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## TOOLS FOR ADVANCING PHARMACY PRACTICE

## Opioid exit plan: A pharmacist's role in managing acute postoperative pain

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## ABSTRACT

**Objectives:** The benefits of a pharmacist's involvement in medication reconciliation and discharge counseling are well documented in the literature as improving patient outcomes. In contrast, no studies have focused on the initiation of a pharmacist-led opioid exit plan (OEP) for acute postoperative pain management. This paper summarizes a pharmacist-led OEP practice model and the potential role that pharmacists and student pharmacists can have at the point of admission, during postoperative recovery, and on discharge in acute pain management patients.

**Setting:** The pain management team at St. Joseph Mercy Hospital in Ann Arbor, MI, has developed and implemented a pharmacist-led OEP to better manage acute postoperative pain in neurosurgery and orthopedic and colorectal surgery in an effort to ensure appropriate patient and provider education and understanding of pain management.

**Practice description:** OEP is a tool with the potential to expand the role of pharmacists in managing acute pain in postoperative patients at the point of admission, during the postoperative inpatient stay, and on discharge. Its benefits include medication reconciliation review and prescription drug–monitoring program search before admission, interdisciplinary rounds with the medical team to provide optimal inpatient postoperative pain management, clinical assessment of outpatient prescriptions with opioid discharge counseling, and medication evaluation of prescribed pain regimen and opioid discontinuation status at the post-discharge follow-up appointment.

**Conclusion:** A hospital pain management team operating a pharmacist-led OEP can be key to guiding the appropriate prescribing practice of opioids and assisting with transitions of care on discharge. Further outcomes-based evaluations of the practice model are planned and encouraged to validate and improve the pharmacist-led OEP practice.

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The opioid epidemic in the United States is growing at an alarming rate, causing all health care professionals to evaluate current practice and implement strategies to solve the staggering increase in opioid-related deaths.<sup>1</sup> In an effort to prevent the increasing number of deaths in communities, policymakers in 49 states have called on pharmacists to combat opioid-overdose deaths by enacting statewide protocols, autonomous pharmacist prescriptive authority, and collaborative practice agreements to increase patient access to opioid reversal agents such as naloxone.<sup>2</sup> In addition, 49 states

have instituted a prescription drug–monitoring program (PDMP) to help identify overprescribing and diversion, and aid health care professionals in decision making.<sup>3</sup>

These comprehensive changes in the past decade have placed pharmacists in a position to aid in the prevention of opioid abuse, misuse, and diversion, and help guide appropriate therapeutic selection. An underutilized area for pharmacists to help curb the growing rates of opioid overprescribing is the acute pain management of postoperative patients. More than 51 million surgeries are performed yearly in the United States, and around 9 million of those are minimally invasive.<sup>4,5</sup> More than 75% of patients who undergo surgery experience moderate to severe acute postoperative pain that begins immediately after surgery and extends beyond hospital discharge.<sup>6</sup> Opioids are the primary analgesic treatment for patients experiencing mild to severe acute postoperative surgical pain.<sup>7</sup> Although opioids are the mainstay for acute postoperative pain control,

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**Key points****Background:**

- An opioid exit plan is a national practice model in which providers oversee the proper initiation and discontinuance of opioid medications for pain management.
- A potential area for pharmacists to help curb the growing rates of opioid overprescribing is the acute pain management of postoperative patients.

**Findings:**

- A pharmacy pain management team can be key to guiding the appropriate prescribing practices of inpatient opioids and opioid prescriptions written upon discharge.
- This article summarizes the setup of a pharmacist-led opioid exit plan practice model.

one study demonstrated that patients who receive an opioid prescription within 7 days of surgery are 44% more likely to still be using the medication 1 year after surgery than patients who do not receive an opioid prescription.<sup>8</sup>

**Setting**

In some hospital settings, pharmacists are in a limited position to oversee the dispensing of outpatient opioid prescriptions; they can, however, have an impact in guiding appropriate therapeutic selection of inpatient opioids and helping with the strength and quantity of prescriptions written on discharge.<sup>9</sup> Pharmacists have an opportunity to initiate evidence-based strategies to aid in the proper treatment of postoperative pain while also helping to combat a nationwide epidemic.

