TRANSITIONING TO AN OPIOID-LIGHT EMERGENCY DEPARTMENT AT BAPTIST MEMORIAL HOSPITAL-MEMPHIS

Abstract

Tennessee ranks second nationally in opioid-related deaths. Approximately 80% involve prescription opioids. Patients' first introduction often occurs with an emergency department (ED) visit. Our goal is to decrease patient exposure to opioids in our ED while improving patient care through education and use of alternative medications.

A focused pharmacist team utilized the Kata improvement process to evaluate data, identify obstacles, and develop ideas. Pharmacists were responsible for order-set development, provider and nursing education, data collection, analysis, and communicating results with the ED Medical Director and team. Medical staff and administrative support were obtained.

A multi-modal pain therapy "opioid-light" order set was developed for five specific indications with evidence for efficacy of non-opioids. The order set included alternative therapies for migraine/headache, musculoskeletal, joint dislocation/fracture, renal colic, and chronic abdominal pain.

Milligrams of morphine equivalents per 100 ED patient visits (MME/100) was chosen as the primary metric. Individual provider prescribing patterns were also evaluated. After six months, ED opioid usage decreased by 43% from baseline. After one year, ED opioid usage decreased by 64% with continued maintenance of this reduction. Nursing reports fewer pain-seeking "frequent flyers". Practitioners note increased awareness of opioid-related risks. Patients give positive comments on the conversations we have regarding pain management. We have attained an increase in overall patient satisfaction scores and maintenance in scores related to pain.

Plans are being made to train pharmacists and physicians to spread the program to our entire 22 hospital system as well as the state hospital association in order to decrease patients' exposure to opioids in emergency departments and ultimately reduce opioid abuse in our region.

Medication-Use System Initiative Scope

Our ED practitioners were experiencing first-hand the effects of the opioid crisis as patients were more frequently being treated for overdoses on our doorsteps. Sometimes it would be the same patient again and again, and sometimes too late. Across the state, more Tennesseans die of overdoses than motor vehicle accidents. There are more opioid prescriptions in a year in Tennessee than people. Due to the alarming rate of opioid use and overdoses in our state, a team of pharmacists and physicians within our hospital started working to address the Centers for Disease Control and Tennessee Department of Health initiatives to decrease opioid addiction by improving opioid prescribing patterns.

Studies published in the Annals of Emergency Medicine demonstrated an association of ED opioid initiation with recurrent use (Hoppe et al., 2015; 65: 493-499), and as an initial exposure preceding addiction (Butler et al., 2016; 68: 209-212). This prompted us to focus on ED prescribing patterns. Our ED is in a large community setting with more than 75,000 patient visits in 2017 and an average hospital census of 475 patients.

Data collection was performed to assess our baseline and track progress. Milligrams of morphine equivalents per 100 ED visits (MME/100) was chosen as the primary metric (Graph 1). It was

felt that this metric accounts for the variability of opioids prescribed and normalizes the number of patients over time and as seen by individual ED providers. Opioid administration data was obtained from reports from ED automated dispensing machines.

The baseline data was further evaluated for overall opioid prescribing patterns (Graph 2), percentage of patients prescribed an opioid (Graph 3), and choice and dose of opioid ordered (Graph 4). This revealed a significant variability among prescribers in both type and number of opioids ordered that further supported our efforts. For example, on average 22 percent of patients that visited the ED during the month of April 2017 received an opioid, variably among prescribers ranged from 11% to 64% (Graph 3). Given that a first exposure to an opioid occurs in the ED, this variability was compelling evidence that individual prescribing habits were exposing patients to opioids unnecessarily.

The opioid-light initiative encompasses multiple components of the medication-use system: 1) prescribing: educating providers on alternative medications for pain management and reserving opioids in lower doses as rescue therapy, 2) transcribing/verification: adjustments to override lists to allow pharmacist' review of specific medications and higher doses of opioids, 3) dispensing: utilization of automated dispensing machines to make alternative medications easily accessible, 4) administration: nurse medication education, 5) monitoring: increase in provider, nurse and patient interaction for assessment of improvement in pain and education regarding possible adverse effects of alternative medications, 6) patient education: more in-depth discussions with patients regarding use of alternative medications and concerns regarding opioids, 7) safety: methods for tracking adverse effects.

