



'I feel like they're actually listening to me': a pilot study of a hospital discharge decision-making conversation guide for patients with injection drug use-associated infections

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Abstract

Background: The prevalence of injection drug use (IDU)-associated infections and associated hospitalizations has been increasing for nearly two decades. Due to issues ranging from ongoing substance use to peripherally inserted central catheter safety, many clinicians find discharge decision-making challenging. Typically, clinicians advise patients to remain hospitalized for several weeks for intravenous antimicrobial treatment; however, some patients may desire other antimicrobial treatment options. A structured conversation guide, delivered by infectious disease physicians, intended to inform hospital discharge decisions has the potential to enhance patient participation in decisions. We developed a conversation guide in order to: (1) investigate its feasibility and acceptability and (2) examine experiences, outcomes, and lessons learned from use of the guide.

Methods: We interviewed physicians after they each piloted the conversation guide with two patients. We interviewed patients immediately after the conversation and again 4–6 weeks later. Two analysts indexed transcriptions and used the framework method to identify and organize relevant information. We conducted retrospective chart review to corroborate and contextualize qualitative data.

Results: Eight patients and four infectious disease physicians piloted the conversation guide. All patients ($N=8$) completed antimicrobial treatment. Nearly all participants believed the conversation guide was important for incorporating patient values and preferences. Patients reported an increased sense of autonomy, but felt post-discharge needs could be better addressed. Physician participants identified the guide's long length and inclusion of pain management as areas for improvement.

Conclusions: A novel conversation guide to inform hospital discharge decision-making for patients with IDU-associated infections was feasible, acceptable, and fostered the incorporation of patient preferences and values into decisions. While we identified areas for improvement, overall participants believed that this novel conversation guide helped to improve patient care and autonomy.

Keywords: infective endocarditis, injection drug use, shared-decision making, substance use

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Introduction

Nationally, and in rural states such as Maine, the incidence of injection drug use (IDU)-associated infections and hospitalizations has increased,^{1–6} and this trend is expected to continue. Due to unsafe supply and challenges in accessing prevention and treatment services,⁷ the trend may be exacerbated by the COVID-19 pandemic and its aftermath. Severe IDU-associated infections are often treated with 4–6 weeks of intravenous (IV) antimicrobial treatment in concordance with treatment guidelines. However, transitioning care to the outpatient setting can be challenging: many home health agencies and post-acute care facilities will not accept patients with substance use disorders (SUD), possibly due to stigma and restrictive policies, such as the need to coordinate with opioid treatment programs for patients treated with methadone.⁸ In practice, many inpatient-based health care professionals recommend that people with IDU-associated infections remain hospitalized for prolonged periods because of the concern that they will inject drugs into indwelling central venous catheters, thereby risking another infection or death.⁹ While prolonged hospitalizations might be justified to prevent self-harm, they may also infringe on patient autonomy. Patient autonomy is one of the central principles of medical ethics;¹⁰ however, patients are often not given the ability to choose among medically feasible options which align with their values. In addition, this approach can be stigmatizing and result in costly hospitalizations with unfavorable outcomes such as premature discharges (also known as self-directed discharges (SDD) or leaving ‘against medical advice’).^{11,12} Premature discharges are particularly unsafe for rural patients, who often lack access to important resources.¹³ Instead, other treatment options, such as being discharged with a central venous catheter for outpatient IV therapy, weekly long-acting antibiotic IV infusions, or oral antibiotics, coupled with harm reduction services, merit consideration as they may improve engagement in care.^{14,15} However, these treatment options have been understudied, particularly in rural states, and there is no standardized approach to discussing these antimicrobial options with patients.

Shared decision-making has the potential to transform care for patients hospitalized with IDU-associated infections. Guide-based shared decision-making research is lacking in stigmatized populations, such as patients with SUD. Experts

in palliative care have developed conversation guides to increase rates of serious illness conversations between patients and their providers.^{16,17} These guides provide language for providers to use, along with a structured approach to enable providers to confidently engage in exploration of patient values and preferences.

In this pilot study, we developed a conversation guide for clinicians to utilize with patients with IDU-associated infections discharged to rural communities or counties at risk for HIV/hepatitis outbreaks.¹ The goals of the guide were to improve patient autonomy and help clinicians and patients with IDU-associated infections make shared decisions about hospital disposition (i.e. remain hospitalized, discharge with central line, discharge with weekly infusions, or discharge on oral antimicrobials). Our study objectives were to (1) develop and pilot a structured conversation guide for hospital discharge decision-making with patients experiencing IDU-associated infections, (2) investigate the guide’s feasibility and acceptability, and (3) examine patient and provider experiences, patient outcomes, and lessons learned.

