


Health care professional perspectives on discharging hospitalized patients with injection drug use-associated infections

Nichole Moore, Michael Kohut, Henry Stoddard, Debra Burris, Frank Chessa, Monica K. Sikka , Daniel Solomon, Colleen M. Kershaw, Ellen Eaton, Rebecca Hutchinson, Kathleen M. Fairfield, Thomas J. Stopka, Peter Friedmann and Kinna Thakarakar 

Abstract

Background: Patients with injection drug use (IDU)-associated infections traditionally experience prolonged hospitalizations, which often result in negative experiences and bad outcomes. Harm reduction approaches that value patient autonomy and shared decision-making regarding outpatient treatment options may improve outcomes. We sought to identify health care professionals (HCPs) perspectives on the barriers to offering four different options to hospitalized people who use drugs (PWUD): long-term hospitalization, oral antibiotics, long-acting antibiotics at an infusion center, and outpatient parenteral antibiotics.

Methods: We recruited HCPs ($n = 19$) from a single tertiary care center in Portland, Maine. We interviewed HCPs involved with discharge decision-making and other HCPs involved in the specialized care of PWUD. Semi-structured interviews elicited lead HCP values, preferences, and concerns about presenting outpatient antimicrobial treatment options to PWUD, while support HCPs provided contextual information. We used the iterative categorization approach to code and thematically analyze transcripts.

Results: HCPs were willing to present outpatient treatment options for patients with IDU-associated infections, yet several factors contributed to reluctance. First, insufficient resources, such as transportation, may make these options impractical. However, HCPs may be unaware of existing community resources or viable treatment options. They also may believe the hospital protects patients, and that discharging patients into the community exposes them to structural harms. Some HCPs are concerned that patients with substance use disorder will not make 'good' decisions regarding outpatient antimicrobial options. Finally, there is uncertainty about how responsibility for offering outpatient treatment is shared across changing care teams.

Conclusion: HCPs perceive many barriers to offering outpatient care for people with IDU-associated infections, but with appropriate interventions to address their concerns, may be open to considering more options. This study provides important insights and contextual information that can help inform specific harm reduction interventions aimed at improving care of people with IDU-associated infections.

Keywords: decision making, harm reduction, infections, shared, substance-related disorders

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Background

Substance use and infectious complications from injection drug use (IDU) have reached epidemic proportions in the United States.^{1,2} Patients with

serious infections usually have limited outpatient treatment options and long, costly hospitalizations.³ While remaining hospitalized for the entire course of treatment might be perceived as the

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Correspondence to:

Kinna Thakarakar
Tufts University School of
Medicine, Boston, MA, USA
Center for Interdisciplinary
Population and Health
Research, MaineHealth
Institute for Research,
Portland, ME, USA
Maine Medical Center,
Portland, ME, USA
kinna.thakarakar@mainehealth.org

Nichole Moore
Frank Chessa
Tufts University School of
Medicine, Boston, MA, USA

Michael Kohut
Henry Stoddard
Debra Burris
Center for Interdisciplinary
Population and Health
Research, MaineHealth
Institute for Research,
Portland, ME, USA

Monica K. Sikka
Division of Infectious
Diseases, Department of
Medicine, Oregon Health
& Science University,
Portland, OR, USA

Daniel Solomon
Division of Infectious
Disease, Brigham and
Women's Hospital, Boston,
MA, USA

Colleen M. Kershaw
Section of Infectious
Disease and International
Health, Dartmouth-
Hitchcock Medical Center,
Lebanon, NH, USA
Geisel School of Medicine
at Dartmouth, Hanover,
NH, USA

Ellen Eaton
Division of Infectious
Disease, The University of
Alabama at Birmingham,
Birmingham, AL, USA

Rebecca Hutchinson
Kathleen M. Fairfield
Tufts University School of
Medicine, Boston, MA, USA
Center for Interdisciplinary
Population and Health
Research, MaineHealth
Institute for Research,
Portland, ME, USA

Maine Medical Center,
Portland, ME, USA

Thomas J. Stopka
Department of Public
Health & Community
Medicine, Tufts University
School of Medicine,
Boston, MA, USA

Peter Friedmann
Office of Research, UMass
Chan Medical School-
Baystate, Springfield,
MA, USA

Frank Chessa is also
affiliated to MaineHealth
Institute for Research,
Portland, ME, USA; Maine
Medical Center, Portland,
ME, USA

safest treatment option, prolonged hospitalization is not benign.⁴ However, there are no clear guidelines or protocols for hospital discharge decision-making for people who use drugs (PWUD). Growing evidence suggests that outpatient parenteral antimicrobial therapy (OPAT) among PWUD, step-down approaches from intravenous (IV) to oral antibiotics, and long-acting IV antibiotic infusions are effective for certain patients and shorten hospital stays.⁵⁻⁹ Despite the evidence, patients are often not given a chance to explore these outpatient treatment options.¹⁰

