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Implementation of a Patient-Provider Agreement to Improve Healthcare Delivery for Patients With Substance Use Disorder in the Inpatient Setting

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Objectives: Inpatient healthcare delivery to people who use drugs is an opportunity to provide acute medical stabilization and offer treatment for underlying substance use disorder (SUD). The process of delivering quality healthcare to people with SUD can present challenges.

Methods: We convened a group of stakeholders to discuss challenges and opportunities for improving healthcare safety and employee satisfaction when providing inpatient care to people with SUD.

Results: We developed, implemented, and evaluated a “Pain and Addiction Agreement” tool, a document to guide discussions between providers and patients about expectations and policies for inpatient care.

Conclusions: In this article, we share our experience of working closely with stakeholders. We hope that our project can serve as a blueprint motivating other centers to pursue quality improvement initiatives to improve healthcare for people with SUD and support the people who take care of them in the hospital.

Key Words: quality improvement, teamwork, MD-patient communication, substance use disorder

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The burgeoning nationwide opioid epidemic has affected inpatient healthcare delivery. Hospitalizations related to opioid use disorders have increased dramatically for the past decade.^{1,2} People with untreated or suboptimally managed substance use disorder (SUD) are among the highest users of health care, with frequent hospitalizations, extended lengths of stay, and increased healthcare costs.^{1,3,4}

Inpatient hospitalization represents an opportunity to engage people with SUD in addiction-related care.⁵ Challenges in management of pain in hospitalized people with SUD can occur as a result of several factors including but not limited to high opioid tolerance leading to increased pain medication doses and frequency,^{6,7} high prevalence of suboptimally managed comorbid mental illness,⁸ and lack of understanding of addiction as a chronic, relapsing illness rather than a moral failing.⁹ Patients with SUD report undertreatment of pain and withdrawal and experience stigma-related inequity and delays in care.¹⁰ The

presence of SUD is associated with increased risk of leaving the hospital against medical advice (AMA), signaling fragmented treatment with associated suboptimal treatment outcomes as well as disruptions to clinicians’ workflow.^{11–13} Clinicians report that working with hospitalized patients with SUD is a source of “moral distress,” “burnout,” and feelings of “futility.”⁹ Qualitative work with clinicians has revealed concerns for personal safety and distrust of patients.^{14–17}

At our institution, we identified an opportunity to improve both the inpatient healthcare to people with SUD and the work environment for clinicians interacting with these patients. The goals of this study were to engage stakeholders to understand barriers to delivery of quality care for people with SUD and to develop a standardized process to help address these barriers.

METHODS

Setting

This project was performed at the Tufts Medical Center, a level 1 trauma, 415-bed academic medical center located in Boston, Massachusetts. The Tufts Medical Center has the highest case mix index of any acute care hospital in Massachusetts,¹⁸ a marker of the high acuity and complexity of patients. The inpatient internal medicine service is divided into 6 specialty-based services with most patients admitted to the service aligning with their admitting diagnosis: general medicine, geriatrics, infectious diseases (ID), pulmonology, renal, and gastroenterology. Cardiology and hematology/oncology are specialty services not included in this triage process.

Project Design

There were 4 parts to this project: (1) formative work, (2) development, (3) implementation, and (4) evaluation.

Formative Work

Tufts MC had a quarterly “Opioid Task Force” meeting with a multidisciplinary group of employees. At this meeting, we solicited feedback on the current issues in quality healthcare and formed a subcommittee to improve inpatient hospital care for people with SUD. We used an interactive, consensus-driven process to develop a needs assessment survey and distributed the survey via e-mail to nurses, internal medicine residents, and ID attending physicians (specifically selected because of high prevalence of people with SUD hospitalized with infections). The survey contained 2 closed-ended questions: (1) estimate of the proportion of time spent managing pain and addiction issues when caring for a patient who uses illicit drugs and (2) characterize your level of comfort on a 5-point Likert scale with your ability to keep patients safe while inpatient. There was also a free-text option for survey respondents to share their ideas about how to improve hospital safety when taking care of people with SUD.

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Development

Based on themes that emerged during the formative work, we developed the “Pain and Addiction Agreement” document (details discussed further in results section).

Implementation

In June 2017, clinicians on general medicine, geriatrics, and ID (“intervention group”) received e-mails and in-person training on how to use the “Pain and Addiction Agreement.” Three medicine services (renal, pulmonary, and gastrointestinal) received education about the Pain and Addiction Agreement after the initial implementation and evaluation period (“usual care group.”)

