

# Opioids

## Enhanced Recovery After Surgery (ERAS) and Managing the Difficult Patient

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# Goals

- Review the concept of ERAS
- Opioid-free approaches to pain control
- Managing the challenging patient with pain

## “Paradigm shift in perioperative care”<sup>1</sup>

- Multimodal
- Multidisciplinary
  - Surgeons
  - Anesthetists
  - An ERAS coordinator
- All staff members involved in patient care

# ERAS Protocol

- **Developed in 2001 by European Group**
- United Kingdom
- Sweden
- Denmark
- Norway
- The Netherlands

# History of ERAS

- Fast Track—1994 coronary artery bypass graft (CABG) surgery<sup>1</sup>
- Sigmoid resection with early discharge<sup>2</sup>
- Thoracic epidural anesthesia and sigmoid resection<sup>3</sup>



1. Engelman RM, Rousou JA, Flack JE III, et al. Fast-track recovery of the coronary bypass patient. *Ann Thorac Surg.* 1994;58(6):1742-1746.

2. Bardram L, Funch-Jensen P, Jensen P, Crawford ME, Kehlet H. Recovery after laparoscopic colonic surgery with epidural analgesia, and early oral nutrition and mobilization. *Lancet.* 1995;345(8952): 763-764.

3. Kehlet H, Mogensen T. Hospital stay of 2 days after open sigmoidectomy with a multimodal rehabilitation programme. *Br J Surg.* 1999;86(2): 227-230

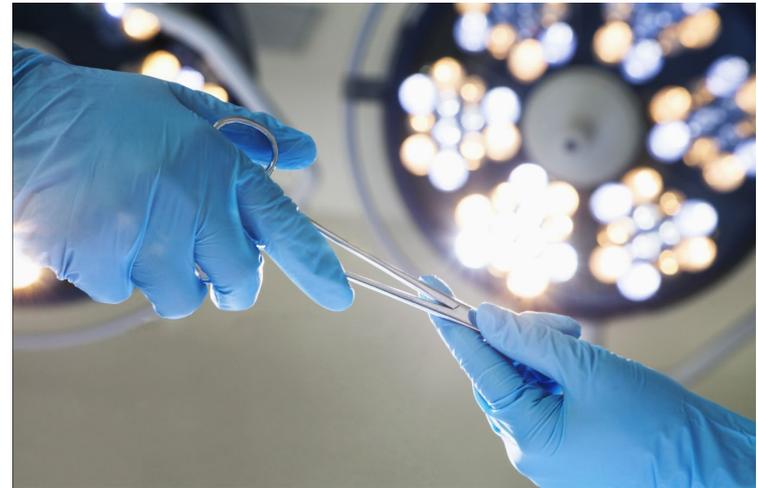
# History of ERAS (cont.)

- Perioperative endocrine/metabolic factors
- Amino acids
- Pre-operative carbohydrates



# ERAS History

- ERAS group London 2001
- Perioperative care versus surgical procedure
- Care and adoption of ERAS practice



# Why ERAS?



# ERAS Components

- **Preadmission**—Smoking cessation
- **Preoperative**—Carbohydrate treatment, thrombosis/infection prophylaxis
- **Intraoperative**—Anesthesia avoiding long-acting opioids; Epidural use.
- **Postoperative**—Early mobilization and catheter/IV removal; Anti-inflammatory drugs/pain control

# Multi-Modal Care

- Multiple elements needed
- Coordinated effort
- Multidisciplinary
- Patient centered



# ERAS Pathway



# ERAS and Pain Control

“We propose that a fundamental principle in acute-pain management is identifying patients who are most at risk and providing an opioid-free anesthesia and postoperative analgesia.”

“This can be achieved by using a multimodal approach that includes regional anesthesia and minimizing the dose and the duration of opioid prescription.”

# Why?

- Opioid dependence or misuse prediction
- After 8 days, 13% are still using opioids 1 year later<sup>1</sup>
- High percentage of post-surgical opioids go unused<sup>2</sup>
- You do not always need opioids



1. Reinberg S. Opioid Dependence Can Start in Just a Few Days. Available at: <https://www.webmd.com/mental-health/addiction/news/20170316/opioid-dependence-can-start-in-just-a-few-days#1>. Accessed on: February 20, 2019.

