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Outcomes

Postoperative opioid prescribing is not my job: A qualitative analysis of care transitions

Michael P. Klueh, BS[a,b], Kenneth R. Sloss, BS[a,c], Lesly A. Dossett, MD, MPH[a], Michael J. Englesbe, MD[a,c,*], Jennifer F. Waljee, MD, MPH, MS[a,c], Chad M. Brummett, MD[c,d], Pooja A. Lagisetty, MD[e,f], Jay S. Lee, MD[a,c]

[a] Department of Surgery, Michigan Medicine, Ann Arbor, MI
[b] University of Michigan Medical School, Ann Arbor, MI
[c] Michigan Opioid Prescribing Engagement Network (OPEN), Ann Arbor, MI
[d] Department of Anesthesiology, Michigan Medicine, Ann Arbor, MI
[e] Department of Internal Medicine, Michigan Medicine, Ann Arbor, MI
[f] VA Center for Clinical Management Research, VA Ann Arbor Healthcare System, Ann Arbor, MI

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ABSTRACT

Background: Persistent opioid use is common after surgical procedures, and postoperative opioid prescribing often transitions from surgeons to primary care physicians in the months after surgery. It is unknown how surgeons currently transition these patients or the preferred approach to successful coordination of care. This qualitative study aimed to describe transitions of care for postoperative opioid prescribing and identify barriers and facilitators of ideal transitions for potential intervention targets.
Methods: We conducted a qualitative study of surgeons and primary care physicians at a large academic healthcare system using a semi-structured interview guide. Transcripts were independently coded using the Theoretical Domains Framework to identify underlying determinants of physician behaviors. We mapped dominant themes to the Behavior Change Wheel to propose potential interventions targeting these behaiors.
Results: Physicians were interviewed between July 2017 and December 2017 beyond thematic saturation ($n = 20$). Surgeons report passive transitions to primary care physicians after ruling out surgical complications, and these patients often bounce back to the surgeon when primary care physicians are uncertain of the cause of ongoing pain. Ideal practices were identified as setting preoperative expectations and engaging in active transition for postoperative opioid prescribing. We identified 3 behavioral targets for multidisciplinary intervention: knowledge (guidelines for coordination of care), barriers (utilizing support staff for active transition), and professional role (incentive for multidisciplinary collaboration).
Conclusion: This qualitative study identifies potential interventions aimed at changing physician behaviors regarding transitions of care for postoperative opioid prescribing. Implementation of these interventions could improve coordination of care for patients with persistent postoperative opioid use.

Introduction

Deaths from opioid overdoses increased 28% from 2015 to 2016, and >40% of these fatalities were due to prescription opioids.[1] Postoperative opioid prescribing contributes to the national opioid epidemic, and 3% to 7% of opioid-naïve patients continue to use opioids 6 months after surgery.[2–5] Our previous work demonstrated that patients receive opioid prescriptions from surgeons in the immediate postoperative period, but the majority of prescribing transitions to primary care providers 3 to 6 months after surgery.[6]

It remains unclear how surgeons transition opioid prescribing for patients who request continued opioids after routine postoperative care is complete. The importance of safely transitioning care is highlighted by the risk of adverse events resulting from poor communication during transfer of care.[7–10] Describing this transition of care for postoperative opioid

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* Reprint requests: Michael J. Englesbe, MD, Section of Transplant Surgery, University of Michigan Health System, UH South Room 6689, SPC 5296, 1500 E. Medical Center Dr, Ann Arbor, MI, 48109.
E-mail address: englesbe@med.umich.edu (M.J. Englesbe).

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prescribing and pain management could identify a framework for a multidisciplinary interventions aimed at reducing opioid misuse and dependence.

Given that the transition of care for postoperative opioid prescribing occurs months after surgery for most patients, we sought to describe current and ideal practices and barriers to transitioning care. We interviewed surgeons and primary care physicians at a large academic healthcare system. Then we used the Theoretical Domains Framework (TDF) and Behavior Change Wheel to identify potential behavioral targets for intervention. We hypothesized that there are many causes, practices, and barriers for transitioning postoperative opioid prescribing, but improving coordination of care could aid in developing a standardized approach for these vulnerable patients.

Methods

Design

We conducted a qualitative study of surgeons and primary care physicians within a large academic healthcare system to more broadly understand postoperative opioid prescribing transitions. Qualitative research is a rigorous method of observation to gather meanings, concepts, characteristics, and descriptions of phenomena, and this method aims to describe the underlying mechanisms of these occurrences. Semi-structured interviews were conducted with a sample of physicians and were analyzed to understand physician behaviors and attitudes regarding the transition of care for postoperative opioid prescribing. We then used behavioral frameworks to tentatively identify potential interventions targeting these behaviors. The exempt status of this study was approved by the University of Michigan Institutional Review Board.

