

MARCQI Pain Optimization Protocol

Evidence Based Opioid Prescribing

Guidelines for Elective Primary Total Hip and Knee Arthroplasty in Opioid Naïve Patients



Rationale:

Pain management, surgical technique, anesthesia and rehabilitation protocols have all changed significantly in the last decade. The majority of patients receive preemptive pain management protocols, regional anesthesia and local infiltration of anesthetics. Procedures have become more anatomic with less dissection and reduced tissue trauma. Many sites are performing outpatient arthroplasty and incorporating alternative pain management techniques.

Despite these changes, there has been little change in post-operative opioid prescribing patterns. Opioid naïve patients are also at risk for chronic persistent opioid use after primary arthroplasty with 4.3% of hip patients and 8.2% of knee patients remaining on opioids at 6 months post-op despite no association with pain reduction or satisfaction after surgery.¹ Chronic opioid use is arguably the most common complication after primary hip or knee arthroplasty. There is also a growing body of evidence that a significant portion of the opioids prescribed after these procedures are not utilized and remain in the community.^{3,4} These medications are at risk for unprescribed use, theft, diversion, or misuse.

Reducing the size (i.e. number of pills) of post-operative prescriptions is not associated with increased calls for refills or worsening post-operative pain or satisfaction.⁴ In addition, smaller volume prescriptions result in less opioid consumption since patients tend to use only a portion of each prescription. Recent data presented at the American Association of Hip and Knee Surgeons (AAHKS) meeting on November 3, 2018 also found no association between script size and refill requests when using a 30 tablet limit.⁵

Recent work has been done in Michigan to systematically quantify prescribing patterns after hip and knee replacement. Actual medication usage was determined at multiple MARCQI sites. This work has identified that the majority of hip replacement patients take fewer than 30 oxycodone 5 milligram pills (or equivalent), or 225 oral morphine equivalents (OME), post-operatively and 15% take no opioids after leaving the hospital. The majority of knee replacement patients take fewer than 56 pills, 420 OME, post-operatively and approximately 10% take no opioids after discharge. In the data obtained, refill requests were independent of the original prescription size. Approximately 35% of THA patients and 50% of TKA patients can be expected to call for a refill or request one at follow-up regardless of the original prescription size.

Michigan law now requires the prescription of fewer than 50 oral morphine equivalents (OMEs) per day and a maximum 7-day supply, 350 OME. In addition, education of patients is an important component of the new recommendations. They should be given a goal of weaning off of opioids within 5-7 days.

The following guidelines are evidence based on data from MARCQI patient's actual opioid consumption after THA and TKA. The guidelines are written to comply with Michigan opioid prescribing laws. They are subject to further refinement over time as necessary.

MARCQI Pain Optimization Protocol

Evidence Based Opioid Prescribing

Guidelines for Elective Primary Total Hip and Knee Arthroplasty in Opioid Naïve Patients



Guidelines for the Opioid Naïve Patient:

1. Incorporate a patient education program about appropriate opioid use, alternative pain management strategies and opioid weaning strategies and methods with a goal of weaning off of opioids 5-7 days after surgery.
2. Perform a MAPS check⁶
3. Review the Start Talking form⁷ with all patients
4. Prescribe opioids for less than or equal to a 7-day supply.⁸
5. Prescribe only one opioid medication at a time and prescribe less than 50 OME per day for opioid naïve patients.
 - a. The risk of overdose or other complications of prescription increase dramatically with combination prescribing.
 - b. Consider avoiding medications which are pro-drugs of the active agent
 - i. Examples include codeine, tramadol
 - ii. Patient metabolism and reaction can be extremely variable
 - c. Avoid “extended release” or “long-acting” formulations
 - i. These medications are not appropriate for acute perioperative pain management
 - ii. Examples include OxyContin or MSContin

MARCQI Pain Optimization Protocol

Evidence Based Opioid Prescribing

Guidelines for Elective Primary Total Hip and Knee Arthroplasty in Opioid Naïve Patients



6. For THA: Limit initial scripts to 240 OME or less. A 30 tablet script is sufficient in the majority of cases.

Examples listed below:

