Joint Replacement Patients: Decreasing Pain and Length of Stay, Improving Discharge Disposition

Author: Judy Schaller, MSN, CMSRN

EDWARD | Naperville, IL

Presented at Magnet Conference, October 2015
Contact Information: JSchaller@edward.org

Purpose:

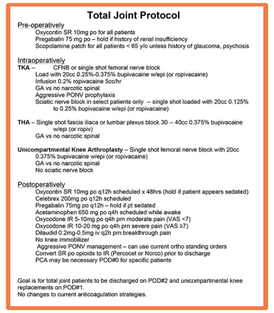
Develop a pain management protocol that continues to keep pain scores at a mangeable level, decreases the incidence of nausea, increases participation in rehabilitation, and decreases length of stay

Background:

- Moderate to severe pain occurs in up to 90% of patients undergoing total joint replacement surgery
- Failure to provide adequate analgesia can impede rehabilitation
- Side effects from anesthesia and opiates can interfere with recovery, timely discharge, and participation in early physical therapy
- Utilizing peripheral nerve blocks improves analgesia after total joint replacement
- Using a multimodal approach to pain management provides adequate analgesia while minimizing side effect in hospitalized patients

Process:

- Reviewed literature for the current standard for perioperative anesthetic and pain management in patients undergoing total joint replacement
- Developed an evidence-based Total Joint Protocol medication regimen for the preoperative, intraoperative, and postoperative care of the total joint replacement patients
- Obtained approval by the Orthopedic Steering Committee, Department of Anesthesiology, Pain Clinical Specialist, and pharmacist
- Developed order sets for Preoperative and Postoperative Pain Management for Total Joint Replacement Surgery
- Educated ortho team including nurses and rehab on the new pain protocol
- Implemented the protocol in January, 2013
- Received IRB approval
- Collected data on patients who had total joint replacement procedures done prior to and after implementation of the new total joint replacement protocol
- Compared outcomes of total joint replacement patients pre-protocol and post-protocol



Total Joint Protocol

Pre-operatively
- Oxycontin SR 10mg po for all patients
- Pregabalin 75 mg po – hold if history of renal insufficiency
- Scopolamine patch for all patients < 65 y/o unless history of glaucoma, psychosis

Intraoperatively
- **TKA** – CFNB or single shot femoral nerve block
  - Load with 20cc 0.25%-0.375% bupivacaine w/epi (or ropivacaine)
  - Infusion 0.2% ropivacaine Sc/hr
  - GA vs no narcotic spinal
  - Aggressive PONV prophylaxis
  - Sciatic nerve block in select patients only – single shot loaded with 20cc 0.125% to 0.25% bupivacaine w/epi (or ropivacaine)
- **THA** – Single shot fascia iliaca or lumbar plexus block 30 – 40cc 0.375% bupivacaine w/epi (or ropiv)
  - GA vs no narcotic spinal
- **Unicompartmental Knee Arthroplasty** – Single shot femoral nerve block with 20cc 0.375% bupivacaine w/epi (or ropivacaine)
  - GA vs no narcotic spinal
  - No sciatic nerve block

Postoperatively
- Oxycontin SR 10mg po q12h scheduled x 48hrs (hold if patient appears sedated)
- Celebrex 200mg po q12h scheduled
- Pregabalin 75mg po q12h – hold if pt sedated
- Acetaminophen 650 mg po q4h scheduled while awake
- Oxycodone IR 5-10mg po q4h prn moderate pain (VAS <7)
- Oxycodone IR 10-20 mg po q4h prn severe pain (VAS ≥7)
- Dilaudid 0.2mg-0.5mg iv q2h prn breakthrough pain
- No knee immobilizer
- Aggressive PONV management – can use current ortho standing orders
- Convert SR po opioids to IR (Percocet or Norco) prior to discharge
- PCA may be necessary PODM0 for specific patients

Goal is for total joint patients to be discharged on POD#2 and unicompartmental knee replacements on POD#1.
No changes to current anticoagulation strategies.

