



Developing a remotely delivered intensive outpatient program adapted for hospitalized patients with opioid use disorder: A qualitative study

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ABSTRACT

Introduction: Individuals with opioid use disorder (OUD) who inject drugs have an elevated risk of experiencing serious injection-related infections. While such infections can be treated, treatment for the underlying OUD is often limited. One potential strategy for more intensive addiction treatment is to offer a remotely delivered intensive outpatient program (IOP), adapted from an existing remote IOP ("Smart IOP"). We aimed to conduct a qualitative study to gather feedback on Smart IOP and identify adaptations needed for hospitalized patients.

Methods: Individuals with OUD and a history of serious injection-related infections completed a semi-structured interview and were shown samples of the videos and program content. The interviews were transcribed verbatim and coded to conduct a thematic analysis.

Results: Seventeen individuals participated. The mean age was 40.8 years and 70.6 % were men. Participants reported that IOP during the hospitalization would have been helpful to their recovery. The themes that emerged were the importance of medications for OUD, having a relapse prevention plan, engaging with a recovery coach, and ensuring treatment linkage post-discharge. Other themes included the recognition of the severity of one's illness and the emotional experiences related to the hospitalization.

Conclusions: Participants expressed the value of an IOP during hospitalization and provided insights into the support needed while hospitalized. The tailored IOP is now being developed and will undergo a pilot feasibility trial.

1. Introduction

Opioid use disorder (OUD) remains a significant public health concern in the United States, leading to a rise in overdose deaths and injection drug use (Rosenthal et al., 2023). One of the consequences of injection drug use is the risk of developing serious injection-related infections, such as endocarditis, osteomyelitis, and abscesses. These infections have also been on the rise, resulting in high mortality rates in recent years (Wurcel et al., 2016) (Ronan & Herzig, 2016). Although hospitals can treat these infections with evidence-based interventions, OUD itself is often unaddressed (Saitz, 2019). In response, a growing number of hospitals have launched addiction consultation services (ACS), to facilitate the initiation of medication for OUD (MOUD) which improves both infection- and addiction-related outcomes (King et al., 2022). Unfortunately, not all patients who are hospitalized for a serious injection-related infection receive MOUD (Serota et al., 2020).

Furthermore, patients with OUD and injection-related infections are often hospitalized up to 6 weeks (Marks et al., 2020), representing a missed opportunity if no additional addiction treatment is offered during this time. Most hospitals lack an ACS, and most hospitalized patients are unable to access traditional addiction treatment programs, which are often not located within the hospital campus (Priest & McCarty, 2019; Saitz, 2019). As such, there is a need for strategies to permit the delivery of addiction treatment to hospitalized patients.

To address this need, a potential solution is to develop a remote, asynchronous, intensive outpatient program (IOP) for hospitalized patients. IOPs have been shown to be an effective treatment for patients with substance use disorders (SUD) (McCarty et al., 2014). IOPs offer nine hours or more of individual and group treatments per week, during which patients learn early-stage relapse management and coping skills, and address problems related to psychosocial well-being. If such a program were available asynchronously with a mobile device, hospitalized

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patients could complete the IOP treatment at a time most convenient to the patient. A remotely delivered IOP could be suitable for hospitalized patients for whom a traditional IOP would interfere with their medical care. Of importance, patients would complete the IOP treatment concurrent with receipt of MOUD treatment and supported by ACSs.

However, no prior studies have attempted to customize an IOP alongside MOUD and ACSs specifically for hospitalized patients with OUD. To bridge this gap, we aimed to adapt an existing remotely delivered IOP (“Smart IOP”) for hospitalized patients. Therefore, we conducted a qualitative study of individuals with OUD and a history of hospitalization for serious injection-related infections to gain insights for tailoring the program. The results will guide necessary adaptations, laying the groundwork for a subsequent pilot feasibility study.

2. Methods

2.1. Setting

This study was conducted between November 2022 and February 2023 at Brigham and Women’s Hospital (BWH), a large academic medical center in Boston, MA. IRB approval was obtained from Mass General Brigham.