As of July 2016, the pharmacy pain management team at St. Joseph Mercy Hospital (SJM) in Ann Arbor, MI, has developed and operated a pharmacist-led opioid exit plan (OEP) to better manage acute postoperative pain and ensure appropriate patient exposure to opioids on arrival, after surgery, and during transitions of care at discharge. Preliminary piloting of the OEP was initiated by student pharmacists with the orthopedic surgery unit in January 2016. Since the project initially launched as a pilot, data collection is premature and will be reported in future literature to ensure completeness. The present report serves as a summarization and example of the implementation of a pharmacist-led OEP for initiation, management, and discontinuation of opioids in postoperative patients.

**Practice description and interventions***Patient population*

The target patient populations for the pharmacist-led OEP were initiated in 3 different surgery areas based on various reasons as highlighted in [Table 1](#). SJM hosts a very involved

enhanced recovery program (ERP) that includes pharmacists, physicians, nurses, social workers, case managers, dietitians, and hospital administrators. The ERP program works to ensure that patients receive high-quality, collaborative, team-based care and efficient postoperative recovery. Colorectal surgery was selected based on the focus of the ERP in this surgical population and already established collaborative interprofessional care. Neurosurgery and orthopedic surgery were selected because of their inclusion in the Bundle Payment for Care Improvement (BPCI) initiative from the Centers for Medicare and Medicaid Services (CMS). According to the CMS Innovations Center, bundled payment models help to align incentives for collaborative care teams, including physicians and other practitioners. This alignment can open the door for practitioners to better work together regardless of specialty or settings. The BPCI initiative was viewed as a potential opportunity to help foster intercollaborative practice and lead to higher-quality care at a lower cost.

*Prescription drug monitoring program search*

Following a preoperative testing appointment for neurosurgery or orthopedic or colorectal surgery, the pharmacist is notified by clinicians of any patients on a current regimen of opioids more than 60 mg oral morphine equivalents (OME) per day. In addition to preoperative interviews, the pharmacist conducts a PDMP search to determine history of opioid usage. This information helps to guide the pain management action plan and allows for alignment with the information collected from the telephonic interview. The PDMP report includes number of providers prescribing opioids, number of pharmacies dispensing opioids, history of early refills, opioids prescribed in the past, and stability of the current regimen. Furthermore, the PDMP search assesses the current home supply of opioid medications and helps with understanding patient habits for guiding appropriate inpatient and discharge therapy.

*Preoperative medicine reconciliation review*

Before being admitted for surgery, the pharmacist or student pharmacist conducts a 15- to 30-minute telephonic comprehensive medication reconciliation review and personalized pain assessment for patients on a current regimen of opioids more than 60 mg OME per day. The goal of the telephone call is to proactively determine a pain management action plan to ensure the most appropriate treatment after surgery and to guide discharge therapy. The Morton PQRST pain assessment method—palliative and provocative factors, quality, radiation, severity, and temporal factors—is conducted to obtain current preoperative pain levels. Information recorded from the medication reconciliation review, PQRST pain assessment, and PDMP search indicates the extent of a patient's opioid tolerance. With this information the pharmacist and student pharmacists work together to document a personalized acute pain management regimen for opioid-tolerant patients to follow after completion of surgery. The personalized regimen is discussed with the surgical team, and a midlevel clinician or resident enters the orders. In addition, the gathered information and history can help to dictate discharge planning recommendations.

**Table 1**  
Target patient population

Area of surgery	Surgery types	Reason for inclusion
Orthopedic surgery	Total knee arthroplasty; total hip arthroplasty	BPCI (CMS); postoperative pain expected; preexisting intercollaborative relationships
Neurosurgery	Fusion, 2 levels or greater	BPCI (CMS); postoperative pain expected; preexisting intercollaborative relationships
Colorectal surgery	All	ERP; postoperative pain expected; preexisting intercollaborative relationships

Abbreviations used: BPCI, Bundle Payment for Care Improvement; CMS, Centers for Medicare and Medicaid Services; ERP, enhanced recovery program.

