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Exploring how hospitalization can alter hepatitis c virus treatment prioritization and trajectories in people who use drugs: A qualitative analysis

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Abstract

Background: People who use drugs (PWUD) have high rates of hepatitis C virus (HCV) infection. Hospitalization can be a time for PWUD to engage in addiction treatment, but little is known about how hospitalization shapes HCV treatment readiness. We aimed to describe how hospitalization and addiction medicine consult service (AMCS) can alter HCV prioritization of inpatient PWUD with HCV.

Methods: We conducted a qualitative study consisting of semi-structured interviews (n = 27) of hospitalized adults with addiction and HCV infection seen by an AMCS at a single, urban, academic center. Interviews were audio-recorded, transcribed, and coded iteratively at the semantic level, and analyzed for themes.

Results: Of the 27 participants, most identified as Caucasian (85%), male gender (67%), and they primarily used opioids (78%); approximately half (48%) reported HCV diagnosis over 5 years ago. We identified three main themes around hospitalization altering the prioritizations and HCV treatment preferences for PWUD: (1) HCV treatment non-engaged (2) HCV treatment urgency, and (3) HCV treatment in the future. Those wanting to treat HCV—whether urgently or in the future—shared the overlapping theme of hospitalization as a reachable moment for their addiction and HCV. These participants recognized the long-term benefits of addressing HCV and connected their hospitalization to substance use.

Conclusion: In our study, PWUD with HCV expressed varying and competing priorities and life circumstances contributing to three main HCV treatment trajectories. Our results suggest ways

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hospitalization can serve as an HCV touchpoint for PWUD, especially in the context of addressing substance use, and could be used when designing and implementing targeted interventions to improve the HCV care continuum for PWUD.

Keywords

Substance-related disorders; hepatitis C; addiction medicine; qualitative research; hospitalization

Introduction

Worldwide, approximately two-thirds of people who inject drugs are exposed to hepatitis C virus (HCV).[1] In higher incomes countries, such as the United States (US), HCV infection rates continue rising, mostly in younger adults via injection drug use.[2–4] The World Health Organization (WHO) has called for eliminating hepatitis as a public health threat by 2030.[5] This announcement follows the advent of highly-efficacious direct-acting antiviral (DAA) medications and HCV treatment as prevention strategies.[5–8]

Current DAA regimens result in HCV cure in almost all patients.[6] Yet, WHO elimination goals currently remain out of reach for most countries, with a major barrier being policies restricting treatment access for people who use drugs (PWUD).[9,10] Oregon, with one of the highest US HCV prevalence rates, developed policies in early 2019 that removed restrictions around addiction treatment engagement and liver fibrosis limitations prior to treatment authorization.[11–14] However, removing coverage barriers does not equate to enhanced treatment access and cure.[15]

While effective HCV treatments exist, gaps in the HCV care continuum persist for PWUD.[16] Barriers to screening and treatment endure, as many PWUD avoid traditional outpatient care settings, limiting opportunities for HCV treatment engagement.[17–20] As rates of substance use-related hospitalizations rise, increasingly, hospitalization can serve as a “touchpoint” to engage PWUD.[21–25] Some hospital systems have implemented inpatient addiction medicine consult services (AMCS) to better care for hospitalized patients with addiction.[26–28] These consult services effectively utilize hospitalization in addressing addiction.[29,30] Given the significant disease burden of HCV in PWUD, this study aimed to describe patient experiences of how hospitalization and AMCS care affects motivations and readiness for HCV treatment.

Methods

We followed the COnsolidated criteria for REporting Qualitative (COREQ) research checklist.[31]

Setting and study design

We conducted a qualitative study of hospitalized adults with substance use disorder (SUD) and untreated HCV infection at a single academic medical center in Portland, Oregon. Our medical center has a robust AMCS consisting of an interprofessional team of addiction medicine clinicians, social workers, and peer recovery mentors with rapid-access pathways to post-discharge community addictions care.[22,30,32] Our study aimed to explore

the experiences of hospitalized PWUD with HCV to later design and implement patient-centered hospital-based interventions. Oregon Health & Science University Institutional Review Board approved all study procedures.

Participant selection

The research team used convenience sampling to identify potential participants via chart review of inpatients with an AMCS order. Eligible participants had a SUD, other than only nicotine, and confirmation of HCV diagnosis—defined as having HCV antibody positivity and a detectable HCV viral RNA. We included participants who consumed alcohol or used substances via inhalation or insufflation as our AMCS sees these patients during hospitalization. Those under police custody, not fluent in English, or with estimated life expectancy less than 6 months were ineligible. Twelve participants declined participation, and ten discharged before potential enrollment. We recruited participants until we no longer identified new emerging themes—point of thematic saturation.

