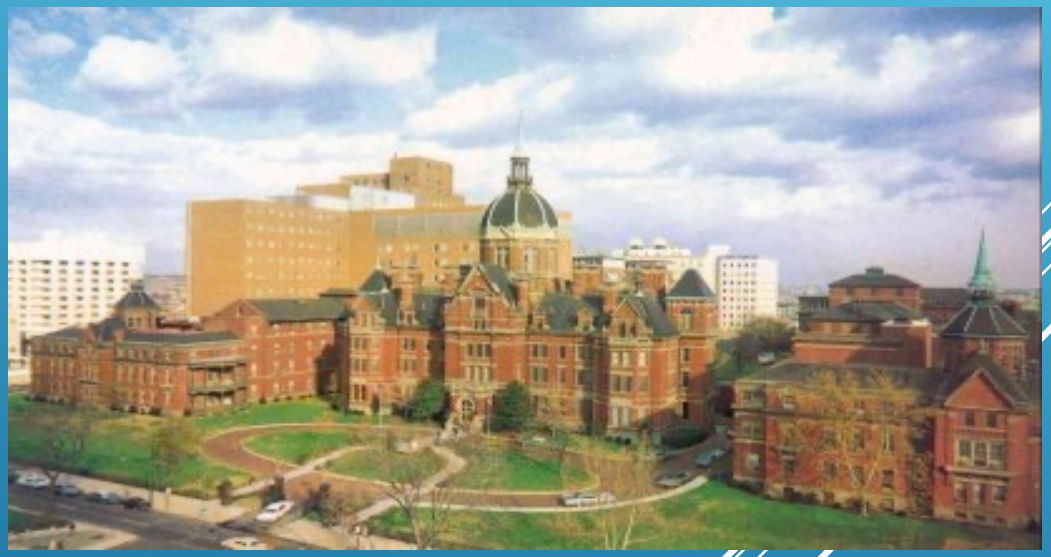
ACUTE PAIN BEYOND BLOCKS



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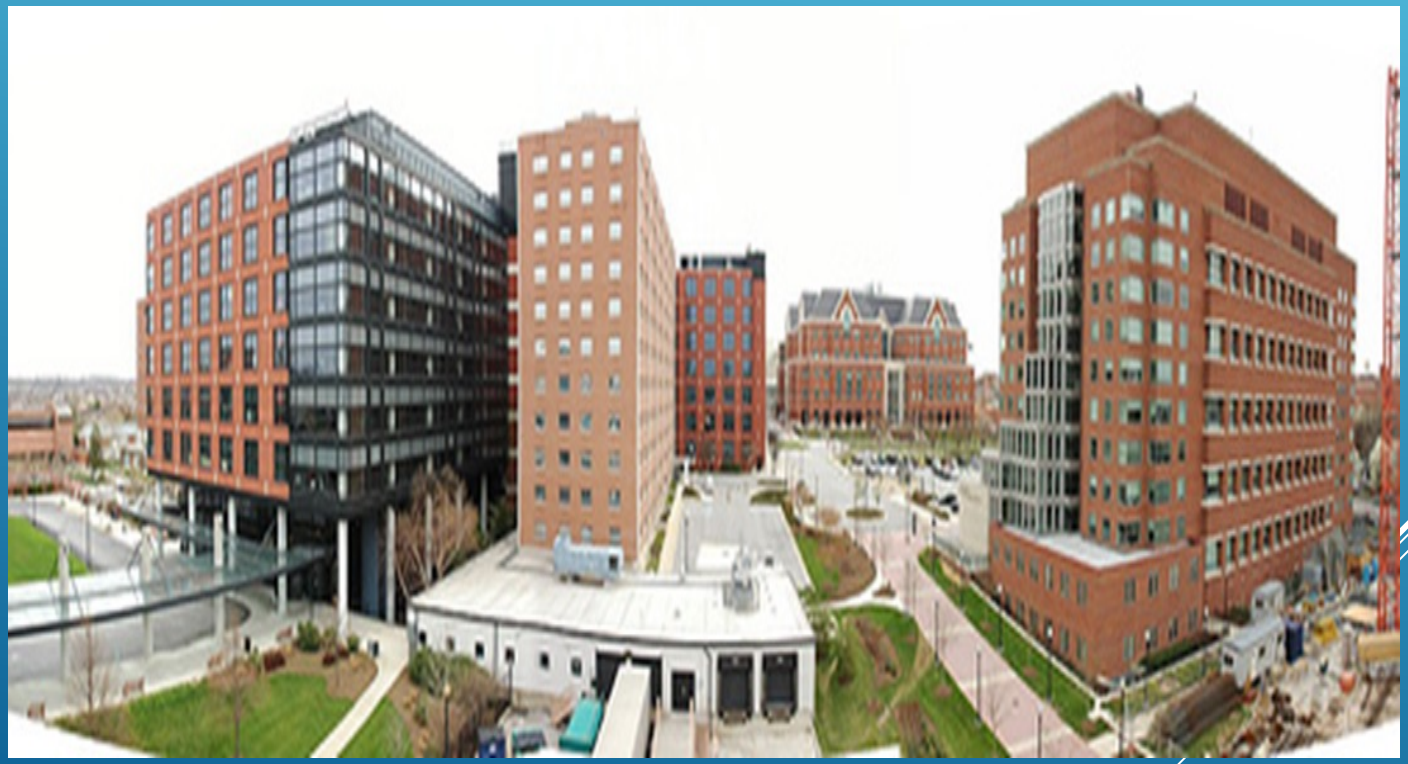
DISCLOSURES