2.2. Participants

Adults 18 or older were recruited. Inclusion criteria were past or current hospitalization for an injection-related infection such as endocarditis, abscess, or osteomyelitis, and a diagnosis of OUD. Exclusion criteria were having active psychosis and being unable to perform consent due to impaired mental status. Recruitment involved online advertisement for outpatients (n = 17) and approaching BWH hospitalized patients (n = 1). One interview was considered incomplete due to a technical issue with the recording device and was removed from the analysis.

2.3. Participant recruitment

Potential participants were screened remotely to ensure eligibility. Verbal consent was obtained before the interview. Consistent with studies utilizing qualitative methods (Guest et al., 2020), recruitment continued until thematic saturation was reached—defined as reaching a point at which additional interviewers yield no new themes. Participants were compensated \$50 for completing the interview.

2.4. Smart IOP

Smart IOP (SIOP) is an online IOP in operation since 2016 initially designed for individuals seeking addiction treatment in rural Virginia. Given the difficulty of attending an IOP in person in rural settings, it allows complete remote participation, typically spanning 8–12 weeks. Additionally, synchronous live sessions with a therapist and case managers are required to progress through the program. Finally, the original program requires that the patient identifies a “smart sponsor”, typically a family or a friend, to provide accountability and confirm abstinence to the therapist. This program was selected for adaptation because the video contents were available and can be viewed entirely asynchronously, permitting the completion of the IOP at the patient’s own pace, a critical factor for hospitalized patients. Instead of identifying a family or a friend to be the smart sponsor, we anticipated utilizing a peer recovery coach to serve this role, both for in-person and remote support during the hospitalization.

2.5. Qualitative study procedure

We developed a semi-structured interview guide using clinical experience, prior literature, and expert opinion (Gale et al., 2013).

Participants were asked about their substance use history, prior experience with addiction treatment (including any experience with IOP treatment), hospitalization experience, feedback about the content and format of the IOP, and the addition of a peer recovery coach. The interviews were conducted in-person or remotely and lasted up to 45 min.

Participants in the study were introduced to the IOP, which consists of interactive video modules of a variety of content. The following list of video modules was presented to participants to indicate if these topics would help support their recovery: relapse and recovery, anxiety, depression, mindfulness, coping with addiction, coping with a prolonged hospital stay, relationships, emotion regulation, medication treatment, safe injection strategies, and harm reduction. Participants were also shown sample videos from the program and told that videos include asking patients to indicate how the content might be applied to their circumstances.

2.6. Analysis

The interviews were recorded with permission and transcribed verbatim using NVivo 13 (2020, R1). We conducted a thematic analysis using the framework method. The interviews were de-identified and coded using a codebook.

3. Results

A total of 17 interviews were completed. Fifteen (88.2 %) were conducted remotely and lasted 27 min on average. Participants’ demographic data are presented in Table 1.

3.1. Hospitalization experience

Participants were asked about their hospitalization experience, which included questions about the treatment for their infection, SUD, and engagement with the hospital staff. While most participants reported experiencing negative interactions such as feeling stigmatized by the hospital staff, the positive interactions made a particular difference. One participant describes her experience

“I also remember at the hospital feeling, particularly when I was feeling like there was a lot of stigma and not being treated well by the doctors. That was a glaring experience, I do remember. There was one, and I think because the way other people treated me was so different I really do remember this one nurse that treated me like a human and was very encouraging and supportive. And that made a big difference to me.” – 34-year-old female admitted for a Staph infection.

Participants reported that they received good care for their infection but felt that their addiction treatment was insufficient. Considering this experience, many felt that an IOP may have addressed this concern during their hospitalization. One participant distinguished between his treatment for the infection and OUD:

Table 1

Participant Characteristics	N = 17
Age (SD)	40.8 (9.8)
Sex, Male, n (%)	12 (70.6 %)
Marital Status, n (%)	
Single	14 (82.3 %)
Married	2 (11.8 %)
Separated	1 (5.9 %)
Employment Status, n (%)	
Employed	7 (41.2 %)
Unemployed	10 (58.8 %)
Addiction History	
Addiction Treatment History	17 (100 %)
Intensive Outpatient Program History	15 (88.2 %)