THA Script	Opioid dose	Acet. Dose	# Pills	Sig. (PRN)	OME/day	Acet./day	Total OME
Oxycodone	5 mg	-	30	1q4	45	-	225
Hydromorphone	2 mg	-	30	1q4	48	-	240
Hydrocodone (Vicodin, Norco)	5 mg	325 mg	30	1-2 q 6	20-40	2,600 mg	150
Tramadol	50 mg	-	30	1-2 q 6	20-40	-	150

7. For TKA: Limit initial script to 320 OME or less. A 40-50 tablet script is sufficient in the majority of cases.

Examples listed below:

TKA Script	Opioid dose	Acet. Dose	# Pills	Sig. (PRN)	OME/day	Acet./day	Total OME
Oxycodone	5 mg	-	40	1q4	45	-	300
Hydromorphone	2 mg	-	40	1q4	48	-	320
Hydrocodone	5 mg	325 mg	50	1-2 q 6	20-40	2,600 mg	250
Tramadol	50 mg	-	50	1-2 q 6	20-40	-	250

8. Scheduled, round-the-clock acetaminophen should be prescribed unless using acetaminophen containing opioid formulations (i.e. hydrocodone/acetaminophen, Vicodin, Percocet, etc.)
 - a. Consider avoiding combination medications that include acetaminophen
 - b. Limit acetaminophen dose to 3000-4000 mg per 24 hours ^{9,10}

MARCQI Pain Optimization Protocol

Evidence Based Opioid Prescribing

Guidelines for Elective Primary Total Hip and Knee Arthroplasty in Opioid Naïve Patients



9. Avoid prescribing concurrent benzodiazepines
 - a. High risk of overdose with combined opioid and benzodiazepine therapy
 - b. If patient is on benzodiazepines preoperatively, do not acutely discontinue given the high morbidity with benzodiazepine withdrawal.
 - c. Consider naloxone (Narcan) prescription if already on benzodiazepines.
10. Consider prescribing naloxone (i.e Narcan) in high risk patients*
11. NSAID therapy can be beneficial for post-operative pain management, however the potential effects of gastric irritation, bleeding and interactions with venothromboembolic (VTE) prophylaxis (potentially increasing VTE risk) should be considered.

MARCQI Pain Optimization Protocol

Evidence Based Opioid Prescribing

Guidelines for Elective Primary Total Hip and Knee Arthroplasty in Opioid Naïve Patients



*History of opioid related overdose, significant pulmonary disease, significant liver disease, obstructive sleep apnea, alcohol use, chronic opioid use greater than 50 oral morphine equivalents per day

References:

1. Goesling J, Moser SE, Zaidi B, et al. Trends and Predictors of Opioid Use Following Total Knee and Total Hip Arthroplasty. *Pain*. 2016;157(6):1259-1265.
2. Hill M V., McMahon ML, Stucke RS, Barth RJ. Wide variation and excessive dosage of opioid prescriptions for common general surgical procedures. *Ann Surg*. 2017;265(4):709-714. doi:10.1097/SLA.0000000000001993.
3. Lee JS, Howard RA, Klueh MP, et al. The Impact of Education and Prescribing Guidelines on Opioid Prescribing for Breast and Melanoma Procedures. *Ann Surg Oncol*. 2018;1-8. doi:10.1245/s10434-018-6772-3.
4. Lee JS, Hu HM, Brummett CM, et al. Postoperative opioid prescribing and the pain scores on hospital consumer assessment of healthcare providers and systems survey. *JAMA - J Am Med Assoc*. 2017;317(19):2013-2015.
5. Hannon CP, Calkins TE, Li J, et al. *Large Opioid Prescriptions Are Unnecessary After Total Joint Arthroplasty: A Randomized Controlled Trial*. Abstract presented at AAHKS Annual Meeting, November 3, 2018.
6. Login at: <https://michigan.pmpaware.net/login>
7. Available at: https://www.michigan.gov/documents/mdhhs/MDHHS-5730_621248_7.dot
8. Michigan Government FAQ document:
https://www.michigan.gov/documents/lara/LARA_DHHS_Opioid_Laws_FAQ_05-02-2018_622175_7.pdf
9. Available at: <https://www.regulations.gov/document?D=FDA-2011-N-0021-0001>. FDA, 76 FR 2691 – 2697, Jan 14, 2011. Accessed November 24, 2018.
10. McNeil Consumer Healthcare. TYLENOL Dosage for Adults. Available at <https://www.tylenol.com/safety-dosing/usage/dosage-for-adults>. 2016; Accessed: November 21, 2018.