OLD PROTOCOL:	NEW PROTOCOL:
• Spinal with Duramorph	• Spinal • No Duramorph
• Femoral Nerve Block (single injection)	• Femoral Nerve Block (single injection)

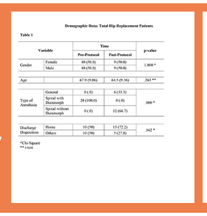
• Patient-Controlled Analgesia	• Total Joint Protocol
	  • Oxycodone ER
	  • Oxycodone IR
	  • Lyrica
	  • Celebrex
	  • Acetaminophen
	  • Scopalamine patch
	  • IVP prn Dilaudid

• Hydrocodone	

Results:

Patients on the new standard pain protocol had decreased length of stay, improved pain control, and a decreased incidence of nausea while maintaining their functional status and discharge disposition

TABLE 1:
Hip Replacement Data Summary

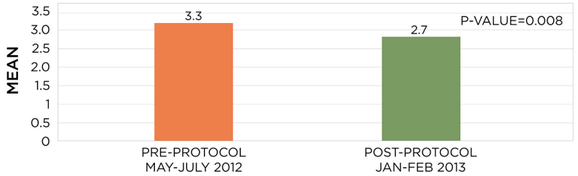


Demographic Data: Total Hip Replacement Patients

Table 1

Variable		Time: Pre-Protocol	Time: Post-Protocol	p-value
Gender	Female	44 (59.5)	9 (50.0)	1.000 *
	Male	30 (40.5)	9 (50.0)	
Age		67.5 (9.06)	64.5 (8.38)	.262 **
Type of Anesthesia	General	9 (.8)	6 (33.3)	.000 *
	Spinal with Duramorph	28 (100.0)	0 (.0)	
	Spinal without Duramorph	0 (.0)	12 (66.7)	
Discharge Disposition	Home	10 (38)	14 (77.2)	.042 *
	Others	10 (38)	5 (27.8)	

*Chi-Square
** t-test



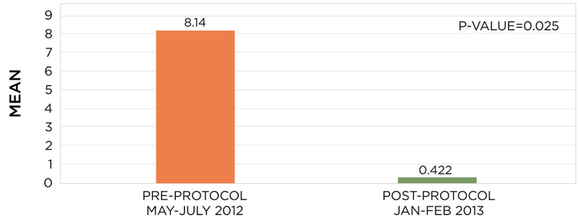


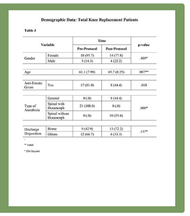
TABLE 2:
Knee Replacement Data Summary

Clinical Outcomes: Total Knee Replacement Patients

Table 4

Variable		Time: Pre-Protocol	Time: Post-Protocol	p-value *
LOS		3.4 (.48)	2.8 (.52)	.004
Variable Cost ($)		5,084.4 (2,475.0)	4,760.5 (2,452.0)	.104
Anti-Emetic Given	Yes	17.0% (8)	8.0% (1)	.018**
	No	4.0% (1)	89.0% (1)	
Pain Score	Walker Lowest	8.3 (2.96)	6.8 (2.16)	.014
	Average	5.7 (2.28)	5.1 (1.11)	.186
	at PR	2.5 (2.50)	2.0 (2.00)	.401
Difference between Initial and Discharge	Ht to Stand	2.0 (3.32)	1.5 (.71)	.680
	Ambulation	127.6 (71.04)	120.4 (68.14)	.858
	Stairs Walking	2.0 (2.00)	2.0 (2.00)	.000
	LE Strength	2.0 (2.00)	2.1 (2.00)	.257
PTH Average Score	Initial	2.6 (.88)	2.3 (.56)	.012
	Discharge	2.1 (.71)	2.0 (.56)	.000
	Difference	2.0 (2.83)	1.9 (.98)	.429
Mobility/Functional Score	Initial	3.9 (.55)	2.7 (.56)	.182
	Discharge	2.0 (.00)	2.0 (.00)	.000
	Difference	1.9 (.71)	1.9 (.40)	.000
Dilaudid Use		8.2 (8.83)	.3 (.47)	.001