Case study

To demonstrate how the guide can be used in practice, we provide a case presentation: a 40-year-old man with severe opioid use disorder, treated with buprenorphine/naloxone, chronic hepatitis C, and posttraumatic stress disorder, was hospitalized for methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia, possible aortic valve endocarditis, and vertebral osteomyelitis. We will later illustrate how the conversation guide can be used in practice for this case presentation.

Methods

Study design

Based on earlier research conducted with health care professionals (HCPs),⁹ patients, and community partners (Eckland *et al.* personal communication, 31 January 2023), we developed a conversation guide (Supplemental Appendix 1). We built on existing decision matrices and risk assessments developed by infectious diseases (ID) and palliative care experts, with real-time guidance and technical advice. Building on work by Ariadne labs,¹⁸ elements of the guide include setting up the conversation, assessing understanding

of the infection, sharing prognosis, exploring key topics (such as patient preferences and values, pain management), antimicrobial trade-offs [remaining inpatient, discharging home or elsewhere with a peripherally inserted central catheter (PICC), partial IV/oral antimicrobials, intermittent or weekly infusions, of oral antimicrobials], and closing the conversation.

To assess the feasibility and acceptability of the guide, we piloted it with 8 patients with IDU-associated infections and 4 ID physicians (each of which used the guide with 2 patients). We used a case studies approach: each use of the guide constituted an in-depth case study. We used the framework method to organize our cases,^{19,20} triangulating perspectives from the patient, physician, and objective measures. We interviewed the patient immediately after using the conversation guide and again 4–6 weeks later, to assess long-term impacts. We interviewed each physician who piloted the guide immediately afterward to obtain feedback on guide usability. We measured objective outcomes, such as antimicrobial treatment completion and engagement in care after hospital discharge, by retrospective review of electronic health records (EHRs). Reporting race and ethnicity in this study was mandated by the US National Institutes of Health (NIH), consistent with the Inclusion of Women, Minorities, and Children policy. Race was self-reported by study participants, and race categories were defined by investigators based on the US Office of Management and Budget's Revisions to the Standards for the Classification of Federal Data on Race and Ethnicity.²¹ We obtained informed consent for all study participants. The MaineHealth Institutional Review Board reviewed this study and deemed it exempt.

Recruitment

To pilot the guide, we recruited patients hospitalized with IDU-associated infections at a single tertiary care hospital. We included patients who were (1) hospitalized with IDU-associated infection, (2) able to give informed consent, and (3) from a rural area using Rural-Urban Commuting Codes²² or county deemed high risk for HIV/viral hepatitis outbreaks.²³ Exclusion criteria included acute psychosis and participation in prior research interviews to develop the guide. ID physicians were recruited to pilot the guide based on availability, willingness to participate, and diversity of

experience. Prior to piloting the guide, ID physicians participated in a 30-min training by coauthor K.T., which included a primer for the conversation guide (Supplemental Appendix 2), a review of the conversation guide itself (Supplemental Appendix 1), and an opportunity to role-play the guide. In total, the study team approached four ID physicians and eight patients; no participants declined to participate during the informed consent process.

Analysis

To triangulate information, we sought an analytical approach that could allow us to treat each case as an analytical unit, while combining information from multiple sources without losing the context of each case. We therefore used the framework method to organize and analyze interviews with physicians and patients.^{19,24} This method utilizes a matrix wherein each case occupies a separate row, and categories of information occupy columns. Categories were determined *a priori* and included acceptability of the guide, perceived benefits and challenges to its use in shared decision-making, and satisfaction with the conversation and the decision. We also performed a descriptive analysis of outcomes including the treatment decision that resulted from the conversation guide [e.g. inpatient, outpatient, partial IV/oral (PO), or intermittent or weekly antimicrobial infusions], antimicrobial treatment completion, initiation of medication for opioid use disorder treatment, and use of preventive strategies such as naloxone prescribing. Information from interviews, along with data from EHR (demographics, clinical course outcome), were combined to create a narrative of each case to capture and summarize the full context of the interaction, health status, and issues that came into play during the conversation guide. The framework approach facilitates thematic analysis across cases by comparing and contrasting information summarized in each category.²⁵ Analysts identified themes to capture perspectives on the major benefits or value of the guide as well as challenges to its use. Based on the knowledge and values relevant to patient decisions, we determined whether the conversation guide effectively addressed these issues.