“Overall, for what I was there for unbelievably well like you know, [they had to do skin graft], they did an amazing, phenomenal job. But the addiction part of it is just like, you know, most doctors will tell you, we went to school for this many years and all that time I had an hour and 20 min of studying addiction. And with the opiate crisis and all the things going on now, especially in Boston, you’d think that, well, Jesus Christ, if you only got an hour and 20 min worth of education, this might not be a bad idea to go on your own and get a little more to understand your patients.” – 42-year-old male admitted for an abscess

Furthermore, when asked what would have made the hospitalization experience less uncomfortable, one participant mentioned how he wished that he had met with an addiction specialist:

“Probably if they would have sent somebody or if they would have had somebody on staff who specifically dealt with addiction to come to talk to me, but at that time, in the medical field, they just didn’t.” – 52-year-old male admitted for an abscess.

3.2. Emotional experience

The emotional impact of the prolonged hospitalization was another emergent theme. When participants were asked about how they felt when they found out about their serious infection, many participants reported fear, often accompanied by regret and shame, important topics to address within the IOP. For example, a participant described

“Well, you know, you have a lot of regret, and this is self-inflicted. And it forces you to look at sort of what has led up to it. You know, and then one of the times I was far away from home, it was lonely. And the other time when I was in Boston, it was just scary.” – 42-year-old male admitted for an abscess

One participant described the profound fear he experienced when confronted with news of a serious infection:

“What do you mean? Like I said earlier, it’s resistant to antibiotics. What do you treat me with? How are you going to cure it? Am I going to get better? All that stuff goes through your mind right then and there, right then and there you think to yourself, wait, what are you talking about? What do you mean by that? And you got to deal with it. It’s one of the most scariest things I’ve ever been through.” – 43-year-old male admitted for MRSA.

3.3. Recognition of the severity of illness

Participants also endorsed gaining insights about their SUD after being hospitalized for an injection-related infection, including recognizing the severity of their illness. When asked about what advice they would give other patients hospitalized for injection-related infection, one participant stated

“Yeah, I would say this because I have congestive heart failure and I know it’s from my drug use, I believe it is. I would say take your health seriously because you only have one body, you only have one life, and you have one heart. You have two lungs and just take it seriously because down the line you’re going to wish, you might say “Hey, I wish I listened to the doctor” or whoever it may be. It could be too late.” – 48-year-old male admitted for cellulitis.

3.4. Program feedback

When asked whether participants would have wanted a program like the proposed IOP while hospitalized, one participant answered

“Yeah, because there’s nothing to do in the hospital. I mean if you are hospitalized, you are hooked up to the IV all day. So, I’m sure they [patients] would be down for it. I certainly would have if they [doctors]

had come to me and said, “Hey, you want to do this thing?” while I was there, I would have said yes.” – 32-year-old male admitted for an abscess.

Another participant answered similarly, emphasizing that an IOP could potentially allow patients to cope with the hospitalization:

“Yeah, definitely. Because when you’re in the hospital it’s just so much downtime, and you have a lot of time to just sit there and think and think. And you know, that can be really dangerous. And yeah, anything to take my mind off things and anything positive at that point would have been hugely beneficial to me.” – 52-year-old male admitted for an abscess

When asked if the IOP videos will be helpful for someone recovering after an infection, one participant answered:

“Yeah, I think it could potentially be helpful. I think anything at all is helpful because like I said, I didn’t have anyone talk about addiction at all.” – 29-year-old male admitted for fungal sepsis

When asked what IOP video topics would be most beneficial for post-hospitalization support, most participants indicated that all topics would be helpful. However, a consistent theme was the need for a structured recovery plan after hospital discharge. One participant described his recovery plan as follows:

“As far as you know, the whole recovery piece went...so it was tough. Like, you know, I had to learn how to keep a schedule, write down everything I needed to do every day, make sure I had time in the morning to remember where I am in life, what I’m doing recovery wise and go to work, you know, keep that schedule simple and get back to do groups and meetings and therapy.” – 39-year-old male admitted for endocarditis.