Prior research suggests that a harm reduction approach to caring for people with substance use disorders (SUDs) reduces stigma and improves engagement in health care.¹¹⁻¹⁶ It promotes low barrier access to services, respects patient autonomy, and, while recognizing abstinence as ideal, accepts alternatives that reduce harms.¹⁷ A harm reduction approach to caring for patients with infectious complications related to IDU would (a) be sensitive to how stigmatizing medical encounters exacerbate harms, (b) prioritize the concerns of patients and ensure their involvement in making shared decisions about their care, and (c) consider a full range of options even in cases where a patient is not abstaining from drug use.^{18,19}

Despite a common ethos of beneficence toward patients, scholarship suggests that the harm reduction model sometimes clashes with paternalistic medical models. In a paternalistic medical model, physicians are experts who know the best treatment option and encourage treatment ‘compliance’ from patients whose autonomy is impaired by addiction. Harm reduction, by contrast, sees a person who uses drugs as having agency and expertise based on their lived experience.²⁰ Discordance between the models may present barriers to implementation of harm reduction approaches in health care settings.

We performed a qualitative study to identify the barriers and facilitators to implementing harm reduction principles in the care of hospitalized patients with infectious complications of IDU. We conducted interviews with health care professionals (HCPs) who elicited the factors they consider relevant to four infection treatment options: long-term hospitalization, oral antibiotics, long-acting antibiotics at an infusion center, and

outpatient parenteral antibiotics. These findings will enable us to design collaborative interventions and harm reduction-based treatment decisions.

Methods

Study design

This analysis was part of a larger study which used in-depth qualitative interviews with HCPs, community partners, and patients to better facilitate shared decision-making between hospital staff and patients hospitalized with IDU-associated infections. Given the breadth of participant perspectives, this study focuses only on HCP perspectives to better understand barriers HCPs experience to offering outpatient treatment options to hospitalized PWUD. To ensure inclusion of relevant information and to understand the hospital environment in which PWUD are receiving care, we included both HCPs who are directly involved with discharge decision-making (lead HCPs) and other HCPs experienced with and involved in the treatment of PWUD in the hospital, such as palliative care physicians, pharmacists, and addiction counselors (support HCPs) (Table 1).

Study population and recruitment

We recruited HCPs ($n=19$) from a 637-bed, academic, tertiary care medical center located in Portland, Maine using theoretical sampling to include a diversity of perspectives relevant to discharge decision-making and the harm reduction approach. Participants were colleagues of K.T. who recruited them by email. We sampled lead HCPs until we achieved thematic saturation, where additional interviews were not producing new information. We sampled support HCPs to provide a breadth of theoretically relevant knowledge rather than thematic saturation. Consistent with our theoretical sampling approach, we continued to recruit participants as long as our data suggested their input was theoretically relevant.²¹

Methods

A trained and experienced interviewer (M.K.) conducted all interviews using a piloted semi-structured interview guide that encouraged participants to reflect on specific experiences with

patients with a history of IDU. The interview probed factors relevant to treatment decisions, instances in which specific treatment options were considered, and experiences with patients who underwent self-directed discharge. The final portion of the interview elicited beliefs and attitudes toward shared decision-making with PWUD. HCPs participated in interviews by phone or videoconference call due to COVID-19 restrictions and lasted between 30 and 60 min. Interviews were digitally recorded and transcribed verbatim by a professional medical transcription service.

Analysts redacted any information that could be used to identify participants. Two authors indexed and thematically analyzed the transcripts using MAXQDA software and iterative categorization, a systematic approach that uses both deductive and inductive codes to first describe and then interpret qualitative data.²² Following indexing, analysts generated themes, which are patterns that appeared across topics and which related to the research aim.²³ The analytical team evaluated the robustness of themes through review of supporting excerpts and consideration of alternative interpretations.

Results

The 19 participants in the sample included 8 lead HCPs and 11 support HCPs with a breadth of expertise (Table 1).

We present five themes relevant to our aim: (1) availability of resources; (2) the uneven distribution of knowledge about treatment options and community resources; (3) the notion that hospitals protect against structural harms; (4) degree of HCPs' trust in PWUD to make treatment decisions; and (5) how hospital discharge responsibility is shared.