Evaluation

Nurses, residents, and attending physicians in the intervention group received a postimplementation survey, which included preimplementation questions with additional closed and open-ended questions about the Pain and Addiction Agreement’s usefulness and effectiveness. We also identified quantitative metrics to evaluate the impact of the Pain and Addiction Agreement. Objective data were collected from January 2017 to December 2017.

- (a) *Overnight hydromorphone doses:* Requests for overnight pain medications were identified as a major stressor for covering clinicians and conflict with patients. Therefore, we sought to measure whether implementation of the Pain and Addiction Agreement was associated with decreased frequency of overnight hydromorphone doses. We queried the hospital electronic medical record to count the number of times intravenous (IV) hydromorphone was given during the nighttime hours (8:00 P.M.–8:00 A.M.). If a patient received more than 1 dose of IV hydromorphone overnight, this was counted as 2 doses. We calculated the average rates of IV hydromorphone given overnight using the number of doses given per month in each study group and divided this by the total number of patients admitted to the study groups during that month to make a doses/admission rate.
- (b) *AMA discharges:* During the formative work, concerns arose that using the Pain and Addiction Agreement may lead to increased frequency of AMA discharges with poorer quality of care to patients. The monthly number of AMA discharges for each group (intervention versus usual care) was divided by the total number of discharges from those groups for the month to calculate the AMA rate.

Statistical Analyses

We conducted a difference-in-difference analysis. We compared changes in averaged rates of (a) doses per admission and (b) AMA discharges that occurred before and after implementation in both the intervention group and the usual care group. We used a 5-month rolling average for the preintervention rate. For the “within-group” comparison, we compared each service team before implementation with themselves after the implementation date (each group served as their own historical control.) We also compared the 2 groups (intervention to usual care), examining the absolute change in rates before and after implementation between the implementation group and standard care for each outcome. The Student *t* test was used for comparative statistics (SAS 9.4; SAS Institute Inc, Cary, NC).

As a quality improvement project, we received a waiver of informed consent from the Tufts Health Sciences Institutional Review Board.

RESULTS

Formative Work

The opioid task force identified a broad group of stakeholders with attending physicians (medicine, psychiatry, emergency medicine, pain specialists, and obstetricians), internal medicine chief residents, hospital administrators, nurses, risk management specialists, social workers, and hospital public safety. These stakeholders were invited to be part of a quality improvement subcommittee to improve inpatient care for people with SUD. The committee met regularly for 9 months and notes from these meetings guided the development of surveys, the intervention, and how to measure the impact of the intervention. During meetings with stakeholders and in the surveys, key themes emerged which can broadly be grouped into 2 categories.

Provider Well-Being

Major factors contributing to provider stress-level when caring for people with SUD included poor communication between physicians and nurses about the pain and withdrawal treatment plan, and frequent requests for high-potency opiates such as intravenous hydromorphone that occurred overnight. One nurse wrote, “*The MD must tell the patient explicitly what pain meds they are ordering, dosing, and frequency so the nurse is not left as the go between.*” Another nurse echoed this, requesting, “*Some kind of contract or rule that only primary team will change pain regimen so they do not keep asking night float and evening nurses for additional doses.*” An attending suggested, “*presenting a unified front with MDs/nurses all present for the discussion and on the same page would be very helpful...we need to do a better job of acknowledging to patients that we understand their addiction issues and that we are trying to do something to help without caving to their requests for IV pain meds.*”

Safety

Stakeholders highlighted concerns over personal safety (shared experiences about patients displaying verbally and physically aggressive behavior, being stuck by needles hidden by the patient) and risk of patients overdosing in the hospital on nonprescribed medications (either through bringing in drugs to the hospital, leaving the hospital to buy drugs, or being brought drugs by a visitor). There were discussions about the role of searching belongings as a way to protect patients and the staff. One nurse wrote, “*I think all patients with history of drug abuse should be searched upon arrival into ED [emergency department] prior to coming to the floor.*” Other stakeholders were concerned that approaching people with SUD about searches could be seen as a breach of the Mental Health Parity and Addiction Equality Act,¹⁹ preventing treatment of SUD as a mental health condition. One physician offered an “airline approach” to the issue, suggesting a broad approach to searches of everyone being admitted to the hospital.

