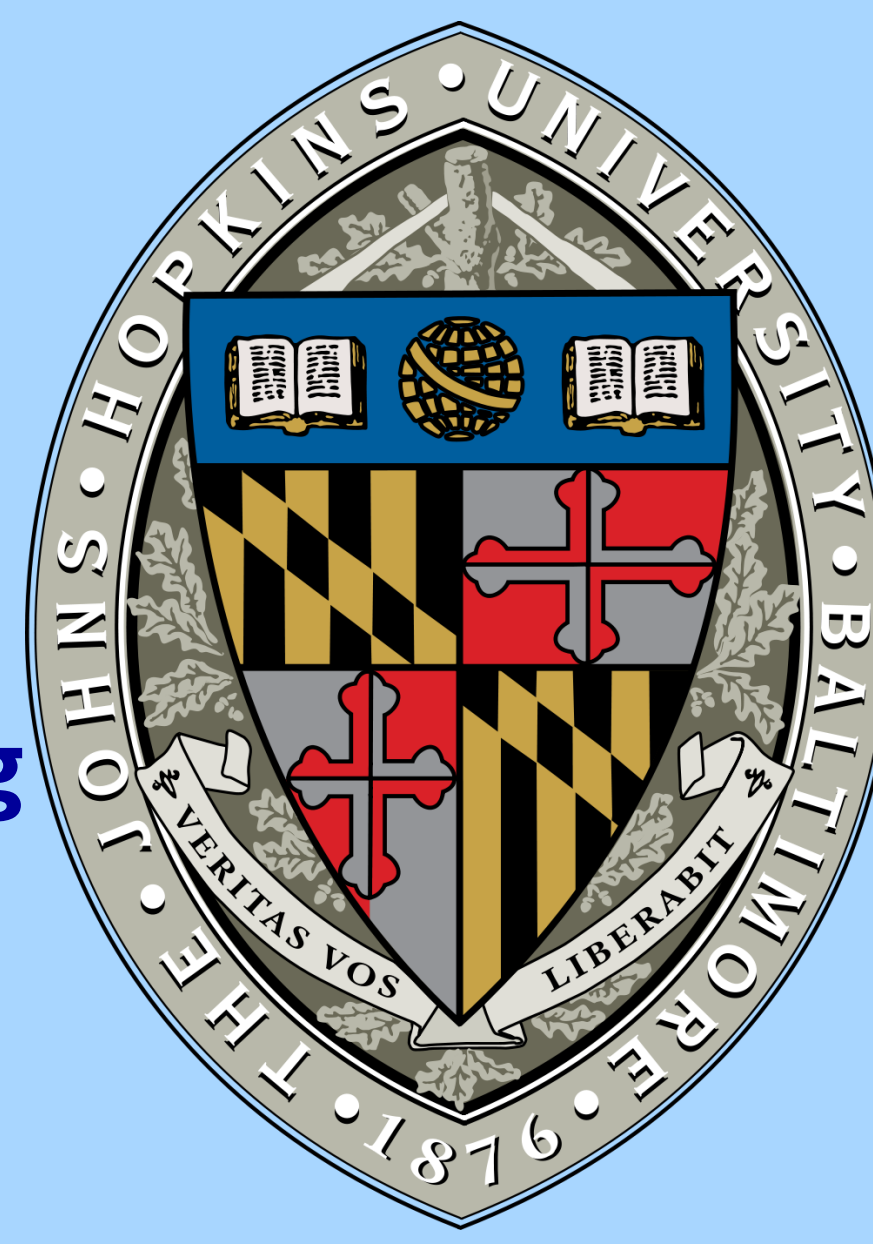


Evolution in Postoperative Pain Management: Implementing a Clinical Pathway in Pain Management for Major Operative Procedures