Analysts redacted any information that could be used to identify participants. Two analysts (M.K., H.S.) used MAXQDA, a qualitative data analysis

software, to index transcripts, using the Iterative Categorization method.²⁵ For each cell in the matrix (summarized in Table 2), analysts reviewed and summarized relevant coded excerpts. Analysts checked one another's work by reviewing excerpts to ensure summaries accurately captured relevant information. We conducted retrospective chart review to corroborate and contextualize qualitative data and conducted descriptive analyses, summarizing the frequencies of patient characteristics and treatment outcomes. We used STATA (12.1, College Station, TX) for quantitative analyses.

Results

Eight patients and four ID physicians piloted the conversation guide. Using chart review, we verified that all patients ($N=8$) completed antimicrobial treatment and 88% were discharged on medication for opioid use disorder. The median age of physicians was 44 and half of the physicians identified as female. A summary of patient characteristics, hospital discharge decision, and treatment outcomes is presented in Table 1. Additional information regarding antimicrobial treatment regimens is available in Supplemental Appendix 3. Following the conversation guide, most patient participants chose to remain hospitalized for their antimicrobial treatment, though half eventually transitioned to either oral antimicrobials ($n=3$) or weekly long-acting infusions ($n=1$). One patient participant was readmitted within 30 days for hydropneumothorax/decortication, but notably not for microbiologic failure or substance use issue.

All physicians and most patients stated that the conversation guide was important for incorporating patient preferences into consideration of antimicrobial treatment options. Patients appreciated more autonomy and their voices being included in their care. Physicians felt the guide facilitated their understanding of patient values, and antimicrobial treatments were better aligned to patient values and preferences. Participants identified the length of the guide (potentially too long/not enough time to devote to it on a busy day), and addressing post-discharge needs such as housing as areas for improvement. Some physician participants felt discussing pain management was out of scope for their practice and did not feel comfortable discussing pain management options with patient participants (Table 2).

Table 1. Characteristics of patient participants with whom infectious disease specialists interacted using a structured conversation guide focused on injection drug use-associated infections, Maine, 2022.

	N (%)^a
<i>Demographics</i>	
Age (median)	40
Gender	
Female	4 (50%)
Male	4 (50%)
Transgender	0
Unhoused	5 (63%)
White	8 (100%)
Insurance	
Medicaid	8 (100%)
Rural-urban commuting code	
Metro	7 (88%)
Small town	1 (12%)
County deemed high risk for viral hepatitis/HIV outbreak	6 (75%)
<i>Health characteristics</i>	
Type(s) of infection ^b	
Septic joint	2 (25%)
Osteomyelitis	3 (38%)
Skin and soft tissue infection	2 (25%)
Bacteremia	6 (75%)
Epidural phlegmon/abscess	2 (25%)
Possible or definite infective endocarditis	2 (25%)
Empyema	1 (13%)
HIV	0 (100%)
Hepatitis B	1 (14%)
Hepatitis C	5 (63%)
Substance use diagnosis ^c	
Severe opioid use disorder/not otherwise specified	8 (100%)

(Continued)

Table 1. (Continued)

	N (%) ^a
Stimulant use (not otherwise specified)	4 (50%)
Alcohol use (not otherwise specified)	3 (38%)
Outcomes	
Median length of stay (days)	37
Decision after conversation guide	
Inpatient	5 (62%)
Intravenous to oral antibiotics if clinical progress	3 (38%)
Antimicrobial treatment results	
Remained inpatient	4 (50%)
Intravenous to oral antimicrobial transition upon discharge	3 (38%)
Weekly infusion	1 (13%)
Completed antimicrobial treatment ^d	100%
Engaged in substance use disorder treatment during hospitalization	100%
Discharged on medication for opioid use disorder ^e	7 (88%)
Discharged with naloxone	7 (88%)
30-day re-admission ^f	14%

^aMay not add up to 100% due to rounding.
^bPatients could have >1 type of injection drug use-associated infection.
^cPatients could have > 1 type of substance use disorder.
^dn = 7; missing follow-up documentation on n = 1.
^en = 4 methadone; n = 3 buprenorphine/naloxone.
^fn = 7 (the single re-admission was due to hydropneumothorax/decortication; unrelated to infectious disease or substance use).