Resources supporting feasibility of outpatient options

HCPs recognized a variety of resources as necessary for patients to be successful with outpatient options, and lack of such resources can be a barrier. Lead HCPs said structural determinants, such as housing instability and lack of social support, impact the viability of outpatient options. Lead HCPs generally agreed that patients experiencing such issues were not good candidates for outpatient options:

Table 1. Description of study population, stratified by lead and support HCPs.

| Service | Lead HCPs ^a N = 8 | Support HCPs ^b N = 11 |
|--|---------------------------------|-------------------------------------|
| Subspecialists | | |
| Addiction | – | 4 |
| Infectious diseases | 3 | 2 |
| Palliative care | – | 1 |
| Hospitalist | | |
| Care management/Nursing administration | – | 4 |
| HCP, health care professionals. ^a Lead HCPs defined as those involved with decision-making. ^b Support HCP defined as those providing supporting information about the contexts of the decisions. | | |

...even if it was a possibility to [. . .] have them discharged [. . .] with the PICC line, if they don't have housing, where is all the antibiotic going to be stored? There's no refrigerator. Where's home health going to meet them? How is the PICC line going to stay clean? Same thing with the oral antibiotics. So, how is the patient going to make sure that they don't lose the antibiotic if they don't have a house to keep it in?. (Infectious Disease Physician – Lead HCP 16)

HCPs reported that patients living in rural areas or those with 'inconvenient and unreliable transportation' would struggle filling prescriptions for oral antibiotics or traveling to infusion centers. Lead HCPs also recognized that, in light of these structural issues, following-up with medical care is challenging for patients.

While resources exist to address these barriers, they are limited. Staff shortages and stringent home health criteria (i.e. needing to be 'home-bound') were barriers, and many HCPs reported challenges finding home health agencies willing to work with PWUD:

...that's what we were told [even] for people who were housed [. . .] the added complication of home health places refusing to go into any home that has injection drug use. Even a history of injection drug use. [. . .] I wonder if, is it really a policy or is it a decision that they make that isn't a policy, but just

an unwritten opinion. (Addiction Professional – Support HCP 8)

Furthermore, insurance gaps limit treatment options. Cost was often cited as a ‘number one challenge’ for outpatient treatment options. Home health aides necessary for OPAT, access to infusion centers, and oral antibiotics all typically require insurance coverage and approval:

They do need to have insurance to pay for [home health] services. We’ve run into times where we have had people privately pay, but I found out that for visiting nurses and visiting physical therapy, it was \$200 per session, per service. And that was one visit. And these patients require multiples. So sometimes it’s not feasible for many people. (Nurse Manager – Support HCP 18)

Even for insured patients, prior authorization poses an additional barrier to receiving services in a timely manner, particularly if an antimicrobial is not standard of care.

In summary, resources related to structural determinants of drug use and related harms are insufficient and objectively limit outpatient treatment options for patients experiencing these structural harms, such as homelessness and lack of insurance. HCPs recognize these limitations as unchangeable and therefore do not offer all outpatient treatment options.

Knowledge among health care providers

Gaps in knowledge among HCPs could also shape which treatment options are offered. Many lead HCPs were not aware of community resources available to support patients:

...a lot of providers don’t even know these resources. I just happen to have fallen into this little niche where I know people. [. . .] If this isn’t your area of care, then you’re just like, ‘Well, I don’t know, they just discharge like everybody else’. (Hospitalist – Lead HCP 9)

There was uncertainty about whether specific resources, such as home health aides and space at infusion centers, would be available for PWUD. Several HCPs believed that a home health agency would not consider a patient for services who had a history of SUD or unstable housing:

The home health companies, for a long time, which I can’t speak to them very recently, a lot of them were just a flat out no if they had a history of IV drug use. So absolutely, 100%, some of the barrier was just no company to do it. (Hospitalist – Lead HCP 11)

However, a nurse manager (HCP 18) and a manager of a home health organization (HCP 19) confirmed that most agencies are willing to visit patients, including those with a history of drug use, in a shelter or halfway house under certain circumstances in which the location was safe (e.g. free of violence) for both parties, and there was a private, clean area for antibiotic administration.

Knowledge of antimicrobial options was a second area of concern. Lead HCPs without infectious disease specialization expressed reluctance about prescribing any antibiotic that was not standard of care. Many lead HCPs believed that oral antibiotics were less effective than daily IV antibiotics. Because of this perceived lower efficacy, they tended to offer oral antibiotics only as a contingency plan when patients choose self-directed discharge. However, an infectious disease pharmacist noted that if the organism and severity of the infection allow, there are evidence-based oral antibiotics that are effective against IDU-associated infections, especially if the patient has already received an initial course of IV antibiotics. This approach did not seem to be common knowledge among HCPs without infectious disease specialization.