- *No financial conflicts of interest*



OBJECTIVES

- Understand the reasons to utilize multimodal therapy
- Describe the mechanism and utility of different interventions within multimodal therapy
- Showing how multimodal therapy fits into ERAS protocols

MULTIMODAL THERAPY

- **Utility of the multimodal regimen**
- IV Lidocaine
- Opioids
- NSAIDs
- Acetaminophen
- Anticonvulsants
- NMDA antagonists
- Alpha adrenergic medications
- Steroids
- Multimodal Therapy and ERAS
- Multimodal Therapy and Cancer

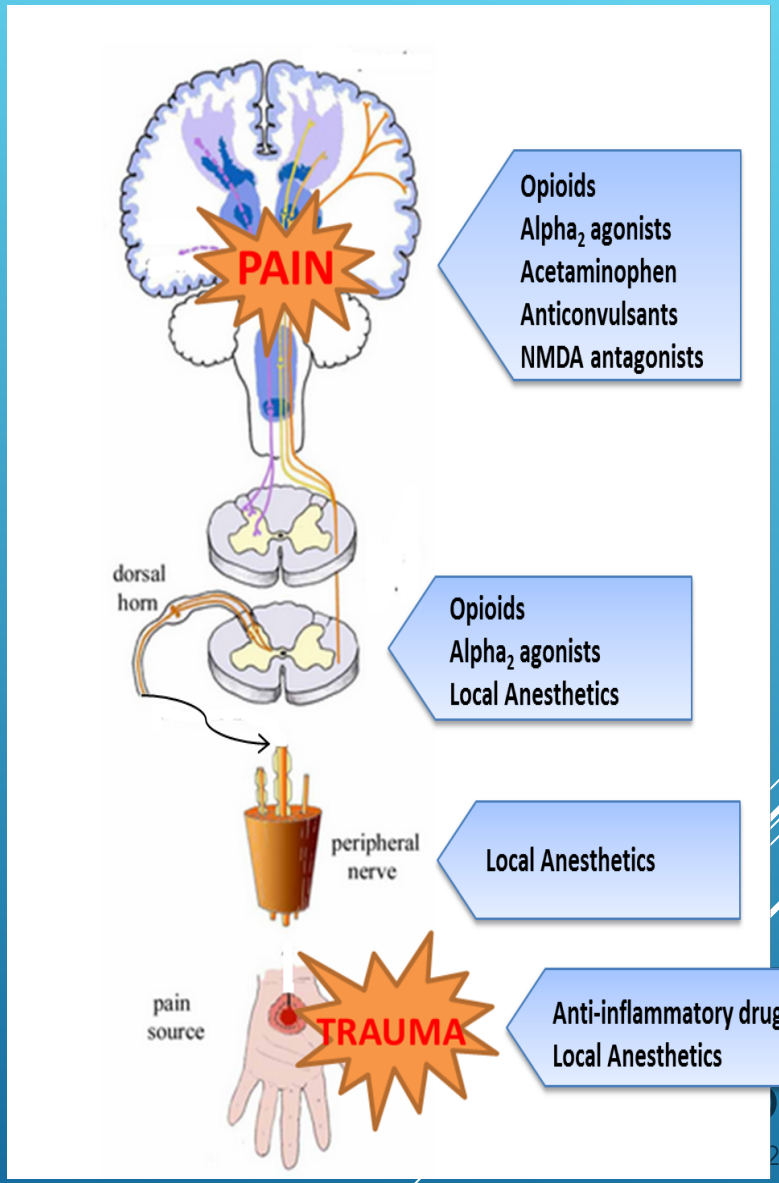
CLINICAL TRIALS ON MULTIMODAL ANALGESIA

- 52 randomized trials 4,893 pts

- 15%-55% less opioid dose

- 22% - 29% less N & V

- 12.7% -15.4% less Sedation



MULTIMODAL THERAPY

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IV LIDOCAINE

- *IV lidocaine infusions for postoperative analgesia:*
  - *May improve analgesia while ↓ opioid consumption.*
  - *May improve return of GI function.*
  - *Does not inhibit the neuro endocrine stress response.*
- *Typical dose: 1.5–2 mg/kg bolus, infusion of 1–2 mg/kg/hr (ideal body weight).*

MULTIMODAL THERAPY

- Utility of the multimodal regimen
- Regional Anesthesia and IV Lidocaine
- **Opioids**
- NSAIDs
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OPIOIDS

- Provide analgesia via mu opioid receptors in CNS and periphery
- Significant side effect profile of nausea, vomiting, sedation, respiratory suppression, dependence, withdrawal (non-life threatening)
- IV PCA often used when patient not tolerating po and/or other modes of medication prove to be ineffective
- Factors associated with respiratory depression with IV PCA include continuous infusion, patient factors (geriatric patient, sleep apnea, pulmonary disease), combination with other sedating agents

MULTIMODAL THERAPY

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NSAID MEDICATIONS

- ▸Anti-inflammatory medications that inhibit cyclooxygenase (COX) and synthesis of prostaglandins
- ▸Can be used for mild to moderate pain control as single agents or for moderate to severe pain in combination with opioids
- ▸May improve postoperative analgesia and can reduce opioid requirement, thus reducing opioid related side effects
- ▸Consider avoiding in patients with GI ulcers and renal dysfunction

- No increased risk of nonunion when analyzing highest quality studies analyzed in meta analysis
- No association between disunion after spinal fusion with routine clinical NSAID dosing up to 14 days in another meta analysis
  - Nonunion associated with ***high*** dose ketorolac

WHAT ABOUT BONE HEALING?

MULTIMODAL THERAPY

- Utility of the multimodal regimen
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ACETAMINOPHEN

Theorized that most likely mechanism is selective COX-2 inhibition

Hepatic toxicity after chronic use or overdose (stay within 4g in 24 hrs)

Has opioid sparing effect postoperatively

WHAT ABOUT ACETAMINOPHEN AND NSAID IN COMBINATION?

- PANSAID trial, a multi-center RCT, studied acetaminophen/ibuprofen administration first 24 hrs after Total Hip Arthroplasty
- Acetaminophen and ibuprofen as sole agents decreased post op opioid consumption without increase in side effects
- Acetaminophen/ibuprofen combination did not decrease opioid use more than ibuprofen as a sole agent (still no increase in side effects)
- Combination group decreased pain scores more than acetaminophen only group

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ROUNDING OUT THE REGIMEN

- Anticonvulsants (gabapentin/pregabalin)
  - Primarily used for nerve pain
  - Look out for leg swelling, sedation/dizziness
  - Decrease opioid consumption when administered preoperatively
  - May be synergistic with opioids in treating acute post op pain
- NMDA Antagonist (ketamine)
  - Postoperative ketamine infusion decreased opioid requirements and decreased pain scores
  - Look out for hallucinations, sedation, visual disturbance

ROUNDING OUT THE REGIMEN

- Steroids (dexamethasone)
  - Conflicting data on if perioperative dexamethasone administration decreased pain scores and opioid consumption
  - Adding dexamethasone to local anesthetic can quicken onset and prolong duration for nerve blocks
  - Look out for hyperglycemia
- Alpha agonists (clonidine, dexmedetomidine)
  - Dexmedetomidine more selective for analgesia receptor alpha 2a compared to clonidine
  - Modest analgesic agents that can reduce perioperative opioid consumption
  - Look out for hypotension, sedation, bradycardia