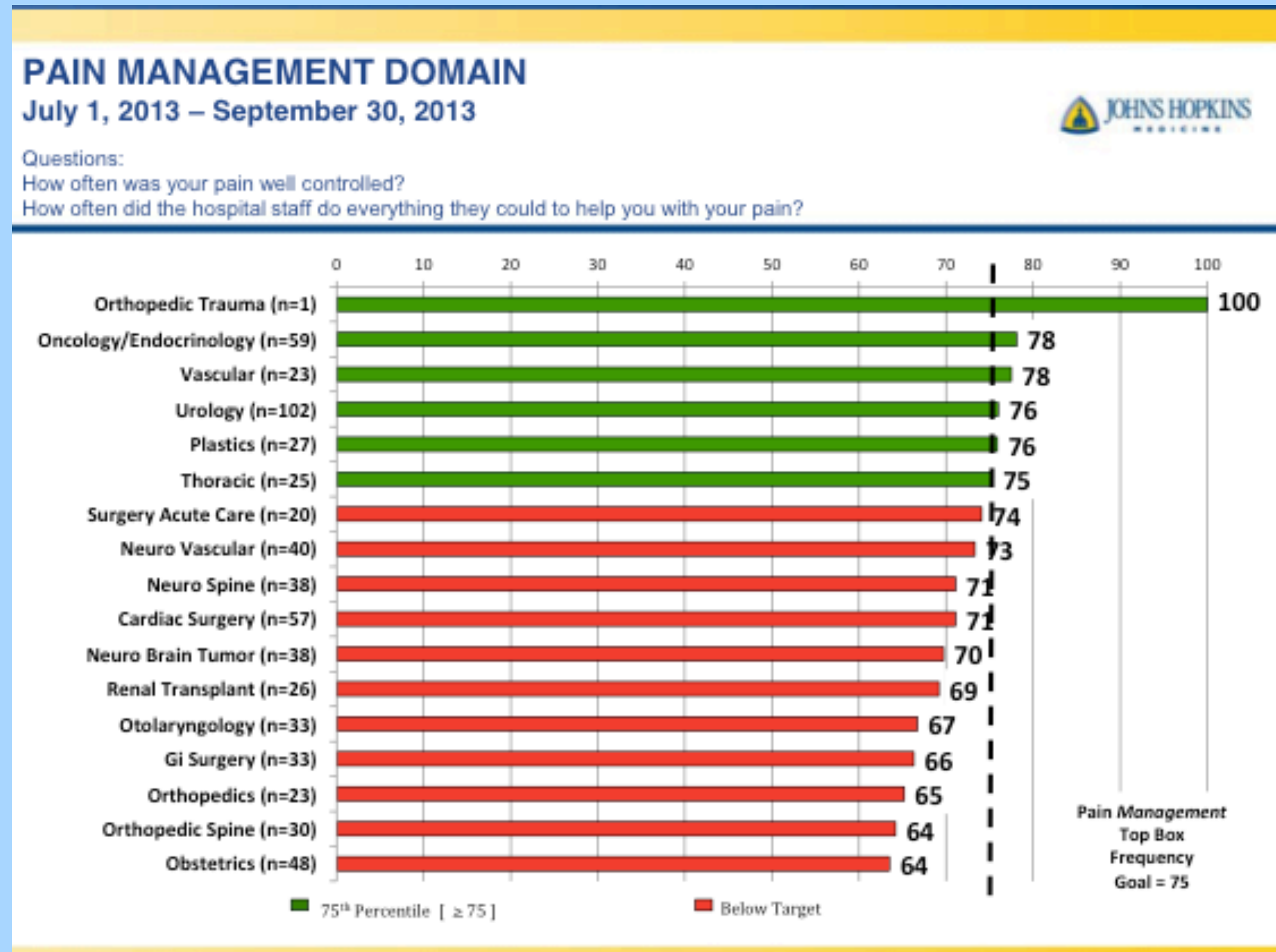
Ashley Y. Ro, Fuld Fellow, BSN '14 Candidate
 Marie Hanna, MD
 Michael Purvin, MD
 Daniel Rodriguez Correa, MD

The Johns Hopkins University School of Nursing
 & Weinberg PACU at Johns Hopkins Hospital



1 Background

Pain, which some consider the fifth vital sign, is universal and subjective and in need of supportive management. Since surgery is one of the most common causes of acute pain, it is important for providers, especially PACU nurses, to respond to patients' pain in a timely fashion in order to improve outcomes such as patient satisfaction and discharge length.¹ Recent HCAHPS data from 2013 shows that pain management fell below the 75th percentile for many surgical units at Johns Hopkins Hospital, most likely due to a lack of staff with expertise in pain management. Past patient-reported data suggests that pain management needs to be improved, as pain in post-operative surgical patients is still undermanaged today.²



2 Aim

Our goal is to improve patient satisfaction with pain management in the perioperative setting, as well as decrease the length of stay in the PACU.