These various gaps in knowledge contributed to lead HCPs not offering the full spectrum of discharge options for patients. Some participants suggested that clear and up-to-date guidelines would help when expert consultation is not feasible.

Hospitals perceived as protective

Lead HCPs were reluctant to offer outpatient options in place of prolonged hospitalization because they believed that they were promoting patient well-being and preventing undue harm from forces extrinsic to the hospital. Implicit in these views is that the hospital is a refuge that protects patients from poor health outcomes and return to substance use:

. . . We always worry about relapse into substance use when someone leaves the hospital. And if someone's supposed to be taking daily antibiotics or going to an infusion center, but they get back into using heroin or stimulants, that's much less likely to happen. So, I think we worry about that follow up and consistency. . . and, maintaining the cleanliness of that line and safety of that line while they're out in the community. (Hospitalist – Lead HCP 5)

At least if they're in the hospital, they're as protected as we can make them, but out in the community, there's just no protection. (Addiction Professional – Support HCP 8)

However, lead HCPs also recognized that hospitalization can be harmful due to stigmatizing encounters, reliving traumatic experiences, or nosocomial infections. Some HCPs recognized that patients may delay seeking medical care due to fears of mistreatment based on previous experiences of feeling disrespected, stigmatized, or judged in hospitals:

[For a lot of patients] just the idea of setting foot inside [the hospital] is they can't handle it. And a lot of times, that's because of treatment that they've had in the emergency department. Like I said, it just takes one or two bad encounters to develop a lot of medical related trauma. And then they come in [to clinic] with fevers and sweats and huge abscesses and I'm like, 'You got to go. You got to go for this one'. And they don't go. . . (Infectious Disease Physician – Lead HCP 6)

Many lead HCPs acknowledged that stigmatization may motivate patients to discharge themselves before treatment is complete. They pointed out that practices such as room searches, indoor confinement, and lack of freedom resemble a jail-like environment, which is triggering for some patients:

. . . It's like a jail to them, they can't have their friends, everything searched, everybody is very distrusting of them, which is always not a good way to start the relationship. . . (Infectious Disease Physician – Lead HCP 11)

Although the hospital could help patients by connecting them to resources, this is not always the reality:

Part of me likes having patients stay in the hospital. Not in the current model that we use, but I like the idea of having them be a captive audience. If we could really bridge the gap with outpatient services and utilize the time to have vocational services and have other really in-depth root cause, changing their social determinants of health, if we could help them get housing. If we could change those things that may actually change their disease process, well then maybe that time is beneficial. Right now that time is not beneficial. (Hospitalist – Lead HCP 9)

Many lead HCPs were resistant to discharging people with history of IDU with a peripherally inserted central catheter (PICC), citing concerns about misuse, but others observed that patients can and do inject substances through their PICC while in the hospital:

Everyone often talks about like, 'Oh, what if they inject through the PICC line?' I'm not actually worried about them injecting through the PICC line because you can talk to them about that and people who inject, do it in the hospital as well as home. I mean we're not protecting them by keeping them in hospital. It's not they're not necessarily injecting. People do it all the time . . . (Infectious Diseases Physician – Lead HCP 6)

In summary, most HCPs believed that long-term hospitalization is the safest option for PWUD because hospitals can be protective against structural determinants of substance use and related harms. HCPs aware of the limitations and harms associated with hospitalization were more open to outpatient alternatives.

Patient capability for decision-making

A harm reduction approach centers patient autonomy in making informed discharge decisions. Many HCPs described how including patients in decisions may encourage more engagement and avoid the negative consequences of self-directed discharge:

. . . I think it's really important to involve the patient in the conversation and you're going to be a lot more successful in getting people to stay if they buy in . . . (Hospitalist Lead – HCP 6)

But I'd like for [an early discharge conversation] to be an option more in the future because it allowed

this patient to have some agency and to make their needs known and to really be part of their care plan in a way that seemed dignified. (Social Worker – Support HCP 12)

However, interviews revealed fears that the patients would make the ‘wrong choice’, potentially leading to worse outcomes. Some HCPs would not even tell patients about outpatient options, citing concerns about patient judgment:

I’m not a physician that writes in my note, ‘if patient decides to have a self-directed discharge, give them doxycycline’. I think I worry that if that’s relayed to the team, it might be relayed to the patient. [. . .] And I think once a team or a patient hears that, they may think that the therapy would be equivalent, and why would they stay? (Infectious Diseases Physician – Lead HCP 16)