Development

Committee discussions and preimplementations surveys laid the groundwork for the development of a new tool to improve healthcare quality. We gathered and reviewed local and national hospital protocols for security searches, visitor policies, and addressing behavioral issues. One stakeholder found an inpatient guideline from the Ohio State University, which eventually was used as basic framework for the new tool.²⁰ Our “Pain and Addiction Agreement” has 4 pillars including pain/withdrawal/addiction management, visitor policy, leaving the floor policy, and search policy (Table 1). After much consideration, we decided not to require the patient to sign the document. Importantly, this distinguishes our agreement from a contract, which has been used at other hospitals.

TABLE 1. The 4 Components of the Pain and Addiction Agreement

Component	Words Used to Describe the Component
Pain control	Please discuss your pain management with us. We are your main care team. We will come up with a treatment plan to control your pain. Please try not to ask for adjustments in your pain medications overnight when your main care team is not here.
Visitor policy	The hospital has a visitor policy for every patient admitted. The team will decide whether it is safe for you to have visitors and how many visitors you can have at one time. Each visitor will need to check in with the nurse when they arrive. There are no overnight visitors.
Leaving the floor policy	You cannot leave the hospital floor unless you have to get a treatment or study on another floor. When you leave the floor, a hospital staff member will be with you at all times. Smoking or vaping will not be allowed. Nicotine replacement will be prescribed with your choice of nicotine gum or patches.
Search policy	The hospital has a policy about when a patient’s belongings can be searched. If we are concerned that you are risk for taking drugs we did not prescribe you, we may call security to search your belongings. If security finds these things, they will be disposed of in accordance with applicable Mass. General Law and Public Safety Policy. If you have prescription medication in a bottle with your name, this will be stored in a secure place until you leave.

Implementation

E-mails and conferences were used to disseminate information about the Pain and Addiction Agreement. Nurses and physicians were instructed that they could discuss the Pain and Addiction Agreement with any patient with either (1) admission with SUD related event (previous in-hospital overdose, evidence of prior inpatient use of nonprescribed substance, or possession of drug paraphernalia) or (2) positive toxicology screen without documented source of prescriptions. Specifically, a history of SUD alone without a behavior event was not an indication to initiate discussion regarding the agreement. Jointly, stakeholders agreed that the goal were to encourage clinician-patient interactions early in the admission about how pain, withdrawal, and SUD would be managed and also to review hospital policies. Ideally, presentation of the agreement would involve several members of the care team, including nursing, house staff, and the attending physician, and if there was disagreement among team members about whether the agreement was appropriate, risk management was available for consultation.

Evaluation

The preimplementation survey was e-mailed to 90 clinicians including 30 nurses, 52 residents, and 8 attending physicians. The postimplementation survey was e-mailed to this same group and an additional 8 attending physicians from the general medicine and the geriatrics services. Forty-nine clinicians (54%) answered the preimplementation survey and 50 clinicians (51%) completed the postimplementation survey.

Most clinicians were aware of the Pain and Addiction Agreement and approximately one-half of respondents (n = 26) had used the Pain and Addiction Agreement. Sixty-one percent of all respondents reported having confidence keeping people who use drugs safe in the hospital before implementation, compared with approximately 72% who reported confidence keeping people who use drugs safe in the hospital after implementation (P = 0.258). Before implementation, the average amount of time spent on the care of patients with pain or addiction was 54% (range = 10%–100%, standard deviation [SD] = 21) compared with postimplementation 56% (range = 5%–91%, SD = 22). Limiting the postimplementation responses only to those 26 people who used the agreement, the time spent of pain and addiction was 60% (range = 20–91, SD = 20).

Most clinicians (81%) who used the Pain and Addiction Agreement indicated that their management of patients with SUD in the hospital has changed since roll out of the Pain and Addiction Agreement. Some responses to the postimplementation survey included the following:

I think it allows residents to be more straightforward with patients about saying no to narcotics when patients ask for it. This way, we can reach an agreement faster about trying other kinds of pain medications. – Resident

A clear agreement is laid out to the patient including dosage of medication and how the medication will be administered. The patient is aware of the treatment plan and is more apt to be compliant knowing this up front.

I feel more comfortable caring for my patients when their belongings are searched, not only for my safety but most importantly their safety. – Nurse

I have been very focused on increased communication amongst all the caregivers for these patients. Also have been more aggressive about addressing management of pain and withdrawal up front. – Attending Physician

Objective Data

Hydromorphone Dosing

Before implementation, the mean dose/admission rate was 0.068 doses/admission (SD = 0.060) with a significant decrease in overnight doses of IV hydromorphone in the intervention group to 0.029 doses/admission (SD = 0.012, P = 0.002). The usual care group started at a higher doses/admission rate of 0.102 (SD = 0.033) with a drop in dose/admission rate to 0.096 that did not reach statistical significance (SD = 0.036, P = 0.909). The difference-in-difference change between the intervention and usual care group was 0.039 versus 0.006, respectively (P < 0.001).