We present six themes that demonstrate the value of the conversation between patients and physicians: (1) patients feeling better informed, (2) improved patient autonomy, (3) safer hospital discharges, (4) patients feeling heard, (5) HCPs learning from patients, and (6) HCPs recognizing the relevance of patient values and goals.

Patients feeling better informed

Patients valued when physicians made them aware of antimicrobial treatment options, which included traditional (completing antimicrobials inpatient) and non-traditional options (i.e. step-down to oral antimicrobials or weekly long-acting injectable antimicrobials):

When there are options, it's nice that those are presented to you and presented in a way that is unbiased. (Patient 3)

Patients felt better informed when they were aware of their inpatient treatment plan and discussed antimicrobial treatment options with their physicians. They also felt that being informed about different treatment options helped them articulate their hospital course and treatment plans to other care team members. In addition, while most patient participants remained hospitalized for their antibiotic course, the additional education about finishing out their antibiotic course with a 'non-traditional' option alleviated some anxiety about remaining in the hospital.

Patient autonomy

Patients valued being involved in the hospital discharge decision process and reported a greater sense of control:

It makes me feel safer going home and have a better control of my health . . . when you get to be . . . part of the decision, . . . it's control. I have a say in my life, because a lot of times in situations like this, you don't. (Patient 3)

Physicians also felt that giving patients autonomy with the conversation guide was important, even if some HCPs may find this approach challenging:

We struggle with this in medicine and infectious disease, but we are supposed to encourage patient autonomy. That's one of our main ethical principles. But we worry about what it would do if we propose [an] 'option that is in our minds inferior', and what happens if some patient hears it and says 'That's all I want to do'. But if we are truly respecting autonomy, and this is something we would consider as a therapeutic option, then we should actually present it to the patient. . . . it's nice to . . . have

Table 2. Summary of patient and physician perspectives on structured conversation guide for injection drug use-associated infections.

	Theme	Summary	Representative quote
Value of conversation	Patients better informed	Patients valued being made aware of treatment options and were aware of their treatment plan	'When there are options, it's nice that those are presented to you and presented in a way that is unbiased'. (Patient)
	Patient autonomy	Patients valued being involved in decision process, reporting greater sense of control	'It makes me feel safer going home and have a better control of my health . . . when you get to be . . . part of the decision, . . . it's control. I have a say in my life, because a lot of times in situations like this, you don't'. (Patient)
	Safer discharge	Patients had greater ability to advocate for safe discharge if desired	'. . . it's very, very important [. . .] because if you don't get along with your doctor, you're more than likely going to be like, "No, f*** you. I don't want that . . ."' (Patient)
	Patients feel heard	Patients valued feeling physician was listening to their concerns and preferences	'[the ID* physician] was actually listening, and not only listening, but wanted to know my opinion on my care . . . I felt like [the ID physician] was truly listening'. (Patient)
	Physician learning from patients	Conversation is a learning opportunity for Physicians. For example, of the feasibility of the approach	'I think one of the things that my mentors have told me in the past was, "Tell somebody who injects drugs that they could leave the hospital with the orals and they'll take you up on the option." And in fact, my experience has been that you can have an open and frank conversation with somebody'. (Physician)
Areas for improvement	Physicians recognize relevance of patient values/goals	Physicians believed that information from the conversations are important and relevant to include with decisions	'But it's still important to have open discussions with people, understand their goals, worries, strengths and weaknesses. And I think the guide helps do that'. (Physician)
	Length of guide	Conversations longer than 15 min were difficult to accommodate in a busy service. Physician suggestions included shortening the guide	'I don't mind sitting down and talking with patients and getting to know them and stuff, but [. . .] This would be a very heavy lift when we have multiple patients on service'. (Physician)
	How pain management is discussed	ID physicians were uncomfortable discussing pain management and addiction medicine. Suggestions to involve other physicians	'I feel like my role is really about treating with antibiotics and diagnosis and treatment of that. And so a lot of times, quite frankly, I spend time, I kind of pushing off questions about pain control because I don't prescribe pain medication'. (Physician)
	Addressing post-discharge needs/continuity of care	Follow-up interviews revealed gaps in care team hand-offs during hospitalization and community hand-offs at discharge, especially with housing and transportation	'. . . the person that was handling my social work was nonexistent for the weeks prior to discharge. [. . .] I need to be set up at [housing], but I haven't heard that come up once in today's [discharge] discussions anywhere'. (Patient)

permission to discuss [different therapeutic options] with a patient. (ID physician 1)