### Developing inpatient postoperative treatment plans

After surgery, all opioid-tolerant patients are initiated on the personalized multimodal postoperative treatment formulated by the pharmacist from the information obtained before admission and the outcome of the surgery. Opioid-naïve patients receive a standardized multimodal postoperative pain order set. Post-surgical pain is treated similarly in all 3 surgical populations with a multimodal around-the-clock nonopioid regimen approach in addition to as-needed opioids. Non-opioids vary according to what is appropriate for each surgery. The pharmacist and students engage in daily interdisciplinary rounds with the postoperative patients to monitor and intervene in the acute pain management therapy as well as other relevant postoperative interventions that the patient may be experiencing (e.g., infection, anticoagulation). When conferring with the medical team during rounds, the pharmacist uses a pain medication regimen classification with an approximate analgesic equivalence tool to recommend changes in the daily pain plan. The analgesic equivalence table helps guide the pharmacist to safely recommend increasing or decreasing opioids 1 class at a time for acute pain management.

### Discharge treatment planning

Promptly following a patient discharge order, the pharmacist and students analyze the amount of opioids

administered in the 24 hours before discharge. The amount of doses in the preceding 24 hours of inpatient pain management is used to determine the expected initial strength and frequency needed for outpatient management of acute pain. The quantity sufficient for managing acute pain is dependent on the presumed time to the first follow-up appointment. Counting the last 24-hour opioid dose administration before discharge and the current home supply (if any was determined from the PDMP search), the pharmacist and students assesses the appropriateness of the recommended proposed outpatient pain regimen. If the planned discharge prescription needs an adjustment, an opioid prescribing reference chart, such as that presented in Table 2, is used to suggest an alternate regimen and to educate prescribers on the appropriate prescribing practices for postoperative acute pain management. Also, the pharmacist is able to explain the reasoning behind their recommendations by providing prescribers with more detailed patient history from the PDMP, preoperative interview, and final 24-hour opioid requirements. The OEP is part of the discharge documentation received by the patient.

### Discharge counseling

Before discharge, the pharmacist or student pharmacists obtain the list of planned outpatient prescriptions and perform a counseling session on how to safely and effectively control postoperative pain. The patient receives an opioid discontinuation plan that delineates a tentative daily schedule to slowly taper the use of opioids until finished or until the next follow-up appointment. Patients are taught about the effects of staying on opioids for inappropriate lengths of time as well as the withdrawal symptoms that can occur. They are also educated about using opioids safely, proper disposal, and the common side effects they may experience. Also based on the medications at discharge, personalized education materials are provided (Table 3) to explain the most important points for the patient to quickly reference at home, including indicated use, a sufficient laxative plan, helpful hints, disposal of unused medication, and side effects.

### Follow-up appointments

Within the colorectal ERP patient population, a final phase of the pharmacist-led OEP is the post-surgical follow-up appointment at an early discharge clinic. After a clinician

**Table 2**  
Postoperative orthopedic oxycodone prescribing reference chart<sup>a</sup>

Average oxycodone dose in past 24 hours	Home days 1–4	Home days 5–7	Home days 8–10	Prescription directions	Recommended quantity of 5 mg oxycodone to prescribe
Patients receiving 15-mg dose					
15 mg × 5–6 doses	3 tabs × 5 doses	3 tabs × 4 doses	2 tabs × 4 doses	1–3 tabs q4h prn	120
15 mg × 3–4 doses	3 tabs × 4 doses	2 tabs × 4 doses	2 tabs × 3 doses	1–3 tabs q4h prn	80
Patients receiving 10-mg dose					
10 mg × 5–6 doses	2 tabs × 5 doses	2 tabs × 4 doses	2 tabs × 3 doses	1–2 tabs q4h prn	80
10 mg × 3–4 doses	2 tabs × 4 doses	2 tabs × 3 doses	1 tab × 3 doses	1–2 tabs q4h prn	60
10 mg × 1–2 doses	Goal for patient is to stop therapy by day 10			1–2 tabs q6h prn	40
Patients receiving 5-mg dose					
5 mg × 5–6 doses	1 tab × 5 doses	1 tab × 4 doses	1 tab × 3 doses	1 tab q4h prn	30
5 mg × 3–4 doses	1 tab × 4 doses	1 tab × 3 doses	1 tab × 3 doses	1 tab q4h prn	30
5 mg × 1–2 doses	Goal for patient is to stop therapy by day 10			1 tab q6h prn	20

<sup>a</sup> Oxycodone is used for this example only; this method is used for all opioid medications.