3 Methods

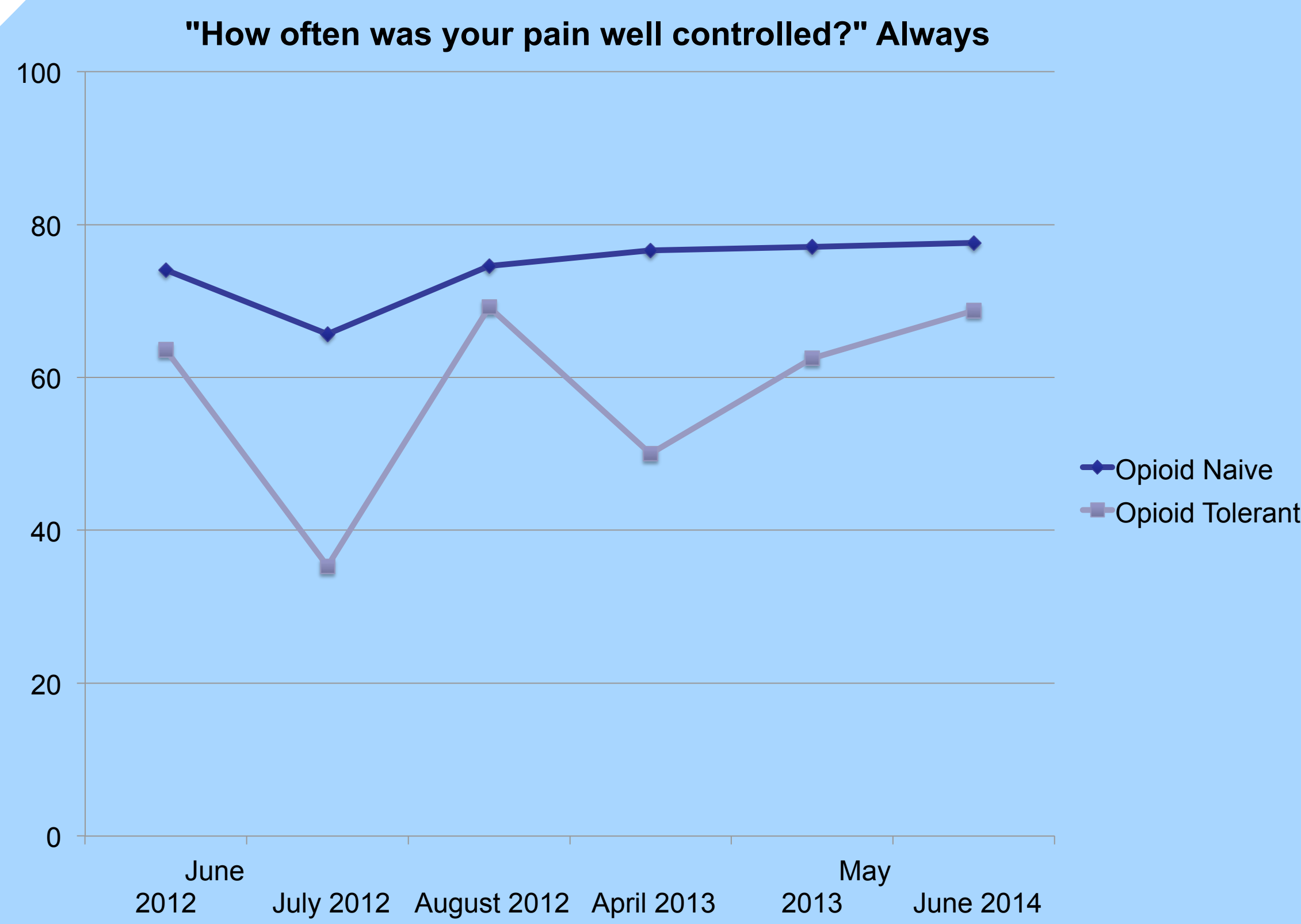
The team created a clinical pathway that provided guidance on appropriate pain interventions for opioid naïve and opioid tolerant patients, emphasizing the different types of analgesics needed. Multiple copies of the clinical pathway were printed out and laminated, passed out to the nurses as well as taped onto the wall of the nurses' station in the 28-bed Weinberg PACU. A survey tool created by Dr. Hanna, chief and director of the Acute Pain Service at JHH, was filled out by the PACU nurses in order to determine patients' perceptions on their pain management. In addition to this, nurses received three in-person educational sessions by Dr. Hanna, since the key to effective pain management is a thorough set of assessment skills and knowledge in pain.³ The clinical pathway was presented to the anesthesiology department during grand rounds, and all anesthesia providers received a copy of the pathway as well. The main questions from the survey that best determined appropriate outcomes on pain management, both for opioid naïve and tolerant patients, were:

- 1) "How often was your pain well controlled?"
- 2) "How long did it take before the patient had pain relief after arrival to the PACU?"
- 3) "What was the duration from the time admitted to PACU to the time discharge criteria were met?"