Participants

Participants were recruited by members of the research team from the departments of General Surgery, Family Medicine, and Internal Medicine at Michigan Medicine. Between July 2017 and December 2017, we interviewed resident surgeons, attending surgeons, and attending primary care physicians. We purposely sampled a diverse range of participants in regard to age, sex, and years of experience. We chose these provider specialties given our previous work revealing that surgeons provide most opioid prescriptions in the immediate postoperative period and the majority of prescribing transitions to primary care physicians between 3 to 6 months after surgery.[6] Resident surgeons were included due to their extensive involvement in postoperative opioid prescribing at Michigan Medicine. After initial analysis, we enrolled participants beyond informational saturation, meaning additional interviews did not result in new information.[11–13]

Interview guide and data collection

Interviews were completed using a semi-structured interview guide that was modeled from previous work on opioid prescribing practices (Appendix I).[14] The interview guide included open-ended questions to describe the clinical course of patients after surgery, practices and attitudes regarding postoperative opioid prescribing, and barriers to ideal transitions of care. The interview guide was piloted once and subsequently revised by 2 of the investigators (M.K., J.L.). All interviews were conducted by a single investigator (M.K.) and lasted approximately 20 minutes. Interviews were conducted either in person or over the telephone, and all interviews were completed in a single setting. Interviews were audiotaped, transcribed verbatim, and de-identified.

Analysis

NVivo (QSR International, Burlington, MA) software was used to assist in the coding, data storage, and data analysis. All transcripts were initially independently coded by 2 investigators (M.K., J.L.). We used deductive analysis with a priori codes to determine the current process for transitioning care for postoperative opioid prescribing. A priori codes included passive transition (patients responsible to arrange own follow-up care), passive referral (surgeons place referral without engaging in direct provider-to-provider communication), and active transition (direct provider-to-provider communication). Next, we used inductive analysis for emergent themes to describe the ideal process for transitioning care and to identify underlying physician behaviors that drive how physicians transition care. We only coded participants' responses if they were explicitly related to transitioning care for postoperative opioid prescribing or pain management.

We then used open coding to identify major content areas (M.K., J.L.). All discrepancies were resolved through discussion and mutual agreement and in consultation with a third investigator (L.D.). Two additional investigators also provided significant contributions to the analysis of identified themes (L.D., P.L.). To systematically categorize our inductive analysis for underlying behaviors, we utilized the Capability, Opportunity, and Motivation (COM-B) model with TDF to code all interviews.[15–18] The COM-B model illustrates how the components of capability, opportunity, and motivation interact with behavior. TDF provides broad domains consisting of specific constructs that improve the categorization of inductive codes into the COM-B components to identify potential targets for behavior interventions. Previous work has identified how the Behavior Change Wheel can be utilized to link the 3 COM-B components to 9 intervention functions and 7 policy categories that target specific sources of behavior.[14,15,18–20] These interactions between the behavior frameworks and potential interventions through the Behavior Change Wheel are illustrated in Fig 1.

Results

We interviewed 10 surgeons and 10 primary care physicians during our study period. Participants included 5 resident surgeons, 5 attending surgeons, and 10 attending primary care physicians. Eleven male and 9 female physicians were interviewed. Participants had a mean age of 41 years and 10 years of experience.

Current and ideal processes

Table I summarizes current practices for transitioning care of postoperative opioid prescribing. Common themes included surgeons ruling out surgical complications, passive transition of care from surgeons to primary care physicians, and these patients often bounce back to the surgeon from primary care physicians. Surgeons frequently reported ruling out surgical complications prior to directing patients to follow-up with their primary care provider for any ongoing pain. Many surgeons viewed this as the completion of their surgical care. The most commonly described practice for postoperative opioid prescribing was passive transition from surgeons to primary care physicians without closed loop communication or direct handoff. Passive transition was characterized as surgeons requiring patients to be responsible for arranging continued treatment from primary care or pain specialists. Likewise, most primary care physicians reported seeing patients in