Safer hospital discharges

Patients reported their conversations with physicians gave them a greater ability to advocate for a safe discharge if desired. By understanding their treatment options, patients had the flexibility to discuss changes in treatment options later during their hospitalization, particularly if they desired to leave the hospital earlier than anticipated. In these situations, instead of being deemed SDD, teams could plan for safer discharges by anticipating changes to treatment options and working with patients to arrange outpatient follow up:

[Before the conversation guide] I would just get overwhelmed with being here and thinking ‘oh my god’. I’m only halfway through. I can’t do this, and I’d just end up signing myself out and leaving. (Patient 8)

By explicitly exploring patient perspectives, physicians also felt the conversation guide could potentially prevent adverse outcomes, such as early discharges:

. . . [it is beneficial to avoid] these sorts of traumatic episodes where people just feel like they have to leave the hospital and that they don’t get very good medical care because they’re leaving without an optimal plan, because we haven’t explored with people’s goals are . . . to avoid that would be nice and be beneficial for patients and for their physicians. I think it’s stressful for [patients] too . . . having that discussion earlier so you’re not getting into these difficult times, like night discharges . . . would be helpful. (ID physician 4)

By feeling heard and included in decisions around hospital discharge decision-making, some patients felt they would be less likely to leave the hospital through a SDD:

I feel like they’re actually listening to me and involving me. In the past, some of the doctors and nurses were pretty judgmental, but that’s gotten a lot better . . . (Patient 8)

Patients feeling heard

Patients valued feeling that their care team was listening to their concerns and preferences:

Being heard made a huge difference. It made me feel much better about the decision. Last year, I didn’t have a choice . . . there were no options presented to me then. (Patient 6)

I think it’s very important that doctors listen, and that you agree and we can all get along and talk about [the treatment plan]. I think it’s very, very important for that to happen, because if you don’t get along with your doctor, you’re more than likely going to be like ‘No, f*** you. I don’t want that’, and that’s not the way it should be. (Patient 4)

Physicians learning from patients

Physician participants felt the conversation was acceptable and created an important opportunity to learn from patients:

. . . it was nice to be able to ask [patients] about . . . their goals. I think that’s important. (ID Physician 3)

Some physician participants anticipated that when they offered a spectrum of antimicrobial treatment options to patients, most patients would choose the option that involved oral antimicrobial agents and a shorter hospitalization. However, they learned that patients made decisions thoughtfully, and several patients preferred completing IV antimicrobial treatment plans:

One of the things that my mentors have told me was, ‘Tell somebody who injects drugs that they could leave the hospital with oral [antimicrobials] and they’ll take you up on that option’. And in fact, my experience has been that you can have an open and frank conversation with somebody . . . I had this experience before the guide, but I certainly felt this way with the guide, that patients can be empowered to stay if you explain why you want them to stay . . . it’s definitely paternalistic medicine to not be offering or explaining what the options are. And then it’s our job to explain why we think one option is better than another. (ID Physician 1)

Physicians recognizing the relevance of patient values/goals

The conversation guide gave physicians the opportunity to understand patient values and goals for treatment of their infection (e.g. what matters to patients most about treating their infection). One physician also felt that this information was helpful for minimizing unsafe discharges:

. . . knowing where people are coming from and what their goals are [is important] . . . sometimes it comes up in the heat of the moment, as someone is threatening to leave, and you realize, oh it's because they need to go and do X, Y, and Z. And we should have figured that out earlier. (ID Physician 2)

Physician participants believed that the information from the conversation guides were important and relevant to include in antimicrobial treatment decisions:

. . . it's still important to have open discussions with people, understand their goals, worries, strengths, and weakness. And I think the guide helps do that. (ID Physician 1)

The conversation guide allowed space for physicians to understand challenges patients may face in completing certain treatment options, as well as highlighting patient-identified strengths for completing treatment. For example, another physician participant discovered that their patient elected to complete IV antimicrobial treatment in the hospital because doing so allowed them to complete their housing application.