2. Bicket MC, Long JJ, Pronovost PJ, Alexander GC, Wu CL. Prescription Opioid Analgesics Commonly Unused After Surgery: A Systematic Review. *JAMA Surg.* 2017;152(11):1066–1071. doi:10.1001/jamasurg.2017.0831

# Pain Is Multidimensional

## American Pain Society/American Academy of Pain Medicine

- Core criteria—Inciting event/diagnosis
- Common features—Signs and symptoms
- Modulating factors—Comorbidity
- Impact/functional—Recovery trajectory
- Pain pathophysiology mechanisms—  
Neurobiological pathways

# Psychosocial Factors

- Stepped Care to Optimize Pain Care Effectiveness (SCOPE) Trial
  - 250 primary-care patients with musculoskeletal pain
  - Measured at baseline, 3 and 12 months
  - Effect of changes of
    - Depression
    - Pain catastrophizing
    - Anxiety on reductions in pain intensity
    - Pain-related disability
- “Improvements in three common psychological comorbidities predicted better pain outcomes.”**

# Risks for Depression/Pain Catastrophizing

- High pain scores/good function
- Younger age
- Females
- Multiple comorbidities

# Multimodal Pain Therapy

- Concurrent use of non-opioid analgesics
- Preemptive analgesia
- Regional analgesic techniques

# Preemptive Analgesia

- Analgesia administered before the painful stimulus occurs
- Hypothesis—reduce subsequent pain or analgesic requirements
- Reduce nociceptor activation →
  - Decreasing receptor activation and inhibiting the production activity of pain neurotransmitters
- Prevents the spinal cord “wind-up phenomenon” (central sensitization)
- Neuroendocrine responses/sympathoadrenal activation

# Preemptive Analgesia (cont.)

- Well established in animal models
- A meta-analysis of randomized trials<sup>1</sup>
- Pre-emptive local anesthetic wound infiltration/non-steroidal anti-inflammatory drug (NSAID)
- Decrease in analgesic consumption, but no decrease in postoperative pain scores

**“Overall, pre-emptive analgesia may offer some short-term benefits, particularly in ambulatory surgery patients.”<sup>2</sup>**

# NSAIDs

- Decrease opioid consumption<sup>1</sup>
- Nonselective
- Selective COX-2 inhibitors
- Equal analgesic efficacy
- First-line treatment
- Not associated with an increase in post-operative bleeding<sup>2</sup>

# NSAIDs (cont.)

- Single dose of a COX-2 inhibitor in the treatment of acute post-operative pain was the subject of a Cochrane review.
- Up to 44% experienced at least 50% pain relief, compared to between 1% and 11% of patients receiving placebo. Overall, the frequency of adverse events was similar in the celecoxib and placebo groups.<sup>1</sup>
- A single dose of ibuprofen, a non-selective NSAID, was observed, in a Cochrane review, to confer at least 50% pain relief in approximately half of patients with moderate to severe post-operative pain, and adverse events were similar to placebo.<sup>2</sup>

# Acetaminophen

- Non-opioid antipyretic
- Mechanism not well understood
- Does not suppress the inflammation
- Central activation of descending serotonergic pathways<sup>1</sup>
- Additive effect with NSAIDS
- Scheduled dosing<sup>2</sup>
- IV formulation “6-hour intervals over 24 hour period for moderate-to-severe pain.”<sup>3</sup>

1. Graham G, Scott K. Mechanism of Action of Paracetamol. *Am J Ther.* 2005 Jan-Feb;12(1):46-55.  
2. Wick EC, Grant MC, Wu CL. Postoperative Multimodal Analgesia Pain Management With Nonopioid Analgesics and Techniques: A Review. *JAMA Surg.* 2017;152(7):691-697. doi:10.1001/jamasurg.2017.0898  
22 3. Sinatra R, Jahr J, Reynolds L, Viscusi E, Groudine S, Payen-Champenois C. Efficacy and Safety of Single and Repeated Administration of 1 Gram Intravenous Acetaminophen Injection (Paracetamol) for Pain Management after Major Orthopedic Surgery. *Anesthesiology* 2005;102(4):822-831.

# Tramadol

- Weak opioid (mu receptor agonist)
- Selective serotonin reuptake inhibitor (SSRI)/selective norepinephrine reuptake inhibitor (SNRI)
- CYP2D6 Substrate
- Caution with those on SSRIs
  - Zoloft
  - Paxil
  - Etc.
- Indication for moderate to moderately severe pain<sup>1</sup>

# NMDA Receptor

- Glutamate receptor
- Association with hyperalgesia/neuropathic pain
- Reduced response to opioids<sup>1</sup>
  - Ketamine
  - Methadone
  - Amantadine
  - Dextromethorphan
- Shown to reduce opioid requirements post-operative<sup>2</sup>

# Gabanoids

- Gabapentin/pregabalin
- Reduce neuronal excitability
- Acute use common
- Effective in decreasing post-operative narcotic consumption/pruritus<sup>1</sup>
- Schedule drug?<sup>2</sup>

1. Han C, Li XD, Jiang HQ, Ma JX, Ma XL. The use of gabapentin in the management of postoperative pain after total knee arthroplasty: A PRISMA-compliant meta-analysis of randomized controlled trials. *Medicine (Baltimore)*. 2016;95(23):e3883.