* t-test
** Chi-Square

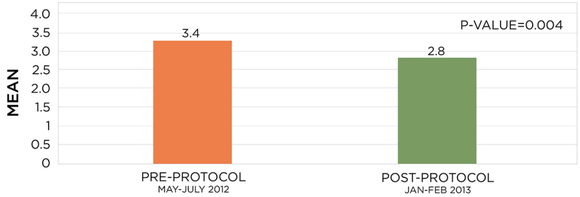


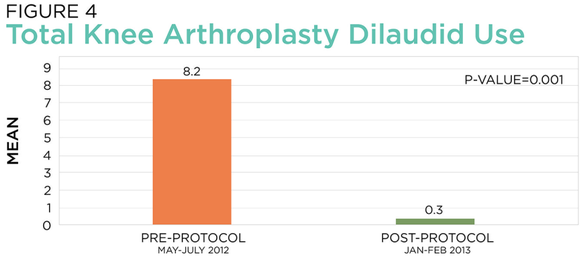
Demographic Data: Total Knee Replacement Patients

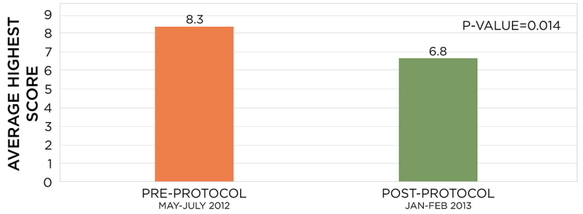
Table 3

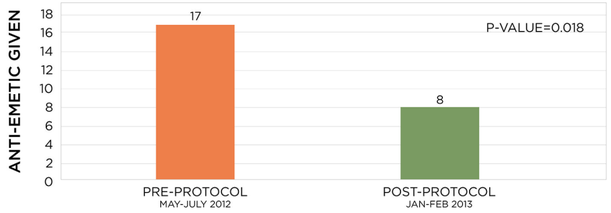
Variable		Time: Pre-Protocol	Time: Post-Protocol	p-value
Gender	Female	8 (44.4)	14 (77.8)	.025*
	Male	10 (55.6)	4 (22.2)	
Age		66.1 (7.96)	69.7 (8.23)	.003**
Anti-Emetic Given	Yes	17.0% (8)	8.0% (1)	.018
	No	4.0% (1)	89.0% (1)	
Type of Anesthesia	General	44 (8)	8 (44.4)	.000*
	Spinal with Duramorph	25 (100.0)	0 (.0)	
	Spinal without Duramorph	0 (.0)	10 (55.6)	
Discharge Disposition	Home	9 (42.9)	13 (72.2)	.115*
	Others	12 (66.7)	6 (33.3)	

* t-test
** Chi-Square









Conclusions:

- PCA's are no longer used and a multimodal approach focusing on oral medications has been implemented
- Pain management is standardized through the use of the Total Joint Pain Management Order Set
- The standard pain protocol has been requested by physicians caring for patients outside the Total Joint Replacement population

Acknowledgements:

The author acknowledges the contributions of her research co-investigators: Joanne Abeling, RN; Tina Bobo, MSN, RN; Patti Ludwig-Beymer, PhD, RN; and Fran Zamar; and members of the team that developed the pain protocol: Lisa Heuser, Pharm.D.; Phil Williams, Pharm.D.; Madiha Syed, Pharm.D.; Tom Beris, MD; Arcangelo (Lino) Iusco, MD; Frank Gentile, MD; Greg Barrett, MD; Keith Hanni, MD; Scott Mittenthal, MD; Troy Karlsson, MD; and Andrew Kim, MD