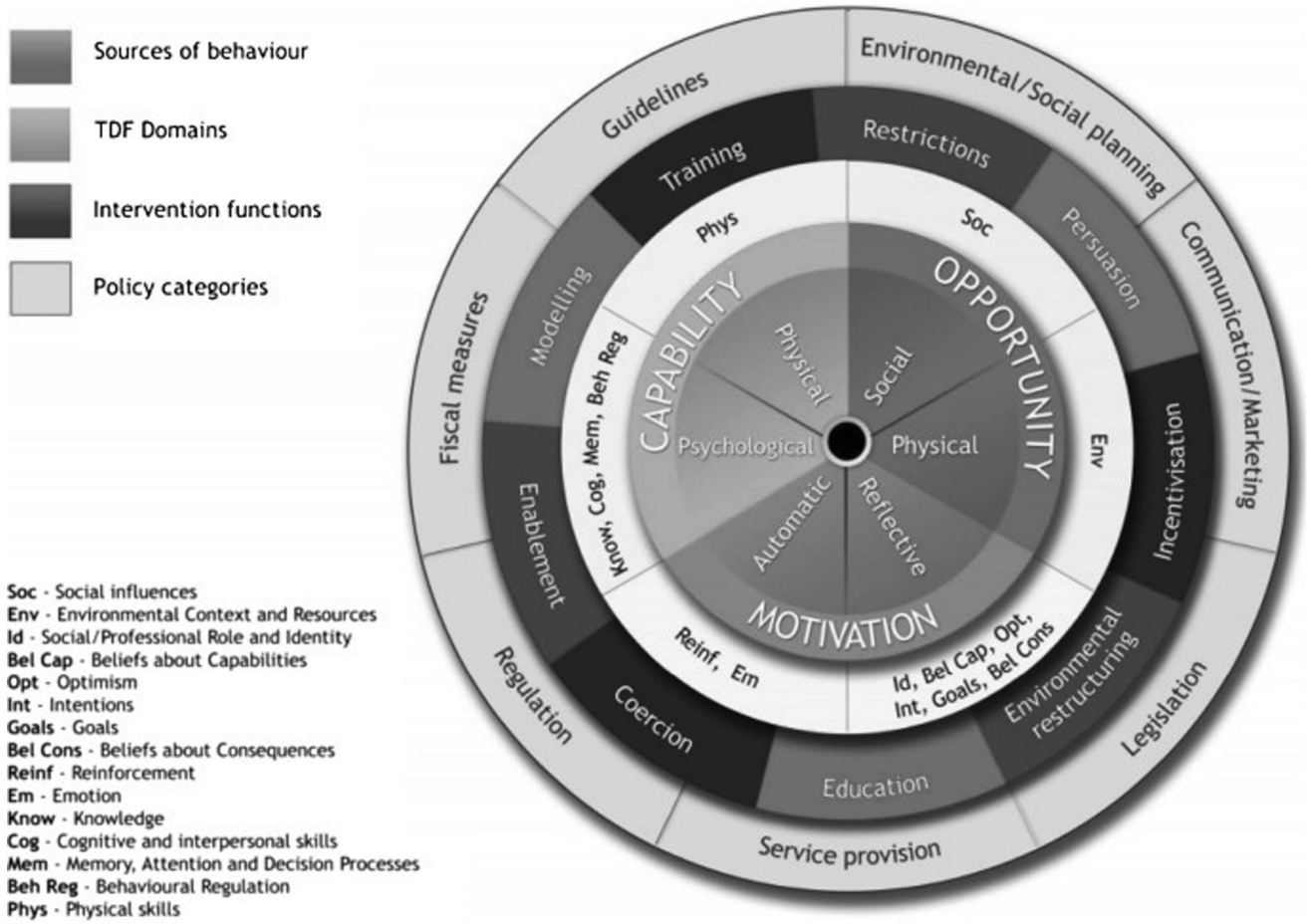

Fig 1. Behavior change wheel.[20] At the center of the Behavior Change Wheel are the COM-B components that interact with underlying behaviors. TDF domains are listed and illustrate how these are linked to COM-B components. Intervention functions and policy categories are shown on the outside portions of the wheel. It is important to note that COM-B components and TDF domains are directly linked, but their connection to interventions and policies is nonlinear and previously described in referenced literature.[18,20]

clinic after an operation without receiving any correspondence from the surgeons other than the initial discharge summary. Many primary care physicians reported referring patients back to the surgeon (bounce back) if they requested postoperative opioid prescriptions and the cause of their ongoing pain was uncertain. Other practices that were infrequently described included an active transition from surgeons to primary care physicians with closed loop communication. This practice typically involved complex patients with medical or psychiatric comorbidities.