**Table 3**  
Postoperative medication home management

Medication	Why am I taking this medication?	Most common possible side effects	Helpful hints
<b>Pain and bowel management</b>			
Pain—Opioids: oxycodone (Roxicodone); Take ___ tablets every ___ hours as needed for pain	To treat moderate to severe pain	Drowsiness, fatigue, nausea, vomiting, constipation, itching	<ul style="list-style-type: none"> <li>• Take with food to prevent upset stomach</li> <li>• Avoid driving and alcohol while taking this medication</li> <li>• Use enough to control pain to allow to keep up activity at home</li> </ul> Suggested goals to slowly come off this medication: <ul style="list-style-type: none"> <li>• Days 1 to 4: Take ___ tablets, ___ times a day</li> <li>• Days 5 to 7: Take ___ tablets, ___ times a day</li> <li>• Days 8 to 10: Take ___ tablets, ___ times a day</li> </ul>
Pain—Nonopioids: acetaminophen (Tylenol)	To treat mild to moderate pain	Upset stomach	<ul style="list-style-type: none"> <li>• Do not use over-the-counter medications that also contain acetaminophen in them</li> </ul>
Stool Softeners: docusate sodium (Colace)	To treat opioid-induced constipation	Diarrhea, rash	<ul style="list-style-type: none"> <li>• Drink plenty of water while taking this drug</li> <li>• May take 24 to 72 hours to see effect</li> <li>• Best results when taken consistently</li> </ul>
Laxatives: senna (Senokot), polyethylene glycol (Miralax)	To treat opioid-induced constipation	Bloating, gas, nausea, urgency, stomach pain	<ul style="list-style-type: none"> <li>• Senna: Take at night if only taking once daily—should see effect in 6 to 12 hours</li> <li>• Polyethylene glycol: Use measuring cap provided to mix powder with 1 cup of water, juice, coffee, or tea</li> </ul>
<b>Clot prevention</b>			
Aspirin (Ecotrin, Bufferin), 325 mg; Take 1 tablet by mouth daily for 4 weeks	To prevent blood clots and stroke	Bruising, bleeding, ulcers	START DATE: _____ END DATE: _____ <ul style="list-style-type: none"> <li>• This is NOT for pain—aspirin should be taken at the same time every day for clot prevention</li> <li>• Take with food to prevent upset stomach</li> <li>• Do not take Advil, Motrin, Aleve, or other agents that may increase bleeding risk without approval from your doctor first</li> <li>• Tell your doctor if you have bloody/dark stools</li> </ul>
Other counseling points: For proper medication disposal: Go to <a href="http://www.dontflushdrugs.com">www.dontflushdrugs.com</a>			

completes a physical assessment of the patient's surgical healing, a pharmacist performs a medication evaluation of the initial progress of the prescribed pain regimen and opioid discontinuation status. If any opioid-related adverse problems are identified, the pharmacist provides a modified acute pain management plan and fulfills concurrent patient counseling on the changes. [Figure 1](#) further illustrates the entire program and components.