Discharge AMA

Before implementation, the mean AMA discharge rate was 0.010 (SD = 0.002) before implementation, and it increased to 0.016 (SD = 0.007) after implementation (P = 0.013). The usual care group started with an AMA rate of 0.007 (SD = 0.005) and increased to 0.010 (SD = 0.002, P = 0.070). There was a greater increase in the intervention group than the usual care group (0.06 versus 0.003, P < 0.001).

DISCUSSION

Using a collaborative approach inclusive of multiple stakeholders, we developed and implemented a tool to increase the quality of care delivered to people with SUD and address clinician stress when working with patients with SUD. The overarching themes explored during the formative work were effectively

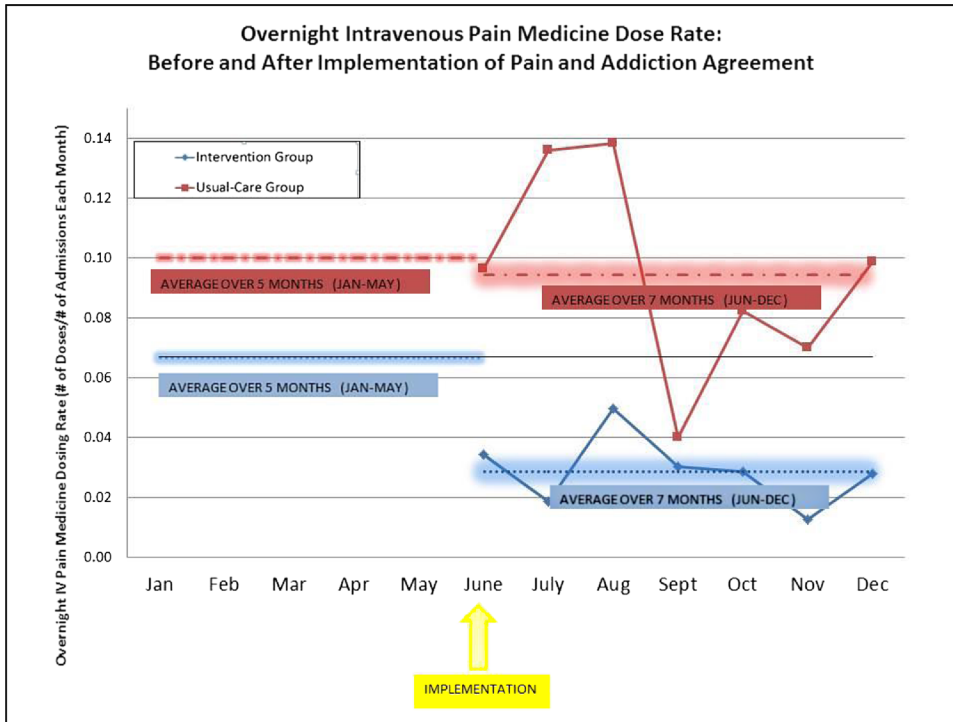


FIGURE 1. There was a decrease in overnight hydromorphone dose rate in the intervention group after the implementation (0.068 doses/admission to 0.029 doses/admission, change of 0.039) which was significantly different ($P < 0.001$) when compared with the change in the usual care group (0.029 doses/admission to 0.006 doses/admission, change of 0.006).

translated into protocols focusing on improved patient safety and clinician satisfaction. The objective measures showed decrease in overnight intravenous medications. After implementation, there

was a statistically significant increase in the AMA discharge rate; however, it should be noted that there were secular increases in both the intervention group and the usual care group.