We also explored ideal processes for transitioning postoperative opioid prescribing. Prevailing themes were focused on a multidisciplinary approach, including an active transition from surgeons to primary care physicians for patients with prolonged postoperative opioid use. Surgeons and primary care physicians report that communication between providers would assist primary care physicians knowing whether postoperative opioids should be tapered or if it is appropriate to continue to prescribe. Additionally, both surgeons and primary care physicians reported the need for adequate patient education regarding postoperative pain expectations and duration of opioid use. Figure 2 depicts the most common path for patients that require a transition of care for postoperative opioid prescribing along with the most representative ideal processes for transitioning care. Additional sample quotes for current and ideal practices are shown in Appendix II.

COM-B model and theoretical domains framework

After using TDF to code each interview transcript, we found 5 most commonly coded domains to be representative of the transition of care for postoperative opioid prescribing: knowledge; social influences; environmental context and resources; professional role and identity; and goals. Table II portrays sample quotes from surgeons and primary care physicians for each theme. Additional quotes are available in Appendix III.

Knowledge

Knowledge was identified as key domain for many participants. It is categorized under the COM-B capability component and defined as the awareness of the existence of something.[15] Knowledge was the relevant specific construct for this domain, and it was characterized by the "lack of understanding of how to manage persistent postoperative pain and opioid use." In particular, surgeons reported lack of knowledge for how to taper patients off opioids after surgery and how to coordinate care with the providers that follow these patients long-term. Primary care physicians expressed lack of knowledge about the normal trajectories of postoperative pain and when or how long opioids should be prescribed postoperatively.

Table I
Summary of current and ideal processes for transitioning postoperative opioid prescribing

Process	Practice	Sample quote
Current process	Rule out surgical complication	Surgeon: "I did my very finite procedure, unless I messed something up. But that's up to me to figure out if there was a physical anatomic problem that is the result of my operation versus addictive behavior. If I've ruled out the technical problem, I think it is all on the primary care doctor's shoulders."
	Passive transition from surgeon to PCP	Surgeon: "I leave that up to the patient. I tell them to just talk to your primary care doctors. I don't have a discussion with the other physician. I'll document that a patient is outside the window of requiring additional narcotics related to their operation. Additional medication is at the discretion of the PCP." PCP: "A lot of it is hot potato. What I see is the surgeon says, 'I'm going to give you 40 hydrocodone. There's no problem with the surgery, my part's fine. Go to your primary doctor and let them deal with it.' But you've got a problem now because most primary care doctors are going to say no and then the patient's stuck."
	Bounce back from PCP to surgeon	PCP: "I send them back to the surgeon to ask why they're having prolonged pain. Is there something related to the surgery that needs to be looked at again. If the surgeon says there's no reason that they're in pain, then I won't prescribe them."
Ideal process	Active transition from surgeon to PCP	Surgeon: "When this transition happens, I think there is a potentially intervenable point during that transition that usually gets missed because I don't talk to the PCP and they don't talk to me." PCP: "Communication is the biggest thing. I cannot think of a time when a surgeon has reached out to me to say, 'We operated on your patient. They are still on narcotics and we do or don't think it is reasonable to continue narcotic medications.' I think that would be helpful to communicate that transition. The more communication the better."
	Setting expectations	Surgeon: "Ideally we need buy in from the surgical provider to make sure that expectations are real. Patients need to know going in that having surgery is going to hurt. Not that we don't control the pain, but must have reasonable expectations of what level of pain control we'll be able to achieve." PCP: "I think the patient comes to get surgery and they are looking at the surgeon that is going to cut them open. The surgeon has a responsibility to say to the patient at least once if not twice, 'This is going to hurt, and it's going to get better and you don't need medications to get you all the way better.'"

PCP, primary care physician.