Study procedures and data collection

Study team members (XAL, TAV) trained in qualitative research methodology conducted all interviews and had no clinical relationship with participants. Interviewers used a semi-structured interview guide (Supplement 1) to ensure coverage of relevant subject areas regarding (1) health care priorities, (2) how HCV affects health, judgment/stigma, and relationships, (3) HCV treatment motivations, (4) HCV treatment barriers and facilitators, (5) HCV treatment readiness, and (6) healthcare system experiences. After identifying eligible participants, the interviewer then assessed participant interest and obtained informed consent. The interview entailed a single, audio-recorded, semi-structured session with one interviewer—either an addiction medicine fellow (XAL) or medical student (TAV). Interviews were conducted either in participant's single-occupancy hospital room or in a private hospital conference room. Study participants received a $20 gift card. Audio recordings were professionally transcribed. Participants did not review audio recordings, transcripts, or research findings.

Data analysis

We conducted a thematic content analysis, comparatively reviewing data to identify and then classify major themes.[33] We analyzed transcripts at the semantic level and developed study codes iteratively in an inductive and deductive process. The coding team consisted of 2 coders (XAL, TAV) who initially reviewed three transcripts, reconciled coding discrepancies, and then developed a preliminary codebook with other team members (AS, HE). Coders then reviewed remaining transcripts with regular coding meetings to review discrepancies, analysis progress, code development, and emergent themes. We used ATLAS.ti 8.4 for transcript and data management.

Results

We conducted 27 in-depth interviews between June and November 2019. Mean interview duration was 38 min (range 17–70, SD 14.3). We outline participant demographics in Table 1. Approximately half (48%) of participants reported receiving their HCV diagnosis over

5 years ago, and one was diagnosed during their current hospitalization. Most participants (78%) reported their primary substance of choice as heroin/opioids; the remaining 11% methamphetamine, and 11% alcohol. None reported benzodiazepines or cocaine/crack and we did not collect polysubstance use history. We identified three main themes around hospitalization altering HCV treatment trajectories and preferences for PWUD—(1) HCV treatment non-engaged (2) HCV treatment urgency, and (3) HCV treatment in the future. The themes of HCV treatment urgency and HCV treatment in the future overlapped in hospitalization as a reachable moment for engagement in addiction and HCV.

HCV treatment non-engaged

Ongoing substance use—All participants shared past or current struggles with addiction. Many described prior treatment attempts—with episodes of "being clean" or "sober" followed by "relapse." Many had other substance-related hospitalizations. One woman with a long history of opioid use disorder (OUD) recalled, "This is the third time I've been in the hospital because of the abscess in my spinal cord."

Some mentioned how their addiction interfered with addressing medical conditions before hospitalization, including HCV, acknowledging they "…put a lotta stuff off, bein' an addict." A man whose primary substance was alcohol stated, "Several times I've been in the hospital for abscesses, they asked me about [Hep C], and then checked me…[but] I got other things on my mind like drugs, and trying to get off the drugs [than] Hep C."

Many participants discussed how they would "delay" or "procrastinate" seeking care, holding off until symptoms got "serious." Many attributed delays to prior negative healthcare interactions. As one man who primarily used opioids described:

> It took me two months to get to the hospital…Trips to the hospital aren't fun for me. Usually, it entails a certain amount of withdrawal. And fighting with some doctor to manage symptoms. It sucks every time.

Chaotic lives and instability—Many participants expressed how turbulent life situations, particularly experiencing homelessness, interfered with addiction treatment engagement and follow-up on chronic health issues. Participants experiencing homelessness felt being unhoused impeded HCV treatment. One man who used methamphetamines stated, "I prefer not to be keeping the [HCV] medicine on me. I'm more concerned about carrying around the medication with me and losing it." Another man with OUD experiencing homelessness expressed, "Living on the streets, you don't make your appointments. You don't have an alarm clock that works…Because when you're homeless, every day's the same. You lose track real quick, plus your use of drugs goes up."

Some outlined concerns about unknown futures that could disrupt possible HCV treatment. As one man with OUD stated, "My life is just too difficult right now [to think about HCV]. Everything's a mess. I'm trying to go into [addiction] treatment, and that may be out of state. I may have to go to jail for a while." A few participants recounted periods of instability which prevented them from addressing health care needs, including HCV. A woman with OUD who had recently moved from out-of-state conveyed:

> [My life] was pretty chaotic. I wanted a more stable life before I started [HCV treatment]…it's hard for me, when I was on the pill for birth control, even just remembering to take that every day was hard for me…I just know myself and knew I would need to be in a very stable, punctual time of my life, and I wasn't.

Delayed HCV health issues—Participants described how they could not "tell," "notice" or "feel" their HCV infection, despite many reporting having HCV for a "long time." One woman who used opioids noted, "[HCV is] easy to forget because it's not in my face every day." If they did have symptoms, participants expressed they were not "super obvious." The perception of delayed health consequences of HCV infection resulted in treatment being a "back burner" issue for many. As one man with OUD stated, "I don't know about the treatment. I don't have any plans of doin' it right away… [HCV is] not something in my top priority list right now. It just hasn't caused me any negative health effects."

HCV treatment urgency

Address all health issues—For some, confronting their own mortality and "surviving" drove a strong sense of urgency around improving their health, including addressing and treating HCV. One man with methamphetamine use disorder whose "heart stopped twice" stated, "The earlier I can get [HCV] addressed, the earlier I would like to address it… There's no reason not to get healthy right now."