HCPs were concerned that patients might not understand the relative efficacy of the options or the severity of their infections. These fears are greatest earlier in a patient’s hospitalization, when withdrawal, pain, and other stressors can significantly affect decision-making:

Obviously a lot of times patients come in and they’re withdrawing from their substances. So, I think that’s not a good time. [. . .] once their pain and withdrawals are under control, that would be a good time to talk about it as soon as possible. (Hospitalist – Lead HCP 5)

Past experiences also shaped how lead HCPs thought about offering these antimicrobial treatments, and several reported greater reluctance after being ‘burned’ by patients who did not complete outpatient treatment. The greatest doubts were expressed for OPAT:

My main concern would be the misuse of line. That would be my first concern, to use the line to inject drugs and certainly lead to the complications, including much worse infections they’ve been treated initially for. (Infectious Diseases Physician–Lead HCP 15)

It’s almost like you’re just giving them easy access to inject . . . And if they got the urge, what is there to stop them from just injecting right into the PICC because our patients sometimes are very impulsive. (Addiction Professional – Support HCP 4)

Concerns about PWUD making poor decisions about their care were closely tied with whether an HCP believed the patient would continue to use substances:

So I think sort of safety and community support, how engaged are they in recovery, if their attitude is that they’re going to just go right back out and continue to use then sending them out say with a PICC line, maybe a less desirable option. (Hospitalist – Lead HCP 14)

Are they going to be able to take oral antibiotics with reasonable adherence for somebody who has very high methamphetamine use? Sometimes I really worry about their ability to be organized enough to take the medications. (Hospitalist – Lead HCP 6)

There were various opinions on whether, and for how long, a patient should abstain from drug use before being offered OPAT. Only one lead HCP (Hospitalist) indicated openness to considering the option for a patient with ‘functional and controlled’ substance use. Most lead HCPs required some degree of SUD treatment, and one suggested that patients need at least 1 year of sobriety.

However, some HCPs emphasized that patient preferences should be discussed, even when those preferences are against what HCPs believe to be the best treatment course for the patient. One support HCP noted that withholding options such as oral antibiotics may backfire:

It may help to present [oral options] to patients. Now, I understand the pros and cons of that: the moment you plant the seed in the patient, then that’s the expectation [. . .] that’s all the patient might be fixated on. But I think [. . .] the moment you say, ‘We’re going to see you for the next six weeks here’, they’re already thinking about, ‘When am I going to leave AMA?’ (Pharmacist – Support HCP 3)

The potential for patients to self-discharge means that they are ultimately involved in decisions about hospitalizations regardless of provider preference:

[Patients] make the decision to leave against medical advice all the time. Right? And we have to accept it.

We can't force them to do things we want [. . .] if they have capacity. [. . .] Some people might view taking oral antibiotics and leaving as a bad decision, but you know, it might be the best decision for that person. (Palliative Care Physician – Support HCP 13)

It's totally appropriate to offer second line treatment when the patient has declined the safer alternative and understands that it might not work. But you also have to give them the knowledge of what that looks like and at least try to set them up for success. (Hospitalist – Lead HCP 6)

Responding to concerns among their colleagues about PICC misuse, HCPs with extensive experience with PWUD advised against focusing on such concerns, recognizing that if a patient is going to inject substances, they can do so without a PICC:

It doesn't seem to me that having a PICC line available is going to change anybody's mind about injecting drugs versus not. (Hospitalist – Lead HCP 5)

One nurse participant (support HCP) reported how a patient had explained, 'that's really offensive to me because I don't need a PICC line to use drugs. I have other ways to use drugs'. Some HCPs suggested misuse was unlikely. A nurse with a long history of working with PWUD in an outpatient setting claimed that most patients were actually fearful of injecting into the PICC due to likely overdose, are more likely to inject where they are accustomed to injecting (e.g. between the toes), and had never heard of anyone injecting directly into a PICC. Reflecting on these concerns, another lead HCP suggested that efforts to predict misuse may be inappropriate:

Well, I mean of course having a PICC line available for drug use seems like a scary idea, you're just allowing people to use. But the flip side of that I think and what I've learned from harm reduction is that [. . .] maybe that's not for us to make judgments about. (Hospitalist– Lead HCP 9)

In summary, while HCPs see value in involving patients in decisions about their treatment course, many were hesitant to trust that patients with SUD are capable of choosing wisely among discharge options. HCPs who were more likely to

offer all outpatient options insisted on the importance of patient autonomy, regardless of substance use history.