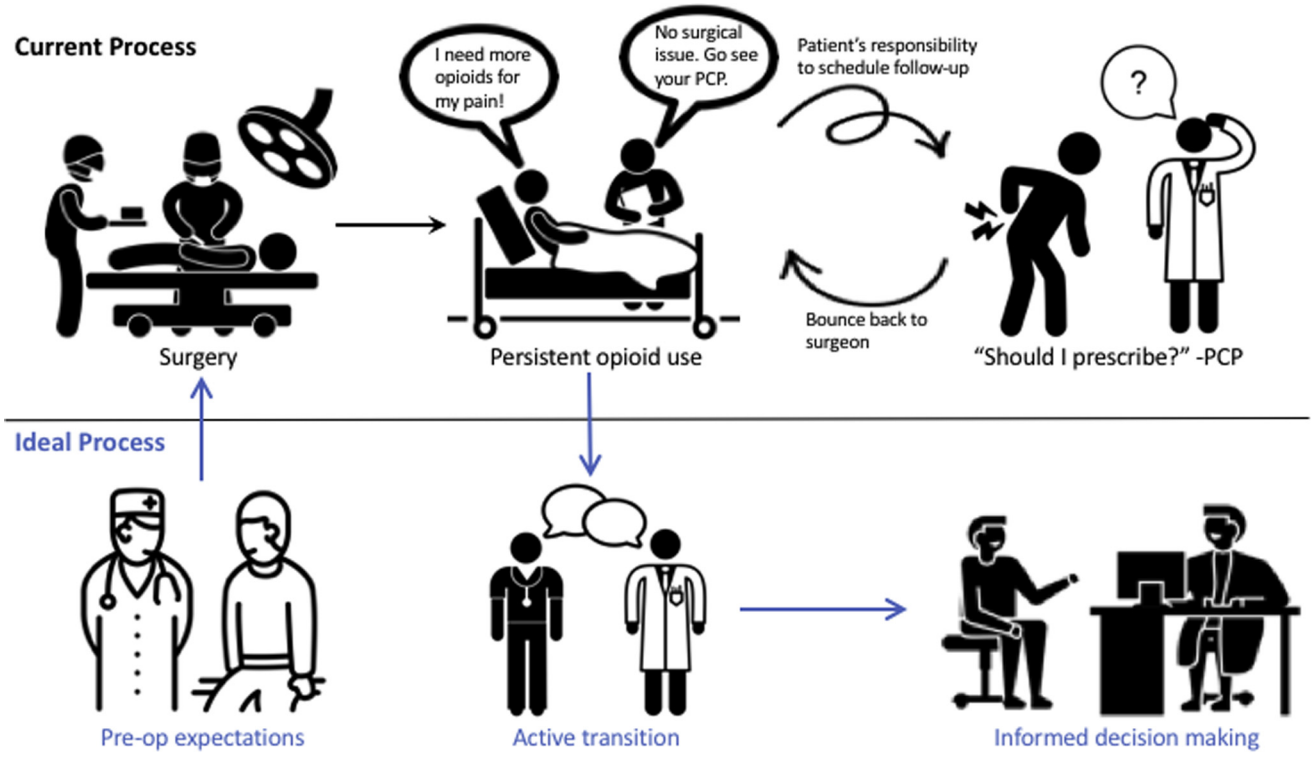

Fig 2. Current and ideal process for transitioning care of postoperative opioid prescribing. After ruling out surgical complications, most surgeons report telling patients to follow-up with their primary care physician for additional opioid medications. Many primary care physicians report sending patients back to surgeons if they request postoperative opioid medications. Ideal practices included preoperative expectations from surgeons on surgical pain and opioid use. Active transition for patients with persistent postoperative opioid use was also noted as an ideal practice for multidisciplinary collaboration on if opioids should be continued or tapered.

Social influences

Social influences was a common domain for surgeons and primary care physicians in determining behavior. It is categorized under the COM-B opportunity component and defined as interpersonal processes that can cause individuals to change their thoughts, feelings, or behaviors.[15] Two specific constructs were determined to be important in this domain. Power was represented by the belief that "hierarchy among surgeons" contributes to continued postoperative opioid prescriptions. Both surgeons and primary care physicians reported that postoperative opioid prescribing is delegated to surgical residents and physician assistants, and resident surgeons thought they are often required by their attending surgeon to prescribe opioids

Table II
Summary of COM-B Model and TDF for transitioning postoperative opioid prescribing