Those with prolonged hospital stays wondered about initiating and possibly completing HCV treatment while hospitalized. Another man with methamphetamine use disorder directly approached his inpatient medical team:

> 'I'm gonna be here like six weeks. Why am I not doing [HCV treatment]?' I am basically in a bubble. And I'm not going anywhere…I've had a stroke. I might as well get my stuff in order and I shouldn't be worrying about 'down the road, I might get Hep C again.' I should focus on now.

Desire to learn about HCV—Many participants with a sense of HCV treatment urgency, requested more information about HCV health effects and treatment eligibility. They wanted to learn about HCV while hospitalized and to have providers "initiate" those conversations. This need for HCV knowledge was especially true for those diagnosed during this or a previous hospitalization. Some participants expressed frustrations around inpatient providers not discussing HCV. As one man with OUD admitted with concerns for possible HCV-related medical complications stated:

> Every time I come into the hospital, [inpatient doctors] don't ever talk about [HCV]…am I wondering, is it destroying my liver? Yeah…Why, [HCV] actually has to start affecting something before it gets brought up…I figured that there would have been more discussion about [HCV]…[HCV] put in my face. They wanna put abstinence and drug-abuse treatment, and all that, in my face every time I'm here.

Needing more outpatient care coordination—Generally, participants with less established outpatient care expressed more urgency to address HCV during hospitalization.

Several participants reported experiences with prior healthcare stigma, including providers requiring "clean time" prior to HCV treatment. Others noted poor treatment within the healthcare system that made them reluctant to establish care. As one man with OUD stated:

> I've been disappointed in the past by [PCPs] and their choices and the way it's affected my life…I just decided I wasn't gonna see one anymore…I would assume that [outpatient doctors] either wouldn't offer [HCV treatment] or wouldn't recommend it [to me].

Some participants with heightened HCV treatment urgency noted less confidence in independently scheduling and following up post-discharge. As one woman who used opioids noted, "I've been on drugs, so I never really had a [PCP] unless someone has set it up for me." As one man with OUD stated, "if [the HCV outpatient appointment] was already kinda set up, I'm more likely to do it than to go outta my way and try to set it up myself."

Disrupted HCV trajectory—Notably, two participants with a sense of urgency in treating HCV had established PCP relationships and more stability in their substance recovery. These participants had begun work-up for HCV treatment prior to hospitalization; consequently hospitalization disrupted their HCV course and they wanted to stay on track to curing HCV. A woman with OUD with plans to start HCV treatment prior to admission recounted:

> I just haven't finished [the authorization]. The [outpatient doctor] had already figured out my genotype and what they were going to prescribe…but then we got asked to go for one more set of tests…I spoke to one of the doctors here if I could start the process maybe here while I'm in the hospital.

HCV treatment in the future

Focus on high priority issues.: While some participants conveyed how hospitalization motivated them to immediately address all health conditions including HCV, others felt overwhelmed by acute illness. These participants wanted to address HCV, but in the future. One man with OUD who required an urgent amputation noted, "…diabetes is killing me. I gotta get it under control. If I can get that under control, I can do a lot more with my life…then we can step into gettin' this hep C treatment." Participants also wanted to minimize interruptions to their HCV treatment after starting. As one man with OUD who was experiencing homelessness stated:

> [Before starting HCV treatment, I] first would want to make sure that I'm stabilized out there, that we're not gonna start the pill and have anything step in the way of me being able to take it for 60 or 90 days every day.

Substance use disorder/addiction top priority—Many participants wanting to defer HCV care preferred to prioritize their addiction treatment. A man who used primarily opioids stated, "My primary health concern would be, like I said, having a place to live but trying to stay clean, trying to stay off heroin. I plan on goin' to some inpatient treatment when I'm finished with my hospital stay."

Some participants expressed how "a little bit of clean time" and staying "sober" would make completing HCV treatment "easier." They also wanted to reduce the likelihood of "giving

it right back to myself," and wanting to be "damn sure not to get [HCV] again." Some participants voiced concerns about how recurrence or ongoing substance use could impede their ability to finish the treatment once they started. One man with OUD previously unable to complete DAA treatment stated:

> I tried to do some hep C treatment…it's kind of hard to follow through with certain things like make it to appointments or in my case, just takin' the meds every day… It's like with this problem of addiction, it's so easy to self-sabotage.

Defer talking about HCV—Participants who wanted future HCV treatment described less interest in talking about HCV during hospitalization. They wanted inpatient providers to focus on "issues that are taking more center stage." As one man whose primary substance of choice was alcohol stated:

> It wouldn't make no difference either way, whether [inpatient doctors] talk to me or they didn't…I gotta worry about this wheelchair. Gotta see if I can walk. A lot more things to worry about than Hep C.

Some participants also thought inpatient doctors "can't do anything about [HCV]" while they were hospitalized. They did not think talking with doctors, who would not be the ones treating their HCV, would be productive. As one woman with OUD stated, "[HCV] is part of my normal life. I feel like it's something I can just go and talk to my actual [outpatient] doctor about. Tell her I want the treatment."