2. Peckham A, Ananickal M, Sclar D. Gabapentin use, abuse, and the US opioid epidemic: the case for reclassification as a controlled substance and the need for pharmacovigilance. *Risk Manag Healthc Policy*. 2018;11:109-116. Published 2018 Aug 17. doi:10.2147/RMHP.S168504

# Buprenorphine

- Underutilized
- Partial Mu agonist with good analgesic properties
- Selective binding
- Less respiratory depression
- Lower abuse potential

# Obstacles



# Is it Time for Opioids?

- Non-opioid treatment failure
- Severe pain > 7 on visual analogue scale (VAS)<sup>1</sup>
- Proper assessment of patients
  - Risks-serious side effects
  - Including respiratory depression
  - Motor impairment
  - Cognitive impairment
  - Sedation
- High-risk populations
  - Elderly
  - Obese
- Area of long and continuing debate in both the medical and regulatory arenas

# Not an Either or Choice

- Two guidelines recommended co-prescribing opioids with nonopioid analgesic medications to reduce total opioid requirements and improve pain control.<sup>1, 2</sup>

# Creating a Problem?

- Opioid-naïve patients admitted to the hospital, 15%–25% fill an opioid prescription in the week after hospital discharge.<sup>1</sup>
- 43% of such patients fill another opioid prescription 90-days post-discharge.<sup>2</sup>
- 15% meet the criteria for long-term use at one year.<sup>3</sup>

1. Calcaterra S, Yamashita T, Min S, Keniston A, Frank J, Binswanger I. Opioid Prescribing at Hospital Discharge Contributes to Chronic Opioid Use. *J Gen Intern Med.* 2015;31(5):478-85.

2. Jena A, Goldman D, Karaca-Mandic P. Hospital Prescribing of Opioids to Medicare Beneficiaries. *JAMA Intern Med.* 2016;176(7):990-997. doi:10.1001/jamainternmed.2016.2737

3. Mosher H, Hofmeyer B, Hadlandsmayth K, Richardson K, Lund B. Predictors of Long-Term Opioid Use After Opioid Initiation at Discharge From Medical and Surgical Hospitalizations. *J. Hosp. Med* 2018;4:243-248. doi:10.12788/jhm.2930

# Standards In Prescribing

- Studies in the emergency department (ED) and hospital settings demonstrate large variations in prescribing of opioids between providers and hospitals.<sup>1</sup>
- Variation unrelated to patient characteristics.
- This highlights areas of clinical uncertainty and the corresponding need for prescribing standards and guidance.

# What is Safe Prescribing?

“A process that recommends a medicine appropriate to the patient’s condition and minimizes the risk of undue harm from it.”<sup>1</sup>



# Risk Assessment

- [Screener and Opioid Assessment for Patients with Pain-Revised \(SOAPP-R\)](#)—24 item instrument to predict misuse
- [Screening Instrument for Substance Abuse Potential \(SISAP\)](#)—Five item questionnaire
- [Diagnosis, Intractability, Risk, and Efficacy \(DIRE\)](#)— Clinician-rated instrument used by primary care physicians (PCPs) to predict the efficacy of analgesia and adherence with long-term treatment.
- [Drug Abuse Screening Test \(DAST-10\)](#)—5-minute self-reported tool to identify a wide range of potential drug abuse problems.

# Evaluating A Patient's Mental Health

- Mood and anxiety disorders are common in substance abuse<sup>1</sup>
- [Patient Health Questionnaire-9 \(PHQ-9\)](#)—A multipurpose instrument for screening, diagnosing, and monitoring the severity of depression
- [Generalized Anxiety Disorder \(GAD\) tool](#)—A questionnaire designed to assess the severity of anxiety

# Screening for Non-Opioid Substance Abuse

- Screen
- Illicit or non-prescribed drug use
  - Prescription Drug Monitoring Program (PDMP)
- Alcohol use
  - Urine toxicology
- Tobacco use

# Use of Opioids in Acute Pain

- Lowest effective dose
- Risk increases with opioid dose
- Using short-acting opioids
- Avoiding use of long-acting/extended-release opioids for acute pain
- Using as-needed rather than scheduled dosing

# Minimize Risk of Opioid-Related Adverse Events

- Using a recognized opioid dose conversion guide
- Avoiding co-administration of parenteral and oral as-needed opioids
- If opioids from different routes are necessary, providing a clear indication
- Avoid co-prescribing opioids with central nervous system (CNS) depressant medications

# Safe Practices on Discharge

- Limited duration of opioids for the acute pain episode
- Use of non-opioid meds in addition
- Elevation, thermal blanket<sup>1</sup>
- Follow-up

# Excessive Prescriptions

- Prescribing more opioid than necessary results in leftover pills
- Among those who abuse opioids, 40% to 50% receive the drug from family members or friends who have leftover pills<sup>1</sup>
- Studies have shown that excessive opioid medications are routinely prescribed and most patients save leftover pills
- In a large retrospective population-based study of 2,392 surgical patients in the state of Michigan, the median number of opioid pills prescribed post-operatively was 30 pills (equivalent to Vicodin 5/325 mg), whereas the median consumption was 9 pills<sup>2</sup>

1. Results from the 2009 National Survey on Drug Use and Health: Volume I. Summary of national findings. Office of Applied Studies, NSDUH Series H-38A, HHS Publication No. SMA 10-4586; Findings, Substance Abuse and Mental Health Services Administration, Rockville, MD 2010.