#### Staffing the program

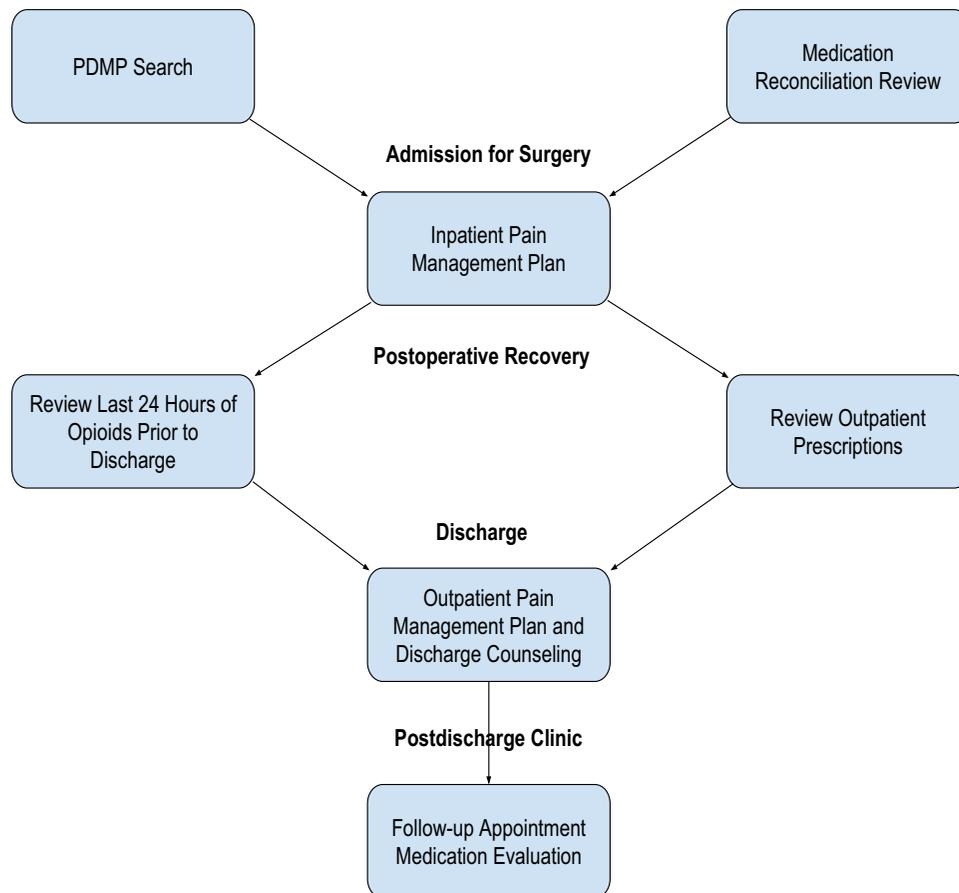
Staffing of the OEP program includes trained pharmacists, student pharmacists, and a clinical pain management pharmacist. Each surgery area is staffed by 1 pharmacist. Student pharmacists often perform discharge counseling and education. Furthermore, a pharmacist develops a personalized inpatient pain plan for identified opioid-tolerant patients through a 15- to 20-minute telephone call before scheduled surgeries. One pharmacist is needed to staff the post-discharge clinic for the colorectal surgery patients. Approximately 8 patients per week are consulted for 20-minute appointments at the post-discharge clinic. During absences or vacations, cross-coverage for discharge counseling or the clinic education can be performed by a student pharmacist, another trained pharmacist, or the clinical pain management pharmacist. [Table 4](#) further

highlights the breakdown of time commitments by surgical units and activities.

#### Discussion

An OEP is a national practice model in which providers oversee the proper initiation and discontinuation of opioid medications for pain management.<sup>10</sup> Although national chronic pain guidelines have long recommended an exit strategy to taper patients off of opioids, recent state-specific guidelines propose focusing on prevention of the transition of acute and subacute pain into chronic pain.<sup>11</sup> Pharmacists can fill an important gap in the prevention of chronic opioid use by integrating themselves into their institution's pain management teams.<sup>12</sup>

One such pain medication stewardship team involving pharmacists reviewed pain orders for 2499 patients over 1 year, resulting in 44% of orders needing an intervention.<sup>13</sup> Of these interventions, 86% involved reconciling the correct history of pain medications with the use of the state PDMP.<sup>13</sup> Moreover, pharmacists involved on the team were consulted to develop inpatient pain management plans for all complex opioid-tolerant patients.<sup>13</sup> Combining the information received from a medication reconciliation and the



**Figure 1.** Overview of pharmacist-led opioid exit plan. PDMP, prescription drug–monitoring program.

PDMP provides valuable data for a pharmacist to develop a multimodal inpatient pain management plan.

The American Society of Anesthesiologists and the American Pain Society guidelines recommend a multimodal method for treating postsurgical pain while also minimizing adverse drug events.<sup>14,15</sup> A recent study evaluated the cost and economic impact of opioid-related adverse drug events (ORADEs) in post-surgical patients of a 26-hospital health system.<sup>16</sup> Of note, 4955 (13.6%) of the 36,529 (98.6%) patients who received opioids for post-surgical pain experienced ORADEs. The primary end point results associated with ORADEs were a 55% longer length of stay, 47% higher cost of care, 36% increased risk of 30-day readmission, and 3.4-fold higher risk of inpatient mortality in patients who experienced ORADEs. A suggested solution to reducing ORADEs in post-surgical patients is to involve pharmacists in the inpatient rounds, discharge counseling, and post-discharge clinic follow-up appointments to prevent ORADEs.