Self-advocate for outpatient HCV treatment—Participants with less urgency around HCV treatment expressed more confidence in outpatient coordination. While some had never met their PCP, they felt capable advocating for themselves when "ready" for HCV treatment. One woman with OUD proclaimed:

> I'm definitely gonna bring [HCV treatment] up, [not] necessarily the first time meeting with them since we have so much to go over, but I definitely am gonna talk to them about it cuz it's gonna be my next step in a few weeks whenever I'm ready for it.

Reachable moment for addiction and HCV

While some participants wanted to treat HCV urgently, and others wanted to delay cure, we found overlapping themes for both groups in (1) recognizing long-term benefits of addressing HCV and (2) connecting hospitalization and acute illness to substance use.

Recognizing long-term benefits of addressing HCV—While few patients had experienced HCV-related symptoms including feeling "sluggish" and "fatigue[d]," most described no symptoms. For many where hospitalization was a reachable moment for addiction and HCV, participants mentioned how treating HCV would alleviate "anxiety," "fear" and "worry" especially around possibly infecting family members or other PWUD, and provide a feeling of having "accomplished" something. With the "clear" thinking of no longer using substances, they could prioritize non-immediate needs such as HCV. As one woman who used opioids stated, "When I get out of here [I want] to get [HCV] taken care of

because it's not very hard…I think it would help me more mentally, [to say] I don't have this infection in my body."

Connecting hospitalization and acute illness to substance use—Many described how hospitalization and fear of mortality were an "eye opener," expressing gratitude and new appreciation in the "value of life." These participants also connected their hospitalization and addiction—how ongoing substance use would eventually "kill" them. Participants mentioned needing addiction treatment—often emphatically stating they were "fed up" and that they "don't wanna be an addict no more." Many reported benefits of initiating, at the direction of the AMCS, medications for OUD—allowing them to "focus," manage "triggers," and alleviate withdrawals. They expressed future-oriented thoughts—wanting to "take care" of family and focus on employment or continuing their education. A young woman with OUD who started buprenorphine-naloxone during hospitalization and planned to discharge to an inpatient treatment program reflected, *"The last 29 days have been a life changer…This is my first time I've been clean for four or five years…This is my time to get all this taken care of, because I've been waiting for this moment."*

Discussion

Our study highlights experiences of patients with SUD and untreated HCV during their acute medical illness requiring hospitalization. Participants shared numerous competing priorities contributing to the themes we outlined. Study findings suggest ways hospitalization can serve as an HCV treatment touchpoint for PWUD, especially in the context of addressing substance use.

We found those with "HCV treatment non-engaged" trajectories also remained less engaged with addiction treatment and expressed expectations of ongoing substance use, chaotic lives, and perceived delays in HCV-related consequences. These factors resulted in HCV treatment being lower priority during this hospitalization. A growing body of evidence and international guidelines strongly support screening and treating HCV regardless of substance use status.[34–36] However, barriers—such as those described by participants in our study—continue to exist for those actively using substances, in accessing and completing DAA treatment.[15,20,37] Nearly half of our study participants had been diagnosed with HCV over five years ago, which highlights the persistence of these HCV treatment barriers and missed opportunities during prior hospitalizations to discuss HCV treatment. In order to reduce HCV transmission rates and as a key component of "treatment as prevention" efforts, we need effective outreach programs to motivate and engage those in the "HCV treatment non-engaged" trajectory.[7,8] Potential avenues to increase HCV treatment access to "non-engaged" participants may include bringing care more directly to them by incorporating HCV treatment into existing harm reduction programs and to housing services and shelters.[38–41] Interventions for closing gaps in the HIV care continuum for patients actively using substances might inform programs to better engage hospitalized PWUD in HCV treatment.[42]

We describe how for many PWUD, hospitalization and engagement in addiction treatment may affect HCV treatment prioritization—with participants expressing desire for HCV cure

urgently or in the future. In the setting of treating addiction, participants in both of these HCV treatment trajectories expressed the capacity to be more future-oriented. Despite the often-delayed manifestations of HCV infection symptoms, participants could envision how curing HCV could improve their life—lessening anxiety and worry, giving themselves a sense of accomplishment while mending and healing relationships. These improvements in personal self-worth have been previously described, but warrant highlighting as additional reason to treat HCV prior to the development of physical manifestations such as liver fibrosis.[43–45] HCV infection and substance use are closely intertwined.[46] By addressing and treating addiction, AMCS may help to close gaps in the HCV care continuum and warrants further investigation.

Those with a strong sense of urgency in treating their HCV expressed interest in completing laboratory work-up and starting curative treatment as soon as possible. Doing so during admission is not cost-effective in the US due to diagnosis-related group-based insurance reimbursement structures that would not pay for DAA medications started during hospitalization. An area of future policy advocacy could include changes to this repayment structure to improve population-level HCV elimination efforts. Studies are underway internationally to investigate the effectiveness of initiating HCV treatment during admission.[47] Hospitalization could serve as a time to complete needed testing for those wanting to start HCV treatment right away and is an important area of future study. Given many participants voicing desire for HCV information, interventions to improve knowledge of hospital-based clinicians around HCV treatment eligibility are worth exploring.