Responsibility for patient outcomes

A central question HCPs raised is over who bears responsibility if they offer outpatient antimicrobial options to PWUD and the patient has a bad outcome:

. . . I could see that patients should be at least in part responsible for these outcomes, but we as physicians, this is what we do. We take responsibility, we take charge. Patients are under our care. So, it is something that we assume responsibility for, for these situations, for their care during this treatment and potential complications. (ID Physician – Lead HCP 15)

This question is complicated by frequent changes in the care team over the course of a patient's hospital stay. Some hospitalists preferred to avoid the issue by deferring to infectious disease specialists regarding all decisions about treatment:

. . .because I'm not an expert, I don't feel comfortable with being responsible for somebody leaving with a line. So I would defer to the infectious disease specialists, and I would also in my deferral to them, allow them to accept the responsibility for that. (Hospitalist – Lead HCP 10)

The following excerpt furthermore speaks to a sense among other HCPs that providing a PICC would make them partially responsible for adverse outcomes or a patient's drug use:

I think that's another concern, is if patients go out and that line itself gets infected. It goes back to who inserted it. It would look potentially bad on the institution, then, if the patient ends up getting a line related infection. (Pharmacist – Support HCP 3)

However, some HCPs countered that liability should only be a concern when HCPs provide 'substandard care' that lacks a safe transition to outpatient care or does not provide adequate education regarding the safe use of the PICC:

The liability I think comes when you give them substandard care when you could have given better care or when you don't attempt to provide any care

or support or treatment that allows them a reasonable chance at a safe transition to the outpatient world. (Hospitalist – Lead HCP 6)

Some HCPs asserted that the risk of PICC misuse also needs to be weighed against the risk that a patient will undergo in self-directed discharge without completing treatment, reflecting on liability and respect for patients:

It seems like providers are really concerned about the liability of somebody leaving with PICC line and using, but they're not necessarily concerned about the liability of not treating patients with respect, having them leave the hospital early and then returning to active use in the absence of treatment. (Addiction Professional – Support HCP 1)

As with gaps in knowledge, some HCPs suggested that such concerns could be addressed by implementing clear guidelines and harm reduction-based policies, which could offload responsibility from individual HCPs.

Discussion

Through qualitative interviews with HCPs, we collected contextual information for hospital discharge decision-making in people with IDU-associated infections and identified barriers to outpatient treatment options. While most HCPs seemed open to discussing outpatient options in some contexts, several barriers were apparent. HCPs may default to inpatient IV antimicrobials based on misconceptions about existing resources and treatment efficacy of non-standard options, such as oral or long-acting antimicrobials. Several HCPs felt that the hospital could help alleviate some structural problems associated with substance use (for example, housing insecurity and access to SUD treatment), while many also recognized that some patients have negative experiences in the hospital that alienate PWUD from medical systems. Some HCPs were further concerned that if they presented all possible treatment options, patients may choose an inappropriate or ineffective option in favor of leaving the hospital prematurely. This concern may reflect HCPs' lack of trust in the ability of PWUD to make good decisions about their care. Finally, uncertainty about who might be held responsible for any poor outcomes with outpatient treatment led some HCPs to only consider

inpatient treatment options for patients who have a history of SUD.

Although some of the barriers to outpatient care were unmodifiable, several barriers could be alleviated by creating a shared understanding of the structural determinants of substance use and related harms, as outlined in the Harm Reduction Implementation Framework (HRIF) (Table 2). The HRIF is a seven-step framework to help organizations fully and effectively implement a harm reduction approach that is contingent on a commitment to social justice and reducing stigma through incorporating experiential voices and evidence-based practices.¹⁷ For example, rather than basing decisions solely around assessments of whether a patient will use the PICC for injecting drugs, HCPs should be fully aware of the actual structural barriers to OPAT, such as unstable housing and insurance status. Addressing these structural determinants of substance use, (e.g. housing for patients experiencing homelessness), may reduce the barriers to offering outpatient treatment options to patients. Implementation of programs and team-based approaches such as integrated treatment for SUD can also address some of these structural barriers.⁵ Key components of this approach include an interdisciplinary team of infectious disease and addiction medicine clinicians, infusion nurses, pharmacists, case managers, social workers, and caregivers.²⁴ This integrated, multidisciplinary team approach, where patients receive both antimicrobial and SUD treatment, has been shown to improve patient outcomes, such as reduced length of stays.²⁵