Federal and state laws require pharmacists to assess the suitability of all prescriptions for controlled substances before dispensing.<sup>17</sup> Although it is expected for community pharmacists to fulfill this requirement, no studies have examined the potential impact of hospital pharmacists assessing the appropriateness of opioid prescribing practices within their respective institutions. Of note, medical literature has shown that more than two-thirds of certain postoperative patients

have leftover excess quantities of opioid medications.<sup>18–20</sup> One such study reported that an average of 19 additional pills per patient went unused, and another that 92% of patients receiving these prescriptions received no disposal instructions for leftover pills.<sup>19,20</sup> Using the OEP tools to assess prescriptions and counsel patients on the proper disposal of unused opioids, pharmacists can help to minimize the risk of diversion in postoperative patients.

There are a few important barriers to note in the development of a pharmacist-led OEP. First is finding time and resources for the pharmacist to execute the program. Pain management teams can save time and resources by recruiting student pharmacists and pharmacy technicians to participate in the OEP by performing medication reconciliation, PDMP searches, and discharge counseling. Pharmacy technicians performing medication reconciliation reviews have been shown to significantly reduce medication discrepancies and allergy discrepancies in preoperative surgical patients.<sup>21</sup> Many states allow pharmacists to delegate their PDMP database access to student pharmacists and pharmacy technicians to conduct patient searches.<sup>22</sup> Inclusion of student pharmacists to assist with the development of educational materials and in rounds can also help. Second is finding a place or particular surgery group for the program to start off. The BPCI program allowed for alignment of incentives, cost-effective care, and also fostering intercollaborative efforts. In addition,

**Table 4**  
Staffing and time commitment

Surgery area	Staffing components	Time commitment	Activity breakdown
Orthopedic surgery	• Clinical pain management pharmacist OR	1. 10–15 minutes per day	1. Interdisciplinary rounds to determine eligible discharge patients
	• Trained staff pharmacist AND	2. 2–4 hours per day	2. Discharge counseling (includes preparing education materials for patients, reviewing charts, and documenting counseling sessions)
	• Student pharmacist(s) (discharge counseling)	3. 45–60 minutes per patient	3. Personalized postoperative pain management plan for all high-dose patients. Approximately 4 per week are identified.
Neurosurgery	• Clinical pain management pharmacist OR	1. 30 minutes per day	1. Interdisciplinary rounds
	• Trained staff pharmacist AND	2. 1–4 hours per day	2. Discharge counseling (includes preparing education materials for patients, reviewing charts, and documenting counseling sessions)
	• Student pharmacist(s) (discharge counseling)	3. 45–60 minutes per patient	3. Personalized postoperative pain management plan for all high-dose patients. Approximately 4 per week are identified.
Colorectal surgery	• Clinical pain management pharmacist OR	1. 30 minutes per day	1. Interdisciplinary rounds
	• Trained clinical pharmacist AND	2. 1–4 hours per day	2. Discharge counseling (includes preparing education materials for patients, reviewing charts, and documenting counseling sessions)
	• Student pharmacist(s) (discharge counseling)	3. 2 days a week up to 3–4 hours/day	3. Clinical pain management pharmacist staffs the post-discharge clinic

Cross-coverage between pharmacists is applicable in all surgical areas.

collaborative groups within a health system similar to an ERP can be used as building blocks to utilize interdisciplinary teamwork with other practitioners. Retrospective chart review for specific surgery groups is another strategy to identify trends in pain medication likelihood.

A third barrier is the education of all surgeons, physician assistants, and nurse practitioners about appropriate prescribing practice for postoperative acute pain management. This education includes both inpatient and outpatient follow-up prescribers. Supplementing prescribers with clear guideline references has reduced the need for reeducation. Finally, discharge counseling historically has been a function of nursing. It is important to educate the nursing staff and work collaboratively to involve pharmacy with performing discharge counseling for this subset of patients. With many institutions already utilizing pharmacists for discharge counseling for various disease states, that is becoming less of a barrier.

## Conclusion

A pharmacy pain management team can be key to guiding the appropriate prescribing practices of inpatient opioids and ensure best practices with quantity and quality of opioid prescriptions written on discharge. This paper summarizes the setup of a new pharmacist-led OEP practice model and the potential role that pharmacists and students can have before admission, during inpatient visits, and during transitions of care for discharge in acute pain management patients. Future outcomes-based evaluations of the success of this practice model are in progress. These outcomes include evaluation of post-surgical emergency department visits, readmission rates within 30 days, number of outpatient opioid prescriptions written, average quantities of prescriptions written, patient

and provider satisfaction, and Health Care Acquisition Performance System scores. Additional research is encouraged to validate and improve the pharmacist-led OEP practice model.

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