Recovery and relapse was also one of the topics that participants said would be helpful to support them after being discharged from the hospital. One participant stated:

“Yeah, definitely like the recovery and relapse one, because eventually you’re going to leave the hospital, and you know, that’s obviously when you’re going to have to start applying things.” – 52-year-old male admitted for an abscess

Another topic that participants felt was important was medication treatment for OUD (MOUD). Participants were asked whether they received MOUD while hospitalized; 12 participants reported that they did. One participant stated:

“If anyone does ever get infected and it’s an infection like mine and was in the hospital, I would recommend getting on Suboxone right away. Like it kills the craving, and you don’t have the urge to use.” – 32-year-old male admitted for an abscess

Another frequently mentioned theme was treatment linkage after the hospitalization. Participants stated that once they left the hospital, they were often not connected to treatment. Reinforcing the importance of continuing care could be integrated into the IOP. Two participants explained:

“Like if they had said “Oh, we have this and this program to do” like right after I would have went to it, but they never like set me up with anything. Like if they had helped me find even a therapist or just something to do afterward because they kind of [were] just like “Oh, you’re here, go back on the street again”. They kind of didn’t do any of that.” – 32-year-old male admitted for an abscess.

“Someone once asked me why after being over the physical, why do I keep going back? But it’s the mental. So that’s why people relapse constantly because you have so much mental baggage, and when you get clean, it allrushes back. I think if people are set up with, you know, with the IOP and maybe some psych help and maybe antidepressants, if they willing to take them, I think it would be like a huge help to people.” – 46-year-old female admitted for an abscess, cellulitis, and MRSA.

Participants agreed that a peer recovery coach's support during IOP would be valuable, emphasizing the need for someone to relate to during their recovery journey. One participant described this importance:

"It's the perfect stranger. You get someone that you can say it to and nobody else, you know, people you love and family you could be ashamed of. But to this person, you can let it go, you know... and not feel judged."
– 48-year-old male admitted for cellulitis

Additionally, many participants mentioned loneliness during hospitalization and recovery, emphasizing the potential benefit of including a recovery coach in reducing this feeling. One participant stated:

"Loneliness was huge for me. Even though I was with people, I felt lonely. I felt like I didn't belong, you know?" – 48-year-old male admitted for cellulitis

One participant described how peer connection can come from group therapy if it was incorporated into Smart IOP:

"Like I was saying earlier group therapy has also been a part of it, like being able to talk to other addicts and you go over a topic, they watch a video and then you can all go for it. I find that extremely helpful because if I can't think of something off the top of my head to relate to a video or something, someone else does it. And that really resonates with me." – 41-year-old male admitted for osteomyelitis.

4. Discussion

To our knowledge, this is the first qualitative study exploring the development of a remotely delivered IOP in supporting patients with OUD hospitalized for serious infections. This study explored both the experience of such prolonged hospitalizations as well as their impressions of engaging in the proposed IOP tailored for hospitalized patients. Respondents generally supported the IOP format and video contents and agreed that a structured addiction treatment may be beneficial during the hospitalization. Participants also endorsed the importance of having a recovery plan and initiating MOUD, engagement with peer support, and the need for linkage to treatment after discharge. Other themes included the recognition of the severity of one's illness and emotional experiences related to the hospitalization, which is consistent with previous reports (Velez et al., 2017). Based on this feedback, we will incorporate content on the importance of MOUD, and a relapse prevention plan, along with support from a peer recovery coach who will help facilitate linkage to care following discharge. While the importance of group therapy was noted by the participants, we are currently unable to incorporate this recommendation, given the nature of the asynchronous format of the current program.

Most participants pointed out the general lack of addiction treatment during their hospitalization, including not receiving MOUD or not having the opportunity to be evaluated and treated by an addiction specialist. This finding continues to support the research on the lack of addiction services in hospitals (Saitz, 2019). Therefore, it is crucial that SIOp is combined with MOUD and ACSs. Respondents felt that they would have benefitted from such a program had it existed, allowing them to take advantage of the prolonged hospital stay. However, given that hospital inpatients have an unpredictable schedule, with frequent interruptions for medication administration, tests, and procedures, any addiction treatment being offered in the hospital would necessarily require flexibility. The asynchronous nature of the remote IOP therefore should permit the completion of a more robust program even while hospitalized.