COM-B component and TDF domain	Specific TDF construct and belief	Sample quote
Capability: knowledge	Knowledge: managing postoperative pain	Surgeon: "I don't know how to manage patients that require opioids for a longer time. I discharge that patient from my practice and suggest they follow-up with their primary care." PCP: "There is not good education at the surgeon or PCP level for the harms of opioids or how long people should be on opioids if at all postoperatively."
Opportunity: social influences	Power: surgical hierarchy	Surgeon: "I was told by my attending to keep giving opioids even though I did not think that we should be giving them, but I felt like I was compelled to do so by my boss." PCP: "On the surgical side, these opioids are being prescribed by lower level individuals. They have their residents or PAs write them, who are quite frequently indiscriminate because they don't want to get callbacks for more medication."
	Group norms: comparing practice to peers	Surgeon: "My approach is very typical of most surgeons from my experience of talking to them and watching them. It's just kind of what most surgeons would do." PCP: "My practice is very similar to others here. I'm probably more cautious with narcotic prescriptions compared to an older physician who knows their patients for decades."
Opportunity: environmental context and resources	Resources: access to pain specialists	Surgeon: "There are a lot of access issues, and our pain doctors are very overworked and overwhelmed. It can be very challenging taking care of this patient population." PCP: "There's just not enough pain specialists. We need more people who want to do this and who are trained to do it."
	Barriers: communication	Surgeon: "I've never talked to primary care providers about this. I feel like there is very little feedback as far as what happens later and how their pain is being managed once they get to their primary care or pain clinic." PCP: "There's no transition. I get an operative report that says they had their knee replaced. That's usually it. No communication from the surgeon or anything. And then they just show up at my office, and they're like it still hurts and they said I have to talk to you."
	Environmental stressors: time	Surgeon: "If the patient requires a lot of opioid medications and we're not doing much for them, we tell them to transition to primary care. We just can't keep up with the volume."
Motivation: professional role and identity	Professional role: scope of practice	Surgeon: "There is a problem going on—pain, chronic pain— and I'm not the right physician to take care of that. I try to wash my hands of it as soon as I can because I'm not the right person for that job. I'm not trained to do it, and I'm not good at it. It would be a disservice to the patient." PCP: "Most of the surgeons don't engage in postoperative pain management. Most of the primary care doctors don't engage in that. There's no middle ground there."
Motivation: goals	Goal priority: avoid prescribing opioids	Surgeon: "If you don't want to take care of the problem, the easiest way is to just write one script and tell the patient that you will only write once. Then they will go away and go to someone else." PCP: "Nobody wants to be in charge of narcotic pain medications. They just want to wash their hands with it. They don't want people calling their offices and asking for pain medications and refills."

PA, physician assistants; *PCP*, primary care physician.

against their professional judgement. Group norms was noted by participants "comparing and modeling their approach to others in their field" regarding postoperative opioid prescribing and transitioning care.

Environmental context and resources

Environmental context and resources was reported as a key factor for most participants. It is categorized within the COM-B opportunity component and is defined as any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior.[15] Three constructs were identified within this domain. Although resources and barriers were present with both surgeons and primary care physicians, environmental stressors were noted only among surgeons. Resources were cited as the "lack of access to pain specialists" for patients with persistent postoperative opioid use. "Poor communication" between surgeons and primary care physicians was reported as a barrier to effective transition of care for postoperative opioid prescribing. For environmental stressors, surgeons noted "lack of time" as a common reason to transition postoperative opioid prescribing to primary care physicians.

Professional role and identity

Professional role and identity was the most frequent domain reported by all participants. It is categorized under the COM-B motivation component and defined as a set of behaviors and displayed personal qualities of an individual in a work setting.[15] Professional role was the specific construct identified in this domain, and it was described as postoperative pain management and opioid prescribing being outside their "scope of practice." Surgeons reported they did not consider persistent pain or opioid use to be a surgical complication, and they thought these issues should be addressed by providers who care for the patients long-term. However, primary care physicians reported that postoperative pain management is not the responsibility of primary care either and that surgeons should be involved in the care of these patients.

Goals

Goals was identified as an important domain in the majority of participants. It is categorized within the COM-B motivation component and defined as the mental representations of outcomes or end states that an individual wants to achieve.[15] Goal priority was reported as the specific construct in this domain. This belief was reported as behavior aimed at reducing the likelihood of having to provide future opioid prescriptions. Both surgeons and primary care physicians want to "avoid refilling postoperative opioid prescriptions."

Potential interventions

We used validated methods to map COM-B components and TDF domains to potential intervention strategies that target specific behaviors.[14,18–20] Potential intervention functions for knowledge