Finally, we outline a third theme—those wanting HCV treatment in the future. These participants described how currently HCV treatment was “low priority.” However, they stated interest in curative treatment once their immediate concerns had resolved. Hospitalization could then become a time to coordinate care between inpatient and outpatient providers about patient future interest in HCV cure.[48,49] Challenges remain to efficaciously link care including patient-level, provider-level, and systems-level barriers.[35] The ease of DAA treatment regimens has facilitated primary care practices effectiveness in curing HCV in their patients.[50,51] Given limited time and resources during hospitalization, inpatient providers often need to focus on acute care needs related to admission and discharge. Research on how inpatient healthcare workers prioritize and coordinate future, non-urgent patient concerns including HCV are warranted.

Our study has limitations. Our study was qualitative, thus conjectures should be avoided about prevalence of findings beyond this population.[52] Participants were from a single, urban academic center with a well-established AMCS. While we made efforts to interview participants from non-urban areas and from diverse backgrounds, our study population matches the demographics of our prior AMCS patient evaluation and of the region.[22,53] Studies specifically exploring diverse patient experiences with HCV are needed given ongoing racial and ethnic disparities in the HCV care continuum.[54,55] All of our participants were seen by an AMCS. Since participants were recruited among those cared for by an AMCS, patients with more stable SUD, or those with unstable SUD who did not want to engage with the AMCS, were not recruited for our study. Further, our findings may not be transferable to settings that lack AMCS care. Our study recruited participants with varying

substance use patterns including alcohol; however, we did not have sufficient participant numbers to conduct sub-analyses based on use of specific substances. Further, we did not specifically ask about use of multiple drugs and polysubstance use, which is an area of particular concern.[56] Finally, we did not follow-up on participants after discharge to see how their HCV trajectory and priorities changed or remained the same after leaving the hospital.

Our study has two major implications. First, while hospitalization can be an important touchpoint for PWUD, curative HCV treatment currently resides in the outpatient setting. AMCS could play an important role in the HCV care continuum by effectively addressing addiction during hospitalization,[30] which most participants wanted to prioritize and saw as inter-related to their HCV.[46] Because AMCS help build and maintain trust in health systems among PWUD, an historically stigmatized population,[57] AMCS could support outpatient follow-up for non-addiction conditions. Further, recognizing how PWUD have competing priorities and HCV trajectories could help when designing and implementing these types of interventions. Also of research interest is how to best integrate SUD care with HCV treatment in various healthcare settings.[51] Second, the Centers for Disease Control and Prevention now recommend universal HCV screening for all adults regardless of risk factors or age cohort.[58] As we heard from many participants in our study who had been diagnosed during previous hospitalizations, expanded HCV screening in hospitals, while valuable for detecting undiagnosed cases, may not be sufficient in enhancing HCV engagement.[59,60] An important area of future work is exploring the understanding of HCV treatment eligibility for PWUD among inpatient healthcare providers.

Our findings describe how hospitalized PWUD with hepatitis C have varying priorities and outline three main HCV treatment trajectories around hospitalization and acute illness. Interventions designed with a better understanding of the priorities and treatment trajectories of PWUD with HCV may result in improving the HCV care continuum.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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References

[1]. Csete J, Kamarulzaman A, Kazatchkine M, et al. Public health and international drug policy. Lancet. 2016;387(10026): 1427–1480. [PubMed: 27021149]

[2]. Williams IT, Bell BP, Kuhnert W, Alter MJ. Incidence and transmission patterns of acute hepatitis C in the United States, 1982–2006. Arch Intern Med. 2011;171(3):242–248. [PubMed: 21325115]

[3]. Zibbell JE, Asher AK, Patel RC, et al. Increases in acute hepatitis C virus infection related to a growing opioid epidemic and associated injection drug use, United States, 2004 to 2014. Am J Public Health. 2018;108(2):175–181. [PubMed: 29267061]

[4]. Centers for Disease Control and Prevention. Viral Hepatitis Surveillance United States, 2017. Atlanta, GA: CDC; 2019:1–63.

[5]. World Health Organization. Combating Hepatitis B and C to Reach Elimination by 2030. Advocacy Brief. https://apps.who.int/iris/bitstream/handle/10665/206453/WHO_HIV_2016.04_eng.pdf;jsessionid=1AAC3B187FD6A31B715C079496E02E66?sequence=1. Published May 2016. Accessed November 28, 2018.