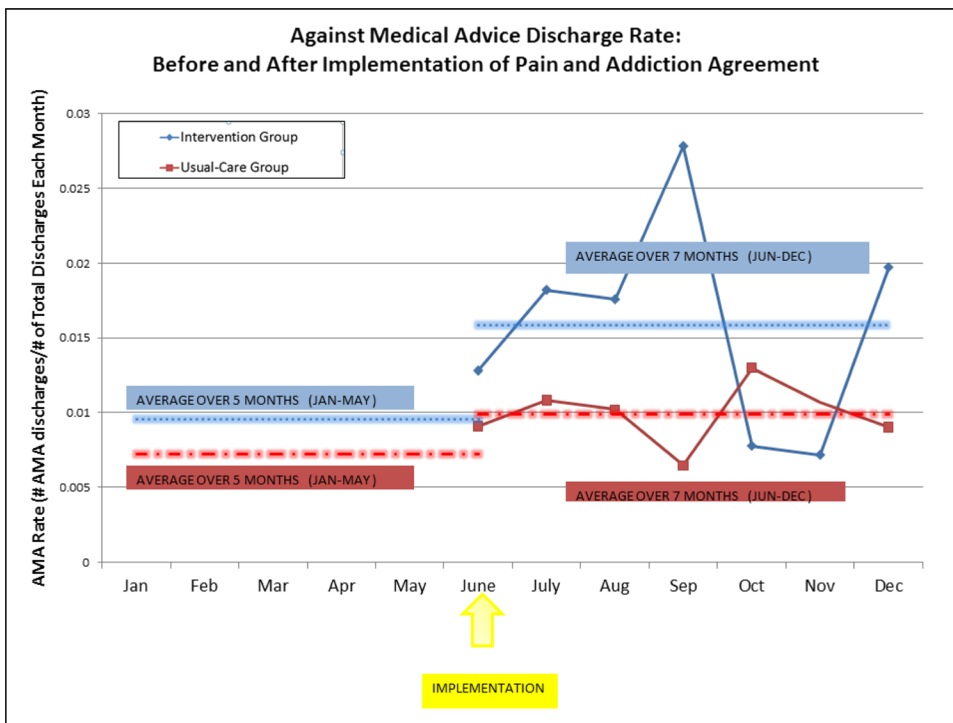


FIGURE 2. There was a slight increase in AMA discharge rate (0.06) in the intervention group after implementation, which was significantly higher ($P < 0.001$) than the change in the AMA discharge rate in the usual care group (0.003).

Our works add to the growing literature documenting real-life experiences aimed at improving healthcare quality for people with SUD.^{21–25} Hospitalization can represent an opportunity to provide people with SUD medical stabilization and linkage to social services. Guidelines for the inpatient management of opioid use disorder have been developed, which is geared toward addiction medicine,²⁶ internal medicine providers and hospitalists,⁵ and infectious diseases clinicians²⁷; however, support for other stakeholders, especially nurses, is lacking. Work published in our hospital found that nurses find the management of people with SUD challenging, and as a profession, there is interest for increased education and support.¹⁴ Our experience should be used as a blueprint for other health centers looking to improve health care for people with SUD and clinicians' experiences providing care to people with SUD.

A limitation of our project was the failure to include patients with SUD as a key stakeholder during the formative work. Patient-centered care needs to elicit the perspective of the patient, and the next steps of this project will be to gather patient feedback. Another limitation of our study was reliance on survey methods. Responder bias may lead to oversampling of clinicians supportive of our process, although it should be noted that people chose to respond to the survey even if they did not use the Pain and Addiction Agreement. In addition, our survey methodology did not link preassessment and postassessment by respondent, so we do not know whether the same people who answered the preassessment survey responded to the postassessment survey. We focused our initial implementation efforts on 3 medicine services, which had the highest proportion of people with SUD, so the comparator service group may have a qualitatively different patient population. That said, assignment to a medicine service is a somewhat arbitrary process, where a patient with SUD and pneumonia, for example, could be admitted to general medicine, ID, or pulmonary services depending on the census of each team at the time.

Finally, despite attempts to disseminate the Pain and Addiction Agreement to many stakeholders, only approximately half of survey respondents reported using the agreement. This could have been because they did not have an opportunity to admit patients with SUD, they did not know about the agreement, or they did not choose to use the agreement. Our postimplementation survey did not differentiate between these possibilities. Engagement of clinicians in training on protocols and policies for SUD can be challenging because of multiple competing priorities while providing care to hospitalized patients. As highlighted in a recent editorial, future efforts to engage clinicians in protocols around hospitalized patient with SUD need the support of hospital administrators to create protected time for learning, and additional champions in the hospitalist field who can convince colleagues about the role inpatient hospital clinicians play in coordinating addiction-related care.²⁸

CONCLUSIONS

Providing safe and equitable health care to people with SUD requires balancing patient autonomy, mental health parity, and patient/clinician safety. Innovative and standardized methods of delivering quality care to people with SUD need to be prioritized for the benefit of the patient, clinicians and the healthcare system.

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