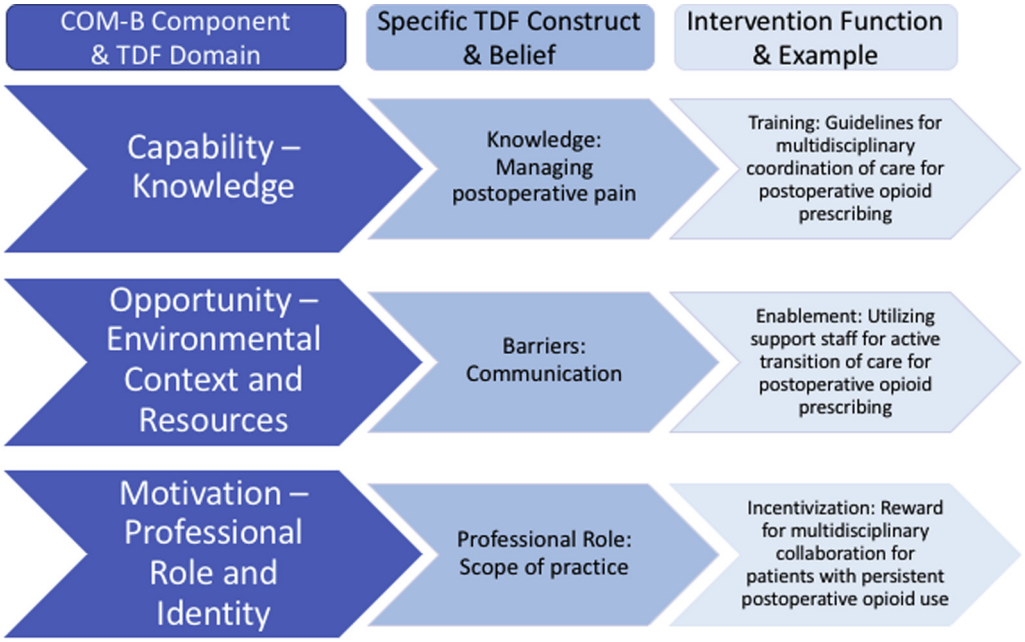

Fig 3. Potential interventions for transitions of care of postoperative opioid prescribing. Three theoretical domains, specific constructs, and beliefs were determined to be most relevant and actionable. Potential targeted intervention functions and examples are depicted for each.

(COM-B capability) include education, training, and enablement. Intervention functions for social influences (COM-B opportunity) and environmental context and resources (COM-B opportunity) comprise restriction, environmental restructuring, and enablement. Professional role and identity (COM-B motivation) and goals (COM-B motivation) have intervention functions including education, persuasion, incentivization, and coercion.

Discussion

The primary goal of this study was to examine the mechanisms by which transitions of opioid prescribing occurs after surgery and to identify potential targets for interventions to improve these transitions. Three actionable TDF constructs and beliefs regarding transitions of care for postoperative opioid prescribing were frequently identified: knowledge (TDF knowledge), barriers (TDF environmental context and resources), and professional role (TDF professional role and identity). For knowledge, "training" interventions enacted by "guidelines" policy can be effective. The specific belief was lack of knowledge of managing postoperative pain, and an intervention could include developing guidelines for multidisciplinary coordination of postoperative opioid management. Going forward, identifying effective strategies to coordinate care for weaning opioids after surgery will be an important component of a multifaceted approach to reduce opioid misuse and related morbidity among postoperative patients. Standardizing transitions of care has been shown to lead to an increase in efficiency and more comprehensive exchange of relevant data in postoperative pediatric patients,[21] and it is also been associated with lower readmission rates for patients after hospital discharge.[22,23] Michigan Opioid Prescribing Engagement Network, developed by physicians at Michigan Medicine, recommends best practices for surgeons that focus on safe and responsible postoperative opioid dose and duration.[24] This study suggests these best practices could be expanded to include defined provider roles, effective communication during transition of care, and recommendations for nonsurgical providers for postoperative opioid prescribing and pain management.

For barriers, "enablement" interventions with a "guidelines" policy is effective. The specific belief was the barrier of poor communication between surgeons and primary care physicians. A potential intervention could involve guidelines regarding the utilization of support staff to engage in active transition and closed loop communication for transitioning postoperative opioid prescribing. Previous work has shown that use of nurses to arrange primary care follow-up and ensure that relevant patient information is communicated during the transition of care can reduce readmission rate for heart failure and ischemic stroke patients, and similar policies could be effective in postoperative opioid prescribing transitions.[25,26]

Professional role can be addressed with "incentivization" interventions and "fiscal" policies. Interventions for the specific belief of scope of practice could include creating a reward for engaging in multidisciplinary coordination of care for patients with persistent postoperative opioid use. Policies currently exist to increase provider reimbursement for providing services that are greater than what is typically required.[27] Similar policies could include providing optimal transitions of care as outlined in guidelines or best practices for patients with persistent postoperative pain or opioid use. Figure 3 demonstrates the interaction between COM-B components and TDF domains with examples for potential targeted interventions for transitions of care for postoperative opioids. As we develop better care models at our institution, we will focus on these key domains to implement targeted interventions aimed at influencing physician behavior regarding transitions of care for postoperative opioid prescribing.