[6]. Falade-Nwulia O, Suarez-Cuervo C, Nelson DR, Fried MW, Segal JB, Sulkowski MS. Oral direct-acting agent therapy for hepatitis c virus infection: a systematic review. Ann Intern Med. 2017;166(9):637–648. [PubMed: 28319996]

[7]. Pitcher AB, Borquez A, Skaathun B, Martin NK. Mathematical modeling of hepatitis c virus (HCV) prevention among people who inject drugs: a review of the literature and insights for elimination strategies. J Theor Biol. 2019;481:194–201. [PubMed: 30452959]

[8]. Hajarizadeh B, Grebely J, Martinello M, Matthews GV, Lloyd AR, Dore GJ. Hepatitis C treatment as prevention: evidence, feasibility, and challenges. Lancet Gastroenterol Hepatol. 2016; 1(4):317–327. [PubMed: 28404202]

[9]. Iversen J, Dore GJ, Catlett B, Cunningham P, Grebely J, Maher L. Association between rapid utilisation of direct hepatitis C antivirals and decline in the prevalence of viremia among people who inject drugs in Australia. J Hepatol. 2019;70(1):33–39. [PubMed: 30367897]

[10]. Klein MB. Hepatitis C virus elimination: time for disruptive innovation. J Int AIDS Soc. 2019;22(7):1–3.

[11]. Oregon Health Authority. Hepatitis C Infections in Oregon. https://www.oregon.gov/oha/PH/DISEASESCONDITIONS/HIVSTDVIRALHEPATITIS/ADULTVIRALHEPATITIS/Documents/Hepatitis-C-in-Oregon.pdf. Published May 2017. Accessed November 28, 2018.

[12]. Rosenberg ES, Hall EW, Sullivan PS, et al. Estimation of state-level prevalence of hepatitis C virus infection, US states and District of Columbia, 2010. Clin Infect Dis. 2017;64(11): 1573–1581. [PubMed: 28449115]

[13]. Oregon Health Authority. Committee advances OHA proposal to remove limits on coverage for hepatitis C treatment. OHA News and Information. https://www.oregon.gov/oha/ERD/Pages/CommitteeadvancesOHAproposaltoremovelimitsoncoverageforhepatitisCtreatment.aspx. Published November 2018. Accessed June 6, 2020.

[14]. Roberts N Oregon Health Plan coverage of direct-acting antiviral (DAA) medication for hepatitis C treatment. https://www.oregon.gov/oha/HSD/OHP/Announcements/March1%2C2019OHPcoverageofdirectactingantiviralmedicationforhepatitisCtreatment.pdf. Published February 2019. Accessed June 6, 2020.

[15]. Høj SB, Jacka B, Minoyan N, Artenie AA, Bruneau J. Conceptualising access in the direct-acting antiviral era: an integrated framework to inform research and practice in HCV care for people who inject drugs. Int J Drug Policy. 2019;72:11–23. [PubMed: 31003825]

[16]. Yehia BR, Schranz AJ, Umscheid CA, Lo Re V. The treatment cascade for chronic hepatitis C virus infection in the United States: a systematic review and meta-analysis. PLoS One. 2014; 9(7):e101554–9. [PubMed: 24988388]

[17]. Iversen J, Grebely J, Catlett B, Cunningham P, Dore GJ, Maher L. Estimating the cascade of hepatitis C testing, care and treatment among people who inject drugs in Australia. Int J Drug Policy. 2017;47:77–85. [PubMed: 28578863]

[18]. Grebely J, Bruneau J, Bruggmann P, et al. Elimination of hepatitis C virus infection among PWID: the beginning of a new era of interferon-free DAA therapy. Int J Drug Policy. 2017;47: 26–33. [PubMed: 28888558]

[19]. Barua S, Greenwald R, Grebely J, Dore GJ, Swan T, Taylor LE. Restrictions for medicaid reimbursement of sofosbuvir for the treatment of hepatitis C virus infection in the United States. Ann Intern Med. 2015;163(3):215–223. [PubMed: 26120969]

[20]. Higashi RT, Jain MK, Quirk L, et al. Patient and provider-level barriers to hepatitis C screening and linkage to care: a mixed-methods evaluation. J Viral Hepat. 2020;27(7):680–610. [PubMed: 32048397]

[21]. Larochelle MR, Bernstein R, Bernson D, et al. Touchpoints – opportunities to predict and prevent opioid overdose: a cohort study. Drug Alcohol Depend. 2019;204:1–9.

[22]. Englander H, Weimer M, Solotaroff R, et al. Planning and designing the improving addiction care team (IMPACT) for hospitalized adults with substance use disorder. J Hosp Med. 2017;12(5):339–342. [PubMed: 28459904]

[23]. Winkelman TNA, Admon LK, Jennings L, Shippee ND, Richardson CR, Bart G. Evaluation of Amphetamine-Related Hospitalizations and Associated Clinical Outcomes and Costs in the United States. JAMA Netw Open. 2018;1(6):e183758–13. [PubMed: 30646256]

[24]. Weiss AJ, Elixhauser A, Barrett M, Steiner CA, Bailer MK, O'Malley L. Opioid-related inpatient stays and emergency department visits by state, 2009–2014. HCUP Statistical Brief #219. https://www.hcup-us.ahrq.gov/reports/statbriefs/sb219-Opioid-Hospital-Stays-ED-Visits-by-State.jsp. Published December 2016. Accessed June 2, 2020.