In addition, any barriers to effective pain management were noted in these surveys. The surveys were collected weekly over the month of June 2014, with a goal of having at least 200 surveys completed.

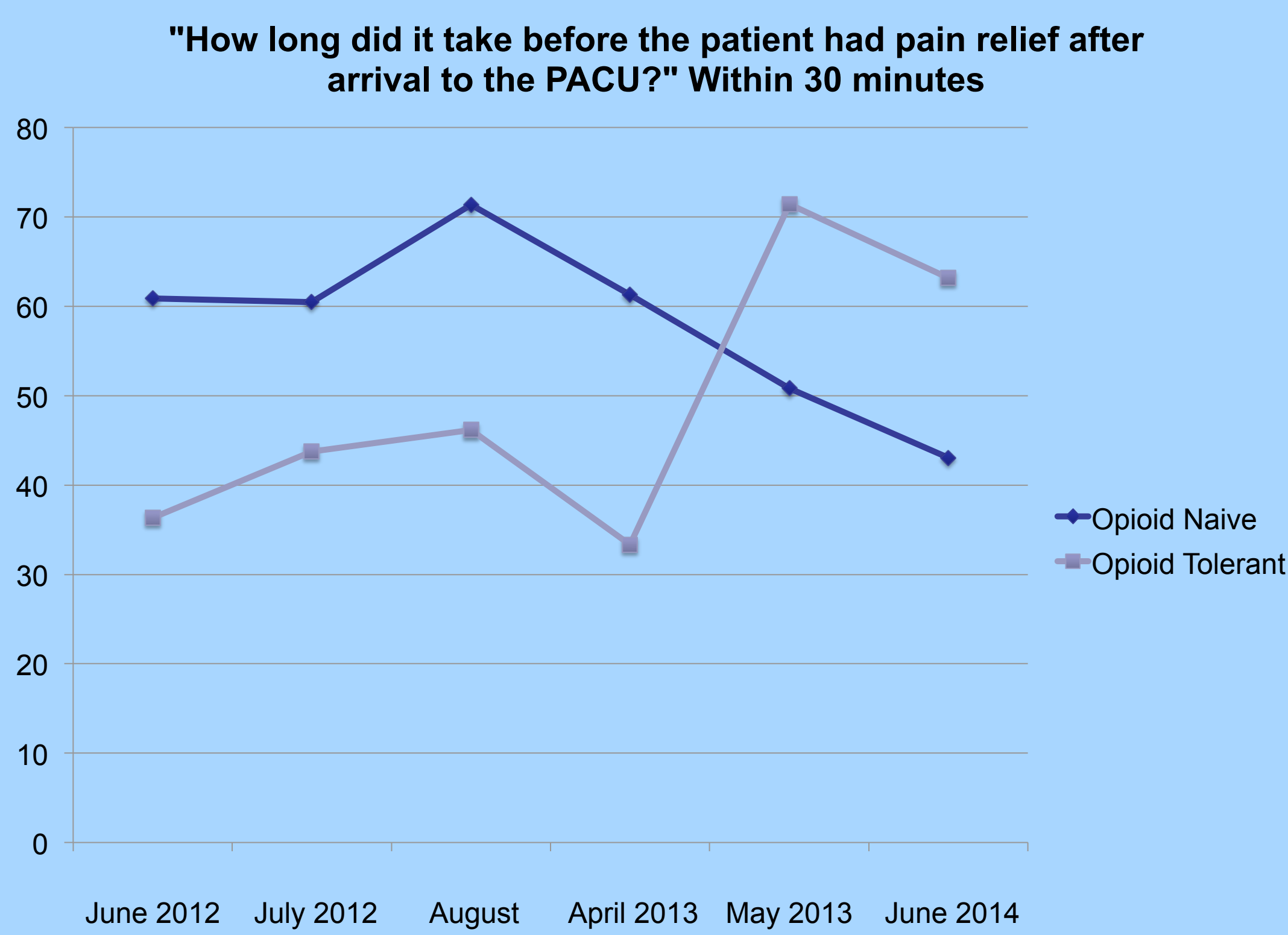
4 Results

Results were compared from past data that began in 2012. Instead of 200 surveys, only 83 were thoroughly completed and sufficient. Based on the results, control of patients' pain improved for both opioid naïve and opioid tolerant patients (77.61% and 68.75%, respectively). However, percentages for the time it took for pain relief within 30 minutes decreased for both types of patients after May 2013 (43.06% and 63.16%). In terms of discharge length, it decreased for opioid tolerant patients but increased for opioid naïve patients (3 hrs 24 min and 2 hrs and 44 min). The most common barriers that affected pain management were: patients having no floor assignments, having delayed pain orders, and most importantly, having high PACU admission pain levels.