The opioid-light order set serves as the tool box to assist the provider in breaking the cycle of ordering opioids as first-line treatment by providing alternative, evidence-based treatment options for management of patients' pain. Effective implementation relied on all members of the inter-professional team as demonstrated through the involvement of multiple steps of the medication use system. Support throughout the ED was easily gained with the increased awareness of the opioid crisis and the leadership provided by our ED medical director.

Pharmacist Leadership

Recognizing the need for greater pharmacist' involvement in pain management in the hospital, our pharmacy director facilitated additional training and conference attendance for two clinical pharmacy specialists to earn Certified Pain Educator credentialing. This added to the depth of our pharmacy team and enabled networking with other programs. Members of our team learned of work being done in Colorado to pilot Opioid-Light EDs across the state. We reached out to state pharmacy leadership and coordinated a webinar with the primary pharmacist involved, Rachael Duncan. Dr. Duncan shared the work developed at Swedish Medical Center in Denver, CO, lessons learned, and their plans to spread the Opioid-Light program to other hospitals in CO. Emphasis was placed on alternative therapies via a multi-modal approach. Dr. Duncan's willingness to collaborate allowed us to model alternative pathway order sets based on what would be piloted in her state.

We met with our ED medical director to discuss various ideas to decrease opioid use in the ED in January 2017. Pharmacists developed a multi-modal pain therapy order set for five specific indications with evidence for efficacy of non-opioids. The "opioid-light" order set included alternative therapies for migraine/headache, musculoskeletal, joint dislocation/fracture, renal colic, and chronic abdominal pain. For example, a provider may choose to initiate high-flow oxygen, ketorolac and metoclopramide for a patient presenting with a migraine instead of the common practice of administering opioids.

Pharmacists presented the opioid-light order set to ED and Pharmacy & Therapeutics committees and provided education to providers and nursing once approved.

Education, data analysis and feedback have been ongoing. A pharmacist team consisting of pharmacy leaders, ED, operations and clinical pharmacists met multiple times weekly to evaluate data, identify obstacles, discuss ideas, and plan next steps through a Kata improvement process. The pharmacy team presented education, implementation plans and data regularly at ED service line, ED provider meetings, and nursing huddles.

Planning and Implementation

A multi-disciplinary, patient-centered approach to medication safety practices is part of our hospital culture. Pharmacy has developed strong team relationships with physicians, nursing and leadership and have been integral to several quality initiatives. In January 2017, our pharmacy team and ED medical director began discussing the possibility of attacking the opioid epidemic head on in our ED. We sought administration support early due to concerns patients would express dissatisfaction with care if not receiving opioid pain medications. We knew that, despite best efforts to communicate our reasoning for utilizing alternatives, some patients may become upset, or even agitated, when we were not administering opioids. For some this was because they knew opioids had worked for their pain in the past. For others, they wanted opioids solely due to the repercussions of the epidemic we are battling. Administration support was a fundamental part of the success of this initiative and made providers' feel comfortable with changing practice in patients' best interests.

We gained full support from both medical staff and administration to begin utilizing an opioid-light approach to pain. Development of an opioid-light order set followed. Approvals of the ED Medical Director/Service Line Committee and the Pharmacy & Therapeutics Committee were obtained prior to implementation. The opioid-light order set went "live" in March 2017. Order-set medications were made available in the automated dispensing machines to encourage utilization and prevent any perceived medication dispensing delays.

ED pharmacists provided education to providers and nurses on the opioid-light order set and the various medication options. We recognized providers and nurses were the front-line educators and users and wanted to make sure all felt comfortable ordering, administering, monitoring and talking to patients about the alternative medications. Pharmacists also educated the ED team on the goals and expectations of becoming an opioid-light ED.

Since changing the choice of medications was the primary focus of this initiative, physicians played a daily role in our improvement. These physicians also played a major part in patient education to ensure them these alternative medications could and would work to help manage patients' pain. Our ED pharmacists and nurses also communicated this message. It was important that we all shared the same understanding as to why we were doing what we were doing, and provided our patients with this information in a consistent manner. If there were times that providers chose to use opioids, nurses and pharmacists also played a role in recommending alternative therapies or lower opioid doses. Involving the entire team helped maintain an ongoing discussion regarding changing practice habits.