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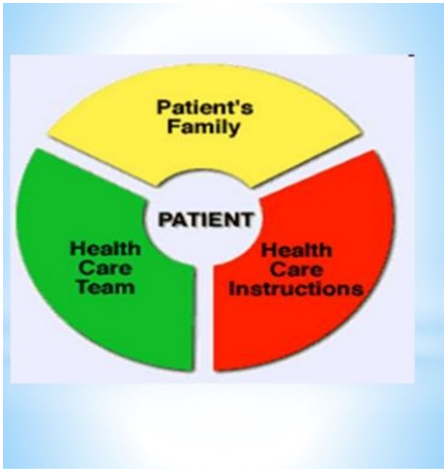
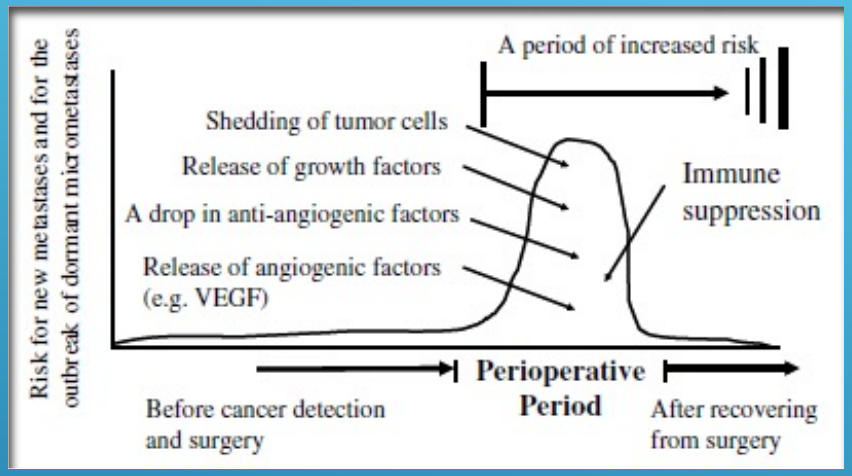
ENHANCED RECOVERY AFTER SURGERY (ERAS)

- Not a rigid or fixed protocol
- ERAS pathways = True multidisciplinary effort
  - Extensive physical therapy before and after surgery that may decrease opioid consumption with total knee replacement
- Patient education and participation
- Perioperative nutrition
- Early mobilization and oral intake
- ***Minimize pain/opioid usage***
- Minimize stress response

I HAVE CANCER

- *Pain*
- *Recovery*
- *Wellness*





- *Surgery ⇒ ↓ immunologic fx*
- *1hr - 7 days after incision*
- *Extent of surgery*
- *laparoscopic (vs. open)*
- *↑Metastases with ↑ degree of surgical stress (mice)*

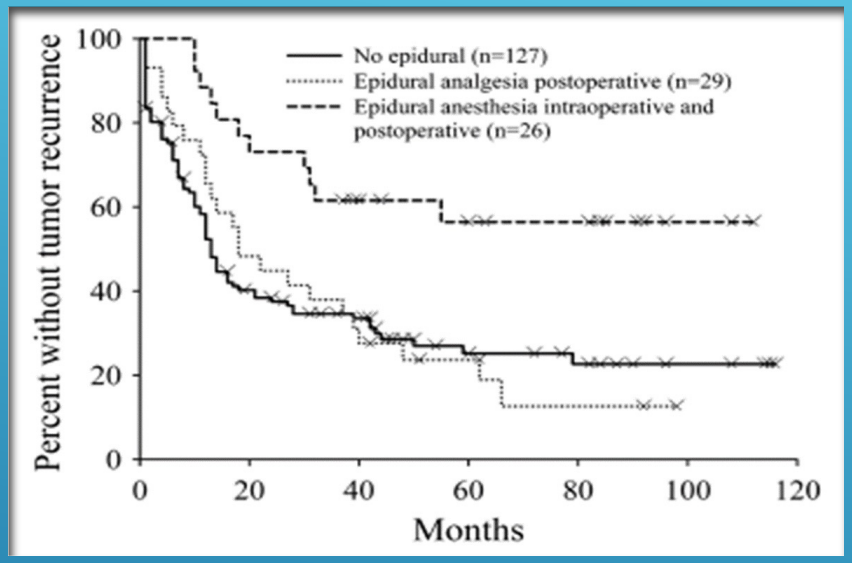
IMMUNOSUPPRESSION IN THE PERIOPERATIVE PERIOD

