as peer support, mental health care, housing, or OAT, which our participants found crucial to personal transformation. Participants in our study remained treatment-adherent and voiced plans for ongoing self-improvement after cure that would serve to return them from the margins of society. Granted access, de-

stigmatization in the eyes of self, family, community, and society formed an important life project in our study, and may fuel ongoing motivation to remain virus free.

Fortifying current relationships was an important life project pursued by participants in our study. As noted by Rance, Rhodes, Fraser, Bryant, and Treloar, (2018) practices of “negotiated safety,” for example decisions to share drug paraphernalia between intimate partners can, serve to deepen trust and intimacy in relationships regardless of serostatus. In many cases, protecting intimacy in relationships via practices of negotiated safety is prioritized over viral risk (Rance, Treloar, Fraser, Bryant, & Rhodes, 2017). In serodiscordant intimate partner relationships or among family and friends, an HCV diagnosis can exert significant stress on individuals, causing distress over to whom and when to disclose and constant worry about transmitting the virus (Whiteley, Elliott, Cunningham-Burley, & Whittaker, 2015). For those not in an intimate relationship, HCV can impact individuals' own feelings of desirability, and can lead to avoidance of intimacy and social isolation (Lenton, Fraser, Moore, & Treloar, 2011).

In our study, participants often described rituals of drug use together with intimate partners, and when gaining access to treatment, referred their partners for treatment when possible. We see this as a striking example of protecting intimate partnerships in the DAA era. One benefit of treatment with DAAs is that intimate partners may undergo treatment together. This is a vast benefit compared to interferon-containing regimens, where anticipated side effects precluded intimate partners from seeking treatment at the same time. Other studies that have employed the life projects framework found that romantic and family relationships are central to organizing the social lives of people undergoing treatment for HIV (Gore-Felton et al., 2005; Smith & Mbakwem, 2007, 2010) and for negotiating relationships to prevent HIV (Garcia et al., 2015). In our study, maintaining and strengthening romantic relationships coincided with harm reduction strategies, especially when both partners continued to use substances and/or they were serodiscordant. As these authors argue in the case of HIV, our study also suggests that HCV treatment programs that acknowledge and encourage these supportive relationships will be met with greater success. A network-based approach to HCV treatment, wherein PWID identify injecting partners for treatment, harnesses the strength of social relationships to increase the potential for treatment as prevention among PWID (Hellard et al., 2015). Community clinics such as those in our study that can furnish referrals to supportive social services may be uniquely positioned to facilitate this point of entry into care for PWID and their injecting partners. Similarly, partner notification and referral to care at the time of hepatitis C diagnosis could be integrated into current models of screening and treatment.

For many participants in our study, the relationship between abstinence and HCV treatment was complex; once obtained, maintaining abstinence prompted concerns about tarnished bodily health that led individuals to seek HCV treatment, and HCV treatment reinforced goals to seek or maintain abstinence to prevent reinfection. The benefits of co-delivery of substance use and HCV treatment are well established in the literature (Bruggmann & Litwin, 2013). Access to OAT has been shown to reduce transmission rates of HCV among PWID in a dose-response fashion (Nolan et al., 2014; Platt et al., 2017). Our findings support that access to OAT may also help mitigate risk of reinfection for those who have been treated. Primary care settings, such as the healthcare for the homeless clinics where this study took place, benefit from the longitudinal relationships with PWID that endure after treatment has concluded. This relationship with the institution is reinforced by providing access to key services and resources (e.g., housing, food security) that form part of clients' broader life goals. Our findings indicate that providers may be able to identify and support life projects such as abstinence from substance use and a variety of harm reduction strategies, and intervene at these critical junctures with referrals to OAT and NSP services.

The life projects that emerged as important to the participants in our

study often overlapped or reinforced each other. Redefining the self, strengthening relationships, abstinence from substance use, and harm reduction strategies were intertwined with other broader life goals, including stable housing, employment security, and healthy living (e.g., nutrition). Participants saw HCV treatment as a critical moment in their lives, shaping how they viewed health, social relationships, and how they reflected on their history of substance use. Those who currently maintained abstinence as a life project had used harm reduction strategies in the past, and vice versa. For clinical practice oriented towards vulnerable PWID with a history of substance use, our study shows that both life projects are valuable in preventing HCV reinfection.

We used recruitment site (NSP or OAT program) as a proxy for intended abstinence versus current injection drug use with intention of observing life projects within these two potentially distinct groups. In reality, these groups had significant overlap both in time since last use, intention to abstain, and use of harm reduction methods. While substance use within the last week was more common in the NSP group ($n = 11/11$) than the OAT group ($n = 3/16$), many NSP participants voiced intention to eventually abstain from substances. Similarly, some OAT program participants identified OAT as a form of harm reduction to reduce substance use, and thereby prevent reinfection. These similarities highlight the complexity and fluidity of substance use and addiction. Our cohort demonstrates what has been described elsewhere, that substance use patterns vary significantly among individuals and across time, and defy a simple dichotomy of abstinence versus active use (McIntosh & McKeganey, 2000; Pienaar et al., 2015). With regards to HCV treatment, by capitalizing on personal motivations and empowering PWID to prevent reinfection after treatment we can best ensure that treated individuals remain virus free regardless of current or future substance use.

Our study included some important limitations. First, our purposive sample selected participants chronologically based on their treatment start date beginning with those first enrolled. Our cohorts from each study site, therefore, may represent those individuals who were most highly motivated to engage in and complete treatment. To capture the experiences of participants during the treatment process we conducted in-depth interviews at week 10 of treatment. Thus, their narratives may represent certain themes (e.g., abstinence, harm reduction, and healthy behaviour change) more so than if the sample included those who were unwilling to engage in or complete DAA treatment. Finally, the observational design does not allow us to comment on the durability of these life projects in the long run.

Even after considering these limitations, our study advances the literature on the social experiences of PWID undergoing DAA treatment. The concept of life projects framed our analysis of individual and social incentives for engaging in DAA treatment. Self-improvement, strengthening of relationships, abstinence, and harm reduction emerged as important motivators for completing HCV treatment. Understanding these incentives could help to enhance treatment uptake and adherence through dedicated programs that address current barriers to care faced by PWID. Supporting life projects towards successful treatment of PWID carries intrinsic value for the individual. This approach also holds potential for proactively engaging PWID in treatment programs towards achievement of the public health goal of treatment as prevention. In order to realize the potential benefits of treatment for both the individual and greater society, however, we will first need unencumbered universal access to HCV treatment.

Declarations of interest

None.

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