Despite the straightforward utility of an order-set, we knew we needed an ongoing process for review and improvement to ensure continuous improvement towards our goal. For this reason, we decided to utilize our healthcare system's improvement process, the Toyota Kata. This process requires goal setting with smaller targets along the way, and encourages its users to employ rapid

experimentation with a focus on obstacle identification. For the opioid-light initiative, pharmacy took ownership of the Kata board and daily process improvement.

Prescribing data was shared with the ED medical director and presented at monthly ED provider meetings. Pharmacists also had one-on-ones with high-usage providers to address barriers and provide recommendations. One method of addressing prescribing patterns was to change providers' "favorites" in computerized prescriber order entry (CPOE) to lower doses of opioids. This way, when opioids are deemed necessary, low doses are more likely to be ordered instead of defaulting to high doses. We also worked with administration and nursing leadership to develop policy and training to allow ED nurses to administer low, analgesic doses of ketamine. Up to this point, ketamine had been restricted to physician administration in our facility.

Interdisciplinary teamwork was the cornerstone of success for the opioid-light initiative. The ED medical director led the initiative by setting a higher standard and engaging peer discussions, which led to healthy peer-to-peer competition and openness to changing practices. Pharmacists developed the order set, incorporated feedback, provided education, identified barriers to change, and analyzed and shared data. ED providers and nurses provided reassurance to patients that we cared about treating their pain and taking care of them in the long-term by decreasing exposure to opioids. Nursing leadership facilitated advancing nurse practice with policy and training on ketamine administration. Administration supported the opioid-light work on the front-end, removing providers' concerns regarding patient satisfaction dependent on opioid prescribing.

Measured Outcomes and Impact

The first step of our opioid-light initiative and the Kata process was to determine our baseline, or "current" condition, and our goal, or "challenge". Milligrams of morphine equivalents per 100 ED patient visits (MME/100) was chosen as the primary metric (Graph 1). As discussed, this metric accounts for variability among opioids prescribed and differences in numbers of patients seen over time and among providers. MME/100 was used to both track trends and compare providers' use of opioids to their peers. After determining our current condition (123 MME/100, January 2017), we decided to target a 40% reduction in opioid use in our ED to 74 MME/100 by October 2017. While our overall goal was set at a 40% reduction, we set short-term, two-week target goals along the way. These target conditions helped us identify which day-to-day process changes were effective to continuously reduce and sustain a reduction in our ED opioid use.

The focus in the beginning was on education for all providers. Interim analyses of opioid use numbers including individual provider data were conducted through daily meetings (Graphs 2-5). The purpose of these analyses was to identify opportunities for improvement for individual providers. We realized some providers consistently utilized higher than average amounts of opioids compared to peers. We focused mainly on the providers whose usage was above average and consistently had a high patient volume (Graph 5).

Once we identified our "high-users", we began the process of determining the frequency of opioid doses per patients seen and the type and doses of opioids providers ordered. Patterns emerged and we began to understand that optimizing these two factors would move us towards our MME/100 patient visits goal. Some providers prescribed opioids to a high percentage of patients seen while others were in the habit of prescribing high doses. The highest users did both. We worked closely with our ED medical director and providers to further promote the use of alternatives. We learned some providers

held perceptions patients needed “at least such and such dose” to have any effect. We changed these beliefs by showing how colleagues effectively utilized alternatives and lower doses.

Through providers gaining increased experience with alternative medications for patients presenting with certain modalities of pain, overall opioid use per patient trended down. We realized a reduction in the percent of ED patients that received an opioid dose from 22% in April to 12% by August 2017. This represents a 55% decrease in the frequency of patients receiving an opioid in just four months.

One of the most successful steps towards our goal was our shift in focus to the types of opioid doses administered (Graph 4). Although the opioid light order set covers five different modalities of pain, a large number of patients did not fit these categories. There were also patients in which the alternative therapies did not sufficiently manage their pain. For these patients, we wanted to promote the use of the lowest effective opioid dose.

We set a goal to reduce our use of the opioids which result in high MME. As one of the steps in our Kata process, we requested our ED providers initially order 50% of the typical dose they would give patients. Despite some of the provider’s concern that frequency of repeat doses would increase, this proved to not be true. Providers were surprised to learn most patients’ pain was adequately treated with the lower dose. This change likely had the most impact on our MME/100 visits and the culture of our ED. Our providers now regularly attempt to start with a low dose if opioids are needed.