PREOPERATIVE

- NPO: Bowel prep + 20oz of a carb (e.g., Gatorade) up to 2h preoperatively.
- ***Acetaminophen 1gm PO x1***
- ***Celebrex 200mg PO x1***
- ***Gabapentin 600mg PO x1 (100-300mg for renal patients)***
- ***Thoracic epidural (T6-T9)***
- ***TAP block in case of no epidural placement***
- Anti-emetic order: Scopolamine patch x1
- Temperature management

- GA/Propofol to maintain BIS 40-60 and/or inhalational agent
- ***1% lidocaine via the epidural at 4-8 mL/hr***
- ***IV lidocaine gtt at 1-2 mg/kg/hr***
- ***Ketorolac 30mg IV x1***
- ***Opioids only for breakthrough pain***
- Avoid blood transfusions, excessive IV Fluid, ketamine, opioids, Nitrous oxide

INTRAOPERATIVE



INTRAOPERATIVE

- Cytoreductive surgery:

  Ovarian (n = 182)
- GA /EP intra &postop

  x 2-3 d (n = 26)
- GA/EP postop

  x 2-3 d (n = 29)
- GA /opioids postop

  (n = 127)
- Main findings:

  ↑ Time to tumor recurrence w/ intraop EP (73 m) vs. either postoperative EP (33 m) or no EP (38 m)