[25]. Ronan MV, Herzig SJ. Hospitalizations related to opioid abuse/ dependence and associated serious infections increased sharply, 2002–12. Health Aff (Millwood)). 2016;35(5):832–837. [PubMed: 27140989]

[26]. Englander H, Priest KC, Snyder H, Martin M, Calcaterra S, Gregg J. A call to action: hospitalists' role in addressing substance use disorder. J Hosp Med. 2019;14(3):E1–E4.

[27]. Priest KC, Englander H, Mccarty D. "Now hospital leaders are paying attention": a qualitative study of internal and external factors influencing addiction consult services. J Subst Abuse Treat. 2020;110:59–65. [PubMed: 31952629]

[28]. Berk J, Rogers KM, Wilson DJ, Thakrar A, Feldman L. Missed opportunities for treatment of opioid use disorder in the hospital setting: updating an outdated policy. J Hosp Med. 2020; 15(10):619–613. [PubMed: 31869296]

[29]. Wakeman SE, Metlay JP, Chang Y, Herman GE, Rigotti NA. Inpatient addiction consultation for hospitalized patients increases post-discharge abstinence and reduces addiction severity. J Gen Intern Med. 2017;32(8):909–916. [PubMed: 28526932]

[30]. Englander H, Dobbertin K, Lind BK, et al. Inpatient addiction medicine consultation and post-hospital substance use disorder treatment engagement: a propensity-matched analysis. J Gen Intern Med. 2019;34(12):2796–2803. [PubMed: 31410816]

[31]. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007;19(6): 349–357. [PubMed: 17872937]

[32]. Englander H, Mahoney S, Brandt K, et al. Tools to support hospital-based addiction care: core components, values, and activities of the improving addiction care team. J Addict Med. 2019; 13(2):85–89. [PubMed: 30608265]

[33]. Green J, Thorogood N. Qualitative Methods for Health Research. Los Angeles: SAGE; 2004.

[34]. Aspinall EJ, Corson S, Doyle JS, et al. Treatment of hepatitis c virus infection among people who are actively injecting drugs: a systematic review and meta-analysis. Clin Infect Dis. 2013; 57(suppl_2):S80–S9. [PubMed: 23884071]

[35]. AASLD-IDSA. Key populations: identification and management of HCV in people who inject drugs. Recommendations for testing, managing, and treating hepatitis C. https://www.hcvguidelines.org/unique-populations/pwid. Accessed June 6, 2020.

[36]. Norton BL, Fleming J, Bachhuber MA, et al. High HCV cure rates for people who use drugs treated with direct acting antiviral therapy at an urban primary care clinic. Int J Drug Policy. 2017;47:196–201. [PubMed: 28811158]

[37]. Wolfe D, Luhmann N, Harris M, et al. Human rights and access to hepatitis C treatment for people who inject drugs. Int J Drug Policy. 2015;26(11):1072–1080. [PubMed: 26232055]

[38]. Pericàs JM, Bromberg DJ, Ocampo D, et al. Hepatitis C services at harm reduction centres in the European Union: a 28-country survey. Harm Reduct J. 2019;16(1):20–10. [PubMed: 30898122]

[39]. Kikvidze T, Luhmann N, Avril E, et al. Harm reduction-based and peer-supported hepatitis C treatment for people who inject drugs in Georgia. Int J Drug Policy. 2018;52:16–19. [PubMed: 29227878]

[40]. Fokuo JK, Masson CL, Anderson A, et al. Recommendations for implementing hepatitis C virus care in homeless shelters: the stakeholder perspective. Hepatol Commun. 2020;4(5): 646–656. [PubMed: 32363316]

[41]. Seaman A, Witkowska M, Chan B, Nelson L, Korthuis PT. A Novel Hepatitis C Mirco-Elimination Model in a Large Healthcare for the Homeless Organization. Montreal, Canada: International Network on Hepatitis in Substance Users (INHSU); 2019.

[42]. Korthuis PT, Edelman EJ. Substance use and the HIV care continuum: important advances. Addict Sci Clin Pract. 2018; 13(1):13. [PubMed: 29530080]

[43]. E Williams B, Nelons D, Seaman A, et al. Life projects: the transformative potential of direct-acting antiviral treatment for hepatitis C among people who inject drugs. Int J Drug Policy. 2019;72:138–145. [PubMed: 30995968]

[44]. Batchelder AW, Peyser D, Nahvi S, Arnsten JH, Litwin AH. “Hepatitis C treatment turned me around:” Psychological and behavioral transformation related to hepatitis C treatment. Drug Alcohol Depend. 2015;153:66–71. [PubMed: 26096534]

[45]. Richmond JA, Ellard J, Wallace J, et al. Achieving a hepatitis C cure: a qualitative exploration of the experiences and meanings of achieving a hepatitis C cure using the direct acting antivirals in Australia. Hepatol Med Policy. 2018;3(1):1–9. [PubMed: 30288324]