In this study, we found that misconceptions around PICC misuse and inferiority of outpatient antimicrobial options were common. Prior studies have shown that PICC misuse is relatively uncommon among PWUD.⁹ Moreover, in select groups of patients, growing evidence supports that oral antimicrobials can be as effective as IV antimicrobial options.^{26,27} Many clinicians may still consider IV antibiotics as first-line therapy, but this approach may be based on personal experience, rather than evidence-based practice.²⁸ Addressing knowledge gaps in PICC misuse and educating HCPs on new and current antimicrobial research are important for facilitating a harm reduction approach to discharge decision-making. Also, addressing knowledge gaps on factors that facilitate outpatient treatment, such as home

Table 2. Summary of study themes, potential interventions, and HRIF tenets.^a

| Theme | Intervention | HRIF tenet |
|------------------------|---|------------|
| Inadequate resources | <ul style="list-style-type: none"> - Address and change structural barriers, such as housing insecurity. - Utilize team-based approaches to care. | #1 |
| Knowledge gaps | <ul style="list-style-type: none"> - Address knowledge gaps in PICC misuse, antimicrobial efficacy, and existing community resources. - Harm reduction education. - Team-based approaches to care. | #1 #3 |
| Hospital as protective | <ul style="list-style-type: none"> - Address stigmatization and mistreatment in hospital through effective leadership and organizational culture. - Address restrictive hospital policies. | #3 |
| Trust in patients | <ul style="list-style-type: none"> - Include patient voices in decision-making. - Assess for capability to make decisions. | #2 |
| Responsibility | <ul style="list-style-type: none"> - Implement harm reduction-based guidelines on discharge. - Utilize interdisciplinary teams. | |

HRIF, Harm Reduction Implementation Framework; PICC, peripherally inserted central catheter.
^aHRIF tenets (1) create a shared understanding of the structural determinants of substance use and related harms, (2) ensure meaningful inclusion of experiential voices in policies, programs, and services, and (3) promote an organizational culture of harm reduction.

health policies and community resources, would further allow HCPs to expand treatment options for patients.

Most HCPs in this study expressed concern that other care team members would not be supportive of offering all discharge options. This view further highlights the importance of education and other methods to address differences in care philosophies. The HRIF points out that creating an organizational culture of harm reduction and utilizing effective hospital leadership to ensure organizational culture shifts can prevent widespread stigmatization and improve outcomes.¹⁷ An organization with a culture of harm reduction is one in which staff feel safe discussing substance use and harm reduction, and they are provided with educational opportunities that improve patient care.¹⁷ This training would include sharing evidence-based examples of successful harm reduction implementation and firsthand stories from patients. OPTIONS-DC, a multidisciplinary and interprofessional care conference developed at Oregon Health & Science University, works under harm reduction and patient-centered models to identify treatment options which are acceptable to both patients and HCPs, and investigators demonstrated that it is entirely feasible to integrate practices of harm reduction into treatment for patients who need long-term antibiotic

treatment.²⁹ Other studies have shown that hospital-based harm reduction promotes patient-centered care.³⁰ In our study, many participants emphasized harm reduction principles and the importance of prioritizing the needs and preferences of PWUD, even when those preferences are against what HCPs believe to be the best treatment course for the patient.

Reframing judgmental and stigmatizing misconceptions is also important for the promotion of a culture of harm reduction. Although some HCPs considered the hospital as protective, patients often experience stigmatization and negative experiences in the hospital. Prior studies have shown that many PWUD believe they will receive poor care at the hospital and that HCPs do not care about their lives.¹² Stigmatization is a key contributor to self-directed discharge, and studies show that odds of hospital readmission for infections in PWUD who have undergone self-directed discharge were almost fourfold higher than standard discharge.²⁸ The most fundamental aspect of a harm reduction approach is recognizing that a medical encounter is not an isolated event, but part of a series of events that shape how a patient thinks about, experiences, and interacts with the medical system. Addressing stigmatization and mistreatment may reduce traumatizing hospital experiences for PWUD, allowing them to stay in

the hospital long enough to create a patient-centered treatment and discharge plan through shared decision-making. Strengthening the patient-provider relationship through the inclusion of patient preferences in treatment plans, from a harm reduction perspective, is essential to encouraging future engagement with systems of medical care and reducing feelings of stigmatization in the hospital. In addition, altering or eliminating restrictive hospital policies (e.g. smoking, visitors, room searches) could improve patient experiences while hospitalized and further encourage engagement with their treatment plan.