- *Acetaminophen 1 gm PO q 6h*

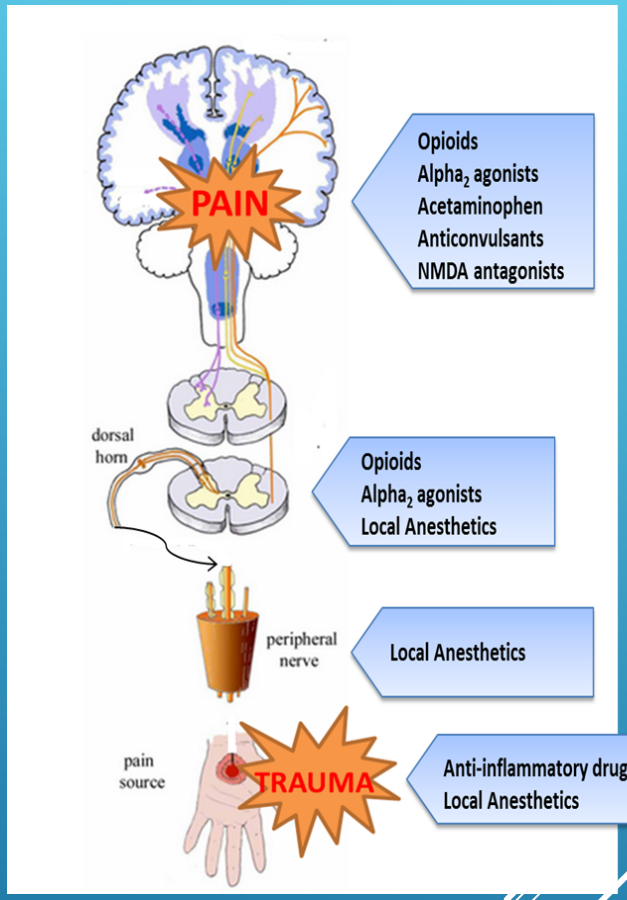
- *Gabapentin 100-300 mg PO TID*

- *Ibuprofen 400 mg PO q 6h*

- *Tramadol 50 mg PO q4h*

- *PRN hydromorphone 2mg PO q 4h*

POSTOPERATIVE



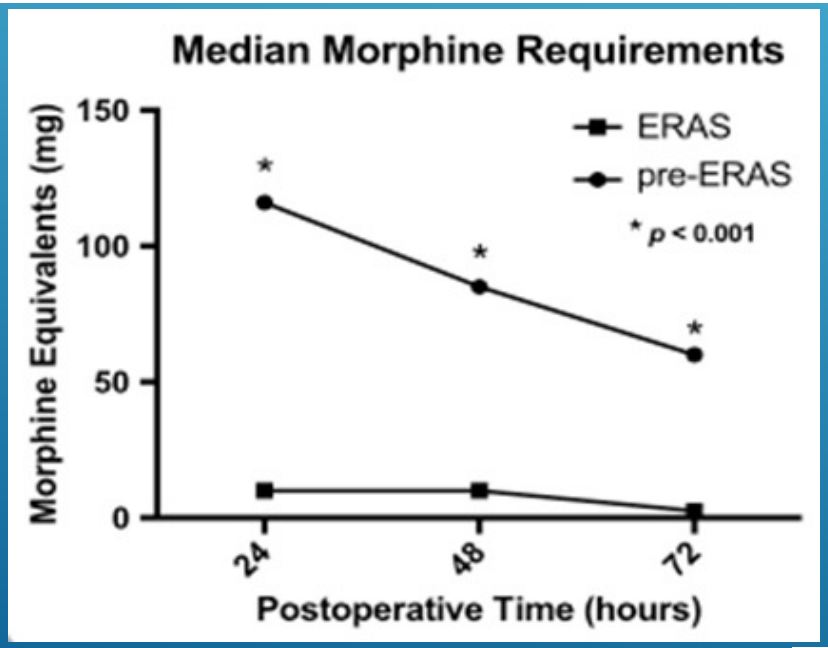
MULTIMODAL IN ERAS

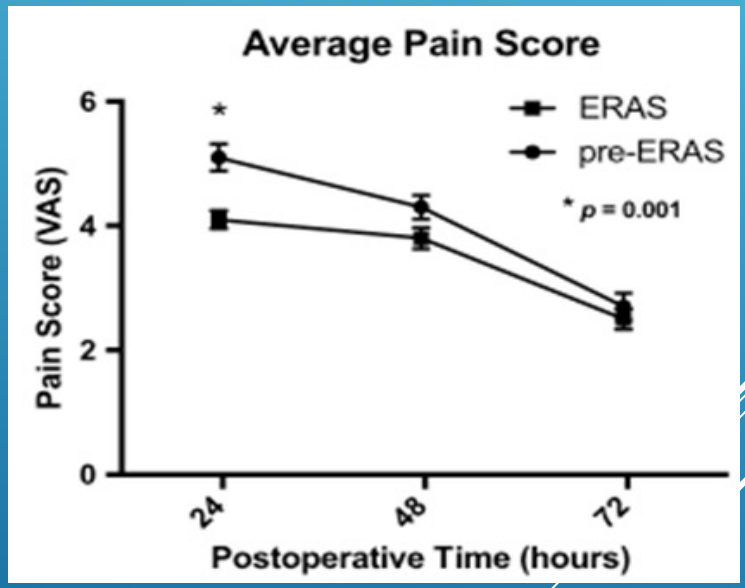
- *Opioid reduction via multimodal therapy in ERAS pathway*
  - *Opioids are ordered as a PRN (as needed) dose*
  - *~50% pts will still receive opioids during their hospital stay but the overall amounts of opioids given are less*
- *Multimodal analgesia (ERAS order sets)*
  - *NSAIDs, acetaminophen, tramadol, gabapentin, epidural analgesia/TAP , lidocaine, opioid PRN for breakthrough pain*

ERAS AND DECREASE IN OPIOID USE

Preserved Analgesia With Reduction in Opioids Through the Use of an Acute Pain Protocol in Enhanced Recovery After Surgery for Open Hepatectomy

Michael C. Grant, MD, Philip M. Sommer, MD,* Cathy He, MD,* Sylvia Li, MD,* Andrew J. Page, MD,† Alexander B. Stone, BA,* Deborah Hobson, BSN,‡ Elizabeth Wick, MD,§ and Christopher L. Wu, MD**





(*Reg Anesth Pain Med* 2017;42: 00–00)

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MBER 20, 2016

NCOLOGY ASCO SPECIAL AR

ment of Chronic Pain in Survivors of Adu
n Society of Clinical Oncology Clinical
Guideline

Russell Portenoy, Christina Lacchetti, Toby Campbell, Andrea Cheville, Ma
ie, Andrea Cooper, Paul Glare, Frank Keefe, Lakshmi Koyyalagunta, Michae
owski, Shirley Otis-Green, Paul Sloan, and Eduardo Bruera

- ▸Screen for pain
- ▸***Multimodal at all times***
- ▸Opioids only to improve function
- ▸Assess side effects of medication
- ▸Understand Tolerance, dependency, addiction, diversion

ONCOLOGY GUIDELINES FOR PAIN MANAGEMENT

MULTIMODAL AND CANCER

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 0/0.2/10/6, 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 equianalgesic dose of another opioid) for at least one week. --	**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 0/0.5/10/6, 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

SAMPLE PROTOCOL

THANK YOU!