[46]. Vega TA, Levander XA, Seaman A, Korthuis PT, Englander H. “Sobriety equals getting rid of hepatitis C”: a qualitative study exploring the interplay of substance use disorder and hepatitis C among hospitalized adults. J Subst Abuse Treat. 2021;127: 108337. [PubMed: 34134860]

[47]. Midgard H, Finbråten AK, Malme KB, et al. Opportunistic treatment of hepatitis C virus infection (OPPORTUNI-C): study protocol for a pragmatic stepped wedge cluster randomized trial of immediate versus outpatient treatment initiation among hospitalized people who inject drugs. Trials. 2020;21(1):1–17. [PubMed: 31898511]

[48]. Jones CD, Vu MB, O’Donnell CM, et al. A failure to communicate: a qualitative exploration of care coordination between hospitalists and primary care providers around patient hospitalizations. J Gen Intern Med. 2015;30(4):417–424. [PubMed: 25316586]

[49]. Munchhof A, Gruber R, Lane KA, Bo N, Rattray NA. Beyond discharge summaries: communication preferences in care transitions between hospitalists and primary care providers using electronic medical records. J Gen Intern Med. 2020;35(6): 1789–1796. [PubMed: 32242311]

[50]. Kattakuzhy S, Gross C, Emmanuel B, et al. Expansion of treatment for hepatitis C virus infection by task shifting to community-based nonspecialist providers: a nonrandomized clinical trial. Ann Intern Med. 2017;167(5):311–318. [PubMed: 28785771]

[51]. Fadnes LT, Aas CF, Vold JH, et al. Integrated treatment of hepatitis C virus infection among people who inject drugs: study protocol for a randomised controlled trial (INTRO-HCV). BMC Infect Dis. 2019;19(1):1–9. [PubMed: 30606108]

[52]. Neale J, Miller P, West R. Reporting quantitative information in qualitative research: guidance for authors and reviewers. Addiction. 2014;109(2):175–176. [PubMed: 24422609]

[53]. United States Census Bureau. QuickFacts – Portland city, Oregon. QuickFacts. https://www.census.gov/quickfacts/fact/table/portlandcityoregon/AGE295218. Published 2019. Accessed June 8, 2020.

[54]. Kim NJ, Locke CJ, Park H, Magee C, Bacchetti P, Khalili M. Race and hepatitis C care continuum in an underserved birth cohort. J Gen Intern Med. 2019;34(10):2005–2013. [PubMed: 30238404]

[55]. Bruce V, Eldredge J, Leyva Y, Mera J, English K, Page K. Hepatitis C virus infection in indigenous populations in the United States and Canada. Epidemiol Rev. 2019;41(1):158–167. [PubMed: 31781749]

[56]. King C, Nicolaidis C, Korthuis PT, Priest KC, Englander H. Patterns of substance use before and after hospitalization among patients seen by an inpatient addiction consult service: a latent transition analysis. J Subst Abuse Treat. 2020;118:108121. [PubMed: 32972645]

[57]. King C, Collins D, Patten A, Nicolaidis C, Englander H. Trust in hospital physicians among patients with substance use disorder referred to an addiction consult service: a mixed-methods study. J Addict Med. 2021. doi:10.1097/ADM.0000000000000819. [Epub ahead of print].

[58]. Schillie S, Wester C, Osborne M, Wesolowski L, Ryerson AB. CDC recommendations for hepatitis C screening among adults – United States. MMWR. 2020;69(2):1–17.

[59]. Hutton J, Doyle J, Zordan R, et al. Point-of-care Hepatitis C virus testing and linkage to treatment in an Australian inner-city emergency department. Int J Drug Policy. 2019;72:84–90. [PubMed: 31351752]

[60]. Liu L, Xu H, Hu Y, et al. Hepatitis C screening in hospitals: find the missing patients. Virol J. 2019;16(1):1–9. [PubMed: 30606229]

Table 1.

Study patient participant characteristics.

Demographics	**Number/Percentage *n* = 27**
Mean age (in years) (SD)	40.9 (10.1)
Gender	
Woman	8 (30%)
Man	18 (67%)
Non-binary/Gender non-conforming/No answer	1 (3%)
Ethnicity/ Race	
Caucasian/White	23 (85%)
Hispanic or Latinx	1 (3.5%)
American Indian/Alaska Native	1 (3.5%)
More than once race/Multi-racial/Other	2 (7.5%)
Geographic location	
Portland metro area	20 (74%)
Other urban areas	2 (7.5%)
Suburban area	2 (7.5%)
Rural/Frontier community	3 (11%)
Marital status	
Never married	15 (55.5%)
Married or living like married/partnered	4 (15%)
Separated or Divorced	8 (29.5%)
Primary substance of choice	
Heroin/opioids/fentanyl	21 (78%)
Methamphetamine/amphetamine	3 (11%)
Alcohol	3 (11%)
Self-reported time since HCV diagnosis	
Current hospitalization	1 (3.5%)
Within previous 12 months	4 (15%)
Over 1 year ago but <5 years ago	9 (33%)
More than 5 years ago	13 (48%)