Prolonged hospitalizations for a life-threatening illness are nevertheless highly distressing due to the acuity of the illness, acute pain, loss of autonomy and freedom of movement, and feelings of loneliness. A common negative experience that was shared was feeling judged or stigmatized by the hospital staff, consistent with previous qualitative studies (Bearnot et al., 2019). We have previously characterized these

stressful experiences as being potentially traumatic (Messinger & Suzuki, 2022). The proposed IOP would specifically include video modules that discuss coping strategies and provide an opportunity to engage with a peer recovery coach—peer support being one of the core pillars of trauma-informed care approaches.

Another common theme among respondents was the need for linkage to addiction treatment after leaving the hospital. Many stated that once they left, they were not linked to any ongoing treatment. This is supported by one review which found that only 7.8 % of patients who were admitted for infection-related endocarditis were linked to treatment when they were discharged from the hospital (Rosenthal et al., 2016). As noted above, hospitals have begun implementing ACSs, staffed by addiction specialists to help facilitate the initiation of MOUD, plan post-discharge treatments, and help increase treatment engagement. Indeed, the growing body of evidence supports ACSs in increasing post-treatment linkage to care and increasing the initiation of MOUD (Englander et al., 2019). However, ACSs are still restricted to larger academic medical centers, and most hospitals lack the resources and expertise to launch an ACS. The proposed remote IOP may therefore serve as a complement to ACS, or it could provide some of the functions of an ACS delivered by a peer recovery coach.

Finally, having a post-discharge recovery plan emerged as a significant theme among participants when asked about the video topics for a remote IOP. Previous literature has suggested that patients with OUD develop an individualized care plan that integrates strategies for relapse prevention (Myers & Compton, 2018). Given our findings and the literature, this suggests that completing a relapse prevention plan prior to discharge may be essential for OUD patients who have survived a serious infection. As such, the proposed IOP will include the completion of a relapse prevention plan facilitated by the recovery coach.

There are several limitations to our study. First, all participants were white and non-Hispanic, which may not permit the generalization of our findings to other racial and ethnic minorities. It is important that future studies capture the experiences of individuals from more diverse racial and ethnic backgrounds. Second, no respondent was currently hospitalized. All participants had survived such an infection some time ago, potentially skewing their opinions or influencing their recall of prior hospitalizations. This is a substantive limitation because having the perspectives of individuals who are currently hospitalized may have yielded different results. In addition, hospitalized patients with serious infections often leave prematurely against medical advice due to inadequate addiction treatment, and the inclusion of their perspectives would have helped understand their needs. Finally, while the proposed adaptation will utilize an in-person peer recovery coach to support those completing the IOP, many hospitals may lack the resources to not only launch an ACS but also to hire a recovery coach. In such circumstances, it is unclear if a remote IOP alone without any in-person support will impact treatment outcomes.

5. Conclusions

Overall, most participants reported that a remotely delivered IOP treatment would be beneficial for patients with OUD who are hospitalized for serious infections while receiving MOUDs and being evaluated by ACSs. They felt that the video content and program structure seemed appropriate. Our participants emphasized the importance of MOUD, having a personalized relapse prevention plan facilitated by the peer recovery coach and ensuring treatment linkage once discharged from the hospital. Based on this feedback, we are making the appropriate modifications to the program and are preparing to conduct a pilot study to evaluate the feasibility of a remotely delivered IOP for hospitalized patients with OUD (NCT05817825).

CRedit authorship contribution statement

Veronica Szpak: Writing – original draft, Investigation, Formal

analysis, Data curation. **Sara Prostko:** Writing – review & editing, Formal analysis. **Roger D. Weiss:** Writing – review & editing, Methodology, Conceptualization. **Joji Suzuki:** Writing – review & editing, Supervision, Methodology, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Dr. Weiss reports consultation with Alkermes. All other authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

Data availability

The authors do not have permission to share data.

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