We surpassed our initial goal by decreasing opioid usage from a baseline of 123 MME/100 visits to 70 MME/100 visits as of September 2017, a 43% reduction. We have achieved an even more impressive 64% reduction to 45 MME/100 as of December 2017 (Graph 1). More importantly, we have been able to maintain this decrease in 2018 (42 MME/100, March 2018).

The results of the project have been communicated throughout the ED and our institution to various physicians and hospital leadership, at nursing and pharmacy meetings, and have resulted in increased awareness of opioid-related risks and opportunities for practice change, especially among hospitalist and anesthesiology group. As a result of the success of this initiative, we have now expanded our focus to peri-operative pain management. We are also collecting data on how patients’ pain is managed once out of the ED. We are evaluating in-patient opioid prescribing patients for patients admitted from the ED and ED opioid discharge prescriptions.

Innovation and Generalizability

The combined approach of alternative therapies and data tracking seems applicable to any setting with a need to evaluate opioid use. We found many providers wanted choices besides opioids. We empowered them to better care for patients by providing education and evidence-based alternative treatment pathways. Others responded to numbers. No provider wanted to be the outlier prescribing multiples more MME for every 100 patient visits. Data brought visibility and a mechanism for intervention to those who routinely prescribed high doses and/or to a high percentage of patients. However, this visibility would not have had significance without a physician leader willing to set a higher standard and have peer-to-peer discussions. It was also necessary to have an interdisciplinary approach and engage patients. Providers and nurses are now better equipped to have conversations about using alternative medications and the potential risks of opioids.

In addition to patient-centric care and providing assurance we want to take care of patients’ pain and do so in a responsible manner, reducing opioid use in the ED comes down to two principles: utilize alternatives first and use lower doses when opioids are warranted. Although these appear to be

simple things to change, we wanted to empower our physicians, not restrict them. Through the Kata process, we were able to identify the barriers that kept our providers from utilizing these two methods. Whether it was uniform over-use of opioids or lack of realization of the potential efficacy of alternatives and lower doses, we created plans to address these obstacles. The pharmacy team prepared data and graphs to visualize ED opioid utilization. The methods to evaluate individual provider patterns evolved as we became more familiar with the data. By continuously communicating with our providers, gathering feedback, and providing current opioid usage compared to peers, we began to see rapid improvement. As we continued our work, we began to have one-on-one discussions with our high-use providers to continue to identify barriers to address.

The pharmacy team's commitment to the Kata process has been the backbone of this initiative. It ensured we continuously moved forward by focusing on identifying barriers and developing steps to experiment against these obstacles. With the support of our administration and ED medical director, our providers and nurses have championed this change in practice. They feel enabled to care for their patients with evidence-based medicine in a manner consistent with minimizing risk and exposure to opioids. Commitment, collaboration, and the continual identification and response to barriers were the key to success.

The results of our opioid-light initiative were presented at the Tennessee Hospital Association (THA) Leadership Summit on October 11, 2017, in Nashville, TN. The work was well received, and we were invited to join the Tennessee Opioid Task Force. Also, THA is collaborating to create a plan to train pharmacists and providers on implementing the opioid-light program throughout EDs in the state. We have hosted a site visit and are presenting at the THA Medication Safety Summit on April 26, 2018. THA has identified other EDs in the state interested in piloting expansion of the opioid-light work. Our pharmacy will be providing regular webinars and assisting however we can with this process.

Plans for Sustaining & Advancing the Initiative

Our future plans are to use our opioid-light initiative program to positively affect opioid abuse in our region and improve overall patient care by use of alternative pain treatments. In our own hospital, we want to build on the success in the ED and spread these strategies to the in-patient and peri-operative management of pain. In our hospital system, our goal is to expand the ED initiative to the other 22 Baptist hospitals in the tri-state areas of Tennessee, Mississippi, and Arkansas. Also, we will be helping spread this model through the state of Tennessee with our collaboration through THA. We are excited for these opportunities to assist other programs with changing practice and are sure to learn ways to improve our own. This should have a major and long-term impact in reducing prescription opioid addiction in this region.