An important tenet of harm reduction principles is the absence of judgment of PWUD. Through increased efforts at harm reduction education and offering space for reflection, HCPs can address their biases and mistrust in PWUD to make 'good' decisions. Changing stigmatizing attitudes and behaviors of HCPs, especially those of experienced providers, can be challenging. Organizations can learn from other institutions that have adopted approaches to reduce stigma and improve harm reduction knowledge.³¹ It is also important to recognize that there are instances in which patients lack capacity to make decisions, such as when they are unable to communicate due to sedation.³² In reality, it may not be appropriate to offer every discharge and treatment option to every patient, but if HCPs approach this decision with a harm reduction approach and without preconceived judgments about patient capability to make decisions, then there is potentially a decreased risk of withholding options which may in fact be appropriate for the patient. However, our study suggests that these decisions should be made with care and with the entire care team, after considering all possible solutions for existing barriers to outpatient treatment.

Finally, several HCPs were hesitant to offer outpatient treatment because they were concerned about who held responsibility for adverse patient outcomes if the patient were to choose a 'non-standard' option. Harm reduction-based guidelines and procedures surrounding treatment and discharge options may address this concern. Patient-centered decision models informed by an interdisciplinary team of providers, such as OPTIONS-DC, both support a harm reduction-based approach and disperse responsibility of the treatment plan among multiple providers.²⁹

This study adds to existing research on HCP perspectives on the care of PWUD, which primarily focused on inpatient treatment, access to addiction medicine services, and attitudes toward PWUD.³³ Englander *et al.*³⁴ describe HCP perspectives on the transition of care from hospital to home and identify many overlapping themes to this study (such as resource availability and education among care team members) but do not focus on PWUD or the decision-making process.

Our findings should be considered in light of the following limitations. First, we recruited and interviewed HCPs at a single academic medical center, so our findings may not be applicable to other hospitals. However, we reached thematic saturation among lead HCPs in our sample, and our results are consistent with prior literature on HCP perspectives toward PWUD. Second, examining patient and community perspectives was out of scope for this article, but future work will include their perspectives to gain a more comprehensive understanding of this important topic. Third, our study was conducted during the second year of the COVID-19 pandemic, which may have altered typical HCP and patient experiences and interactions, beyond those that might normally be experienced. Fourth, no legal professionals were interviewed for this study, so debates over liability and legal repercussions were speculative and therefore a limitation of this study. Finally, due to social desirability bias, it is possible that some participants may not have voiced their true opinions during the interviews.

Conclusion

In our study, we found that HCPs perceived several barriers to outpatient care for patients with IDU-associated infections. Addressing structural drivers of substance use, utilizing team-based approaches to care, addressing knowledge gaps and stigmatization, creating an organizational culture of harm reduction, including patients in treatment conversations, and implementing clear guidelines are all important for alleviating these barriers and for adopting a harm reduction approach to discharge decision-making. Even HCPs who adopt a harm reduction approach, however, may have divergent perspectives on outpatient antimicrobial efficacy and treatment options. HCPs should thus consider whether remaining hospitalized is more protective or more harmful than being in the community.

Declarations

Ethics approval and consent to participate

The MaineHealth Institutional Review Board reviewed this study and deemed the project exempt (ID # 1715061-1). Research staff obtained verbal consent from participants for inclusion and recorded confirmation in a HIPAA-compliant online database for patient participants.

Consent for publication

Not applicable.

Author contributions

Nichole Moore: Conceptualization; Data curation; Formal analysis; Writing – original draft; Writing – review & editing.

Michael Kohut: Formal analysis; Investigation; Methodology; Software; Writing – original draft; Writing – review & editing.

Henry Stoddard: Formal analysis; Writing – review & editing.

Debra Burris: Project administration; Writing – review & editing.

Frank Chessa: Investigation; Writing – review & editing.

Monica K. Sikka: Investigation; Writing – review & editing.

Daniel Solomon: Investigation; Writing – review & editing.

Colleen M. Kershaw: Investigation; Writing – review & editing.

Ellen Eaton: Investigation; Writing – review & editing.

Rebecca Hutchinson: Conceptualization; Investigation; Writing – review & editing.

Kathleen M. Fairfield: Conceptualization; Investigation; Methodology; Supervision; Writing – review & editing.

Thomas J. Stopka: Conceptualization; Funding acquisition; Investigation; Methodology; Supervision; Writing – review & editing.

Peter Friedmann: Investigation; Supervision; Writing – review & editing.

Kinna Thakarar: Conceptualization; Data curation; Funding acquisition; Investigation;

Methodology; Supervision; Writing – original draft; Writing – review & editing.

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Availability of data and materials

De-identified data can be made available on request to corresponding author.

ORCID iDs

Monica K. Sikka  <https://orcid.org/0000-0001-8192-8019>

Kinna Thakarar  <https://orcid.org/0000-0003-4689-0240>

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