While we identified several themes that highlighted the value of the conversation guide, we also identified themes involving areas of improvement for the guide: guide length and timing, how pain management is discussed, addressing post-discharge needs, and continuity of care (Table 2). One physician participant felt that while implementing the conversation guide was feasible, the length of the guide, which varied anywhere from 15 to 35 min when piloted with patients, could be improved by shortening it. In addition, some physician participants felt that implementing the conversation guide at multiple time points during the hospitalization would be beneficial, given that clinical and psychosocial situations may change. Some physicians were uncomfortable discussing pain management and substance use in this context, and they felt that involving other care team members (e.g. the inpatient addiction medicine team, primary team) was important. All patient participants found the guide was acceptable and helpful; however, in follow-up interviews, they reported gaps in essential services (transportation, housing) and felt that earlier conversations with social work experts were necessary. Finally, patient participants also felt that continuity of

care could be improved. While they reported a helpful conversation with physician study participants, they felt other care team members should also receive education on the conversation guide and treatment options. Patients felt that weekly service provider changes, with care often being provided by non-study participants, led to lack of continuity of the care plan discussed during the structured conversation guide.

Case study

In order to illustrate the impacts of the conversation guide on a specific provider–patient interaction, we included one case presentation: a 40-year-old man with severe opioid use disorder, treated with buprenorphine/naloxone prior to admission, chronic hepatitis C, and posttraumatic stress disorder, was hospitalized for MRSA bacteremia, possible aortic valve endocarditis, and vertebral osteomyelitis. The patient endorsed injecting opioids prior to admission. Transthoracic and transesophageal echocardiograms were negative for vegetation, though the latter showed focal thickening of the noncoronary cusp of the aortic valve and was not able to rule out infective endocarditis. Magnetic resonance imaging (MRI) of the lumbar spine indicated epidural phlegmon at L5-S1, not amenable to drainage. Due to vancomycin intolerance, the patient was started on daptomycin upon hospitalization. In the setting of 6 days of positive blood cultures, ceftaroline was added. The addiction psychiatry service team saw the patient, and he was eventually restarted on his home dose of buprenorphine, in addition to hydromorphone as needed for breakthrough pain, Marinol for management of anxiety in the setting of cannabis withdrawal, and diazepam as needed for anxiety while hospitalized. Blood cultures cleared after 10 days, and inflammatory markers improved. A licensed clinical social worker with the team met with the patient on hospital day 10 and again throughout the hospitalization to discuss underlying structural barriers.

During the clinical encounter that utilized the conversation guide, the patient and physician discussed possible discharge with the PICC, but due to housing insecurity, unemployment, and ongoing pain management issues, both agreed that remaining inpatient for IV antibiotics would be beneficial. They also discussed PICC safety outside of the hospital. The patient did not feel he

would inject into his PICC; however, he was concerned about potential recurrence of use and subsequent PICC infection or worsening of infection. The patient and physician also discussed other antimicrobial treatment options (weekly long-acting antibiotic infusions and oral doxycycline), but the patient expressed hesitancy about those options due to the perceived reduced efficacy. On day 30 of hospitalization, however, the patient expressed interest in being discharged from the hospital if his labs were stable. At that time, he had a mild score on the clinical opioid withdrawal scale, was not requiring hydromorphone for breakthrough pain, and was receiving his home dose of buprenorphine/naloxone. He did not want to continue buprenorphine/naloxone after discharge, so the care team began to taper his buprenorphine/naloxone dose per patient preference. He had expressed a desire to stop using opioids however, so planned to follow up with his outpatient addiction medicine provider. Because the patient was already aware of the antimicrobial treatment options, the ID team anticipated the treatment change and arranged for two doses of dalbavancin at the outpatient infusion center. The patient was discharged 3 days later with a referral for hepatitis C treatment and outpatient ID follow-up. He completed his course of dalbavancin and attended his outpatient ID appointment. He did not have any subsequent 30-day readmissions or emergency department visits.

Discussion

In this pilot study, participants felt that a novel, structured conversation guide was a helpful tool for incorporating patient preferences and discussing antimicrobial treatment options for IDU-associated infections. The conversation guide also improved patient autonomy, one of the main principles of medical ethics. Prior work has examined the use of multidisciplinary teams²⁶ and risk scores²⁷ to aid with antimicrobial decision-making decisions. Our pilot study adds to the literature by providing a practical, harm reduction-based communication strategy to incorporate patient perspectives and values into medical treatment options and hospital discharge decision-making.