This is the first qualitative study to specifically analyze transitions of care for postoperative opioid prescribing and pain management between surgeons and primary care physicians. Qualitative work aimed at describing general communication between surgeons and primary care physicians in the postoperative period similarly found a wide variation of communication practices.[28] That study emphasized both documentation and communication as important aspects of safely transitioning surgical patients. Another qualitative study focused on primary care physicians' perceptions of how patients are transferred to their care

after a surgical procedure, and similarly found that poor communication, unclear postoperative plan, and uncertainty about provider responsibilities led to inadequate transitions that may contribute to adverse events.[29] In that study, the authors emphasized the importance of a single physician managing postoperative opioid prescribing as a way to determine the appropriate need and duration of opioids as well as to limit misuse or dependence. In a different acute care setting, care coordination interventions including use of case managers in emergency departments to coordinate with primary care providers resulted in a significant decrease in both emergency department visits and opioid prescribing.[30]

In this study, we found lack of communication between providers leads to passive transitions of care for postoperative opioid prescribing. In addition, another key finding was lack of ownership of postoperative opioid prescribing by both surgeons and primary care physicians. Although previous work has suggested that prolonged opioid use is the most common surgical complication,[2] surgeons did not consider this to be in the same category when ruling out other more typical complications (such as wound infection or incisional hernia) prior to transitioning care to other providers. None of the physicians interviewed wanted to be responsible for postoperative opioid prescribing and pain management, and neither surgeons nor primary care physicians thought this was within the scope of their practice. Although not specifically studied in this work, underlying causes for these beliefs could include lack of defined provider roles or standards of care for the management of postoperative pain. These factors lead to patients with ongoing postoperative pain bouncing back and forth between providers that could contribute to persistent postoperative opioid use. This would result in an increased difficulty for healthcare providers to wean opioid use,[31–33] potentially placing patients at risk for chronic opioid use after surgery. These important issues should be evaluated in future studies.

There were additional findings in this study worth noting that we determined to be rooted in long-standing medicine and surgical culture. Within social influences, power (surgical hierarchy) and group norms (comparing practice to peers) were identified. Primary care physicians expressed the belief that postoperative opioid prescribing is delegated to residents, physician assistants, and nurse practitioners, while surgical residents noted that they felt pressured by their attending surgeons into prescribing opioids beyond what they had personally deemed medically reasonable. Prior qualitative studies have similarly found that resident surgeons' practices for postoperative opioid prescribing is regularly influenced by the preference of attending surgeons.[14,34,35] Interventions for power and group norms could be aimed at changing the culture in the respective medical fields through environmental restructuring. For environmental context and resources, environmental stressors (time) and resources (access to pain specialists) negatively influenced postoperative opioid prescribing. Interventions for these specific beliefs could include increasing the workforce to decrease the demand on the individual provider. Finally, goal priority (avoid prescribing opioids) would be difficult to address, but this could be potentially influenced by our proposed incentivization intervention targeting professional role.

This study has several limitations. First, our interviews were conducted within a single academic healthcare system that serves as a tertiary care facility. Many patients that undergo surgical procedures at our center have primary care physicians outside of our system; therefore, we do not know if our findings are applicable to other healthcare settings with more integrated primary care and specialty networks. However, the major themes identified in this study focused more on professional role and identity as opposed to specific environment, so we think it is unlikely that perceived roles vary in other healthcare systems. Future work should aim to determine barriers and facilitators to transitions of care in other settings. Also, we are unsure the degree to which new statewide policies may impact transitions of care. For example, the state of Michigan has passed new legislation that was implemented after our study period which limits opioid prescriptions for acute pain to no more than a 7-day supply and also requires prescribers to counsel patients on the risks of opioid addiction.[36] We chose to include resident surgeons in this study due to their participation in postoperative opioid prescribing at our institution. This practice is likely similar among academic teaching hospitals. Although residents may represent advanced care providers in the community, the associated findings may not be generalized to other healthcare settings. Residents have less continuity with patients, and it is unknown how their communication with primary care physicians differs than that of attending surgeons. Although these factors may result in divergent resident behavior, dominant themes described in this study were shared between both resident and attending surgeons. Finally, ideal processes described by the participants have not been verified by evidence-based methods and may simply represent improvements to the current construct of the participants' practice.

In conclusion, we describe current and ideal practices for transitions of care for postoperative opioid prescribing. We also identify potential targeted interventions aimed at changing physician behaviors regarding these transitions of care. Based on these findings, we recommend implementation of the following interventions: guidelines to standardize practice, utilization of support staff to improve communication, and incentives to engage in patient-centered care.

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Conflict of interest/Disclosures

Dr. Brummett is a consultant for Recro Pharma and Heron Therapeutics, has received research funding from Neuros Medical Inc, and holds a patent for peripheral perineural dexmedetomidine. Dr. Waljee has received research funding from the Agency for Healthcare Research and Quality, the American College of Surgeons, and the American Foundation for Surgery of the Hand and is an unpaid consultant for 3M Health Information systems. These disclosures are outside the scope of the submitted work.

Supplementary materials

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