2. Howard R, Fry B, Gunaseelan V, et al. Association of Opioid Prescribing With Opioid Consumption After Surgery in Michigan. *JAMA Surg.* 2019;154(1):e184234. doi:10.1001/jamasurg.2018.4234

# At-Risk Populations

- Those on chronic opioids
- Those with a known history of opioid use disorder (OUD)
- Co-morbid medical illness
- Complex psychiatric disorders

# Pain and Substance Use

- Pragmatic, ethical, and legal issues when treating addicted patients
- Address the healthcare needs in addition to their addiction
- “Significant gap in guidelines and recommendations in this specific area”<sup>1</sup>

# What am I Looking at?



# The Challenging Patient

“The majority of primary-care physicians (PCPs) do not have the time or training in pain medicine or addiction to effectively assess and manage these complex patients.”



# Case Study 1—What Do You Do?

- 30-year-old man who works on a factory line assembling equipment who has chronic pain consistent with carpal tunnel syndrome.
- Conservative treatment and a brace has been ineffective and a hand surgeon has recommend carpal tunnel release.
- During pre-surgery work up a urine toxicology screen tests positive for THC but no other substances.
- PDMP report is positive for Neurontin prescribed by his PCP but no other controlled substances.
- He tells his surgeon he has a few beers 1–2 times a week and likes to smoke marijuana on the weekends to relax and denies any other substance use.
- **In the post-operative management of pain, would you prescribe opioids?**

# Case Study 1—What Do You Do?

- Of what importance is his THC use?
- What are the real and imagined risks of prescribing opioids?
- Are there other options?
- Are opioids really needed?

# Case Study 2—What Do You Do?

- 45-year-old man with a history of OUD and chronic low-back pain successfully treated with MAT on Methadone 80mg once daily for three years.
- He had take homes twice a week for methadone along with weekends but goes to the clinic 3 days a week to have methadone administered on sight at the clinic.
- Urine screens done at the clinic have demonstrated no substances but methadone for two years.
- He has had chronic pain and no prior surgeries but develops acute worsening severe back and leg pain with radiculopathy and is unable to walk.
- The surgeon feels urgent surgery indicated. Laminectomy and partial discectomy are performed and you are consulted to assist with pain management.
- The patient is out of recovery and is fully alert, oriented, and medically stable.
- **What should be done now?**

# Case Study 2—What Do You Do? (cont.)

- Continue his regular methadone prescription
- Know chronic MAT treatment is not sufficient for acute pain control
- Talk to the patient!
- Interventions
  - NSAIDS
  - Acetaminophen
  - Steroids
  - Clonidine
- Increase Methadone 5mg bid-tid
- Morphine/Oxycodone
- No outpatient opioid prescription given

# Case Study 3—What Do You Do?

- 78-year-old woman with a history of numerous surgeries including C5-C6 spinal fusion.
- Right hip replacement and left knee replacement.
- She has severe degenerative joint disease and is prescribed Oxycodone 10g three times a day as well as 5mg every 4 hours for breakthrough pain.
- When she comes for her appointments she says her pain is well controlled.
- Her urine screens and PMDP reports are supportive of compliance but she has failed to show for two requested pill counts.
- Last appointment she was accompanied by her daughter who was adamant that her pain is unbearable and her mother needs a stronger dosage of her Oxycodone or maybe Dilaudid.
- **What is happening here and how do you deal with it?**

# Case Study 3—What Do You Do? (cont.)

- High-risk situation
- Elder abuse/victimization?
- How do you approach this?
- Is taper off opioids a must?

# Risk Assessment (cont.)

- Formulate diagnosis with differentials
- Psychological assessment including risk of addictive disorder
- Informed consent
- Treatment agreement
- Pre- and post-intervention assessment of pain level and function
- Trial of opioid therapy and/or adjunctive medication
- Routinely reassess pain score and function

# Risk Assessment (cont.)

- Regularly assess the “4 A’s”
  - Analgesia
  - Activity
  - Adverse effects
  - Aberrant behaviors
- Periodic review of pain diagnosis and the development of comorbid conditions including addictive disorders
- Documentation