5 Conclusions

Based on these results, there needs to be a much more consistent flow of pain management in the PACU, preventing the barriers discussed. Although a majority of patients surveyed in June 2014 perceived to always have well-controlled pain, it is important to provide that control on time, within a 30-minute time period. Furthermore, improved interventions to appropriately discharge patients, especially opioid naïve ones, are needed.



6 Future Directions

Since only 83 surveys were thoroughly completed, such a small number may not be representative of the PACU population. Therefore, future directions include continuing this project to seek improvement after June 2014, encouraging nursing staff to gather more thorough surveys (at least 200) that will be much more representative of the PACU population. In addition, it will be beneficial to gather data on the nurses' perceptions on pain management, especially through a pretest-posttest analysis from their educational sessions. Knowing the effectiveness of the educational sessions will help determine whether or not more sessions are needed to further improve staff knowledge, both from the nursing and anesthesiology ends, in providing efficient pain management and discharge.

7 References

1. Ward, C. (2014). Procedure-specific postoperative pain management. *MedSurg Nursing*, 23(2), 107-110.
2. Hanna, M., Ouanes, J.P., Para, M., & Tomas, G. (n.d.). Postoperative pain and other acute pain syndromes. In Wu, C., & Turk, D. (Eds.), *Clinical Conditions* (pp. 3-29).
3. Taverner, T., & Prince, J. (2014). Nurse screening for neuropathic pain in postoperative patients. *British Journal of Nursing*, 23(2), 76-80.

Funding Source:

The Helene Fuld Leadership Program for the Advancement of Patient Care Quality and Safety

Clinical Pathway for Pain Management	Pre-Op	Intra-Op	Post-Op
All Patients	PO Gabapentin 600mg 1 hour prior to surgery for selected cases requiring prolonged pain control PO Acetaminophen 1g 1 hour prior to surgery In selected ortho case, PO Celecoxib 200 mg	Regional or PNB, if appropriate Opioids including hydromorphone, fentanyl, morphine IV Methadone 0.1 or 0.2mg/kg single dose at case start for major abdominal, orthopedic and thoracic cases if regional not done IV Ketorolac 15-30mg IV Acetaminophen 1g if not given oral preop	Opioid PCA standard dosing, initially fentanyl 0.20/10/6, dilaudid 0.2/10/6, morphine 0.2/10/6 IV or PO Acetaminophen 1g q6h IV Ketorolac 15-30mg q6h or PO Celecoxib 200mg q12h Gabapentin 100mg qhs x 1, then bid for major procedures Regional technique if appropriate Epidural or PNC, with or without IV opioids
If Opioid Tolerant, Add (Opioid Tolerant: Those who take at least 60 mg of oral morphine daily (or an equivalent dose of another opioid) for at least one week. --- FDA)	PO Gabapentin 600-900 mg total 1 hour prior to surgery If home meds include PO Methadone or Fentanyl Patch, continue them	Regional or PNB highly recommended, if appropriate Ketamine, analgesic dose 0.05-0.15mg/kg/hr If spine or large abdominal case, IV Methadone 0.2mg/kg as a single dose at case start	Opioid PCA increased dosing, initially fentanyl 0.40/10/6, dilaudid 0.5/10/6, morphine 0.4/10/6 Pregabalin 50-75mg PO bid or Gabapentin 100 to 200mg PO qhs x 1, then bid Methadone restart home dose ASAP If pain persists, Ketamine 0.05-0.1mg/kg bolus and then 0.05-0.15mg/kg/hr
Five Points for Every Case	Relative Contraindications		
1. Can the patient receive regional (PNB or epidural)? If not intra-op, then postop?	• Gabapentin: Must dose renally in kidney disease		
2. Can the patient receive IV Ketorolac?	• PO Acetaminophen: Contraindicated with liver disease		
3. Can the patient receive IV Acetaminophen?	• NSAIDs: Contraindicated with bleeding, GI ulcers and kidney disease		
4. Anesthesiology resident, place multimodal orders for PACU.			
5. Surgery resident, place multimodal orders for the floor.			

Disclaimer: All medications above require a thorough evaluation for contraindications. Doses given are recommendations. Adjustments may be required for individual patients.