In the palliative care field, communication with patients through serious conversation illness guides have been associated with enhanced goal-consistent care and better quality of life.²⁸ While

communication strategies around antimicrobial treatment have been understudied in hospitalized patients with IDU-associated infections, other studies have shown that treatment outcomes, particularly HIV treatment outcomes, are favorable when HCPs demonstrate high comfort in discussing substance use with their patients.²⁹ Unfortunately, however, patient–HCP discussions of substance use issues are often lacking,³⁰ and in a national survey of 672 ID physicians, only 43% of respondents felt comfortable discussing injection practices with patients.³¹ In the same survey, 82 respondents reported lack of clear guidelines around discharging patients with PICCs if they have a history of substance use, lack of resources such as home health facilities, and lack of insurance coverage as some of the challenges in making antimicrobial treatment decisions. In our study, we found that the use of a conversation guide to openly discuss these challenges was helpful to both patients and providers. Discussing patient goals, preferences, and risks and benefits of antimicrobial treatment options, such as discharging with a PICC, was feasible and acceptable to both patients and HCPs. Most HCPs and patients in our study appreciated the structure of the conversation guide, and both patients and HCPs reported improved knowledge and self-efficacy. These findings are consistent with prior literature in the palliative care field, where self-efficacy and knowledge improvement have been associated with use of a serious illness conversation guide.³² While more work is needed in applying conversation guides for hospitalized patients with IDU-associated infections, there is an opportunity to develop and improve communication strategies around hospital discharge decision-making between HCPs and hospitalized patients with IDU-associated infections. In addition, feedback from patient participants suggested the need for improved communication about the conversation guide, ensuring that information flows from one setting of care to another (i.e. inpatient to outpatient) and between different care team members. Additional work is needed to examine additional implications of conversation guide to health systems, for example, reducing stigma and identifying other care gaps.

Our pilot study findings should be considered in light of several limitations. Because it was a single site study in a rural state with a small sample size, our results may not be transferable to other rural

communities, urban areas, or areas with different patterns of substance use (e.g. an area with more stimulant use, where pharmacologic treatment options are lacking). Consistent with Maine's demographics, most of our study population was white. Additionally, all of our patient participants were English-speaking. Given the prevalence of structural racism and health care disparities in treatment,³³ it will be important to do further studies in a more heterogeneous population and also translate the conversation guide into other languages. Another limitation is that some treatment options, such as long-acting injectable infusions, may not be available in all settings. While the conversation guide specifies to offer only relevant antimicrobial options, it is important to underscore that the conversation guide should be adapted to align with available antimicrobial treatment options. In addition, as some patient and HCP participants could have withheld opinions during study interviews, provision of socially desirable responses may have been a limitation. Finally, due to scheduling conflicts (patient and physician availability), several of the patient–physician conversations occurred when patients may have been several weeks into their IV antimicrobial course. As suggested by several of the participants, piloting the conversation guide at multiple time points, including earlier in the hospitalization, will be important. Additionally, using the guide in a multidisciplinary format that includes patients, physicians, and other members of the care team (e.g. care manager, social worker) could address some of the patient concerns regarding continuity of care issues. Because this is a pilot study, future studies are needed to evaluate the effectiveness of our conversation guide with a larger sample size and in more heterogeneous populations.

Conclusion

In this pilot study, the use of a novel conversation guide to inform hospital discharge decision-making for patients with IDU-associated infections successfully incorporated patient preferences and values into treatment decisions. Notably, there were no self-directed discharges, all participants completed antimicrobial treatment, and most study participants were discharged with medication for opioid use disorder and naloxone. While we identified areas for improvement, overall patients and physicians believed that the

conversation guide helped to improve patient care and autonomy.

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

Patients provided verbal informed consent for the use of their de-identified data. The IRB was informed that outcomes would be presented as case studies and as per the approved protocol, no further consent was required.

Author contributions

Kinna Thakarar: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Writing – original draft; Writing – review & editing.

Michael Kohut: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Validation; Writing – original draft; Writing – review & editing.

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

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

Frank Chessa: Investigation; Writing – review & editing.

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

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Competing interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Availability of data and materials

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

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Supplemental material

Supplemental material for this article is available online.

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