Management of Post Operative Pain

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“Pain is whatever the experiencing person says it is, existing whenever they say it does.” – McCaffrey 1968

“An unpleasant sensory and emotional experience associated with actual or potential tissue damage” – Marskey 1986
Definitions

› Acute Pain
  – Results from disease, inflammation, injury; sudden onset; short time\(^1\)
  – Surgical Pain starts with surgical trauma, ends with tissue healing\(^2\)

› Chronic Pain
  – Persistent, often more than 6-months; onset sudden or slow; intensity mild to moderate; continuous or remittent.

› Nociceptive Pain
  – Somatic (bone, joint, muscle) – aching, throbbing, localized
  – Visceral (organs) – Tumor: aching, fairly local. Obstruction: intermittent, cramping, non-localized

› Neuropathic Pain
  – Injury to nervous system (central, peripheral) – dystrophy, neuralgia
  – Jabbing, stabbing, electric shock, tingling, numbness
Definitions, continued

› Addiction
  – Combination of genetic, psychosocial and environmental factors leading to disease characterized by impaired control over drug use, compulsive use, continue use despite harm and craving.

› Dependence
  – Body adaptation to presence of drug causes withdrawal syndrome when drug stopped or suddenly reduced.

› Tolerance
  – Body adaptation to exposure to drug that causes decrease in drug’s effects and/or side effects over time.
6.8% of 4.2 billion Rx dispensed in 2012 were Opioids
Primary Care prescribed nearly half
Specialists: Pain, Surgery, Physical Med/Rehab
Rates increased 2007 to 2010 then level for most
  – Continued increases Physical Med/Rehab
  – Decreases ED and Dentistry

Adverse Event Reporting System (AERS)
  – Oxycodone and fentanyl most frequently associated with death and serious non-fatal outcomes from 1998-2005
  – Most common etiology excessive sedation, respiratory depression
Planning for Surgery

› **Discuss previous experiences with pain.** Before surgery, talk to your doctor about your experience with different methods of pain control. Mention what worked for you and what didn't.

› **Talk about chronic pain.** If you have chronic pain, you'll likely have to deal with that pain in addition to the postsurgical pain. And your body may be less sensitive to pain medication — a phenomenon called tolerance — if you're taking medications for chronic pain. Discuss this in detail with your doctor before surgery.

› **Make a list of your medications.** Include all prescription and over-the-counter medications, plus any supplements or herbs you've taken in the past month. Your doctor needs to know about anything that might interact with postsurgical pain medications.

› **Be honest about your alcohol and drug use.** Tell your doctor if you're a recovering alcoholic or have a history of other addiction. If so, you can plan for pain control that minimizes the risk of relapse.
  - If you're currently misusing alcohol or drugs — even those that have been prescribed for you — let your doctor know. Withdrawing from these substances can be difficult, and the post-surgical period is not the time to try it.

› **Ask questions.** Find out how severe the pain typically is after this type of surgery, and how long it lasts. What kind of pain medications will be given before and after surgery? What are the possible side effects of these medications? What can be done to minimize side effects?

› **Discuss your concerns about pain medications.** If you're afraid of side effects or overdosing on pain medications, talk to your doctor. He or she can help you understand strategies to safely manage your pain, such as combining medications or using patient-controlled analgesia — a system that allows you to give yourself a dose of pain medication by pushing a button.
Principles for Postop Pain Management

› Goal = no pain at rest; minimal pain on cough/movement
  – Ensure patient understands pain is possible
  – Have patient state their goal for pain control
  – Communicate the risks of over/under pain control to patient

› Assess the characteristics of the Pain

› Use most appropriate pain relieving modalities
  – Chronic Kidney disease affects medication effectiveness

› Re-assess the effectiveness of treatment modality used

› Monitor for side effects and treat if warranted
Assess the characteristics of pain with PQRST

- **P = palliative, provocative factors**
  - what makes pain better/worse

- **Q = quality**
  - describe the pain

- **R = Region/Radiation**
  - localized vs move around

- **S = severity**
  - how does the pain compare with other pain experienced; rate on a scale of 1-10

- **T = temporal factors**
  - does the intensity of pain change with time, worse in AM or PM
Factors Affecting Postop Pain

› Surgical factors
  - upper abdominal and thoracic are more painful
  - Opioid doses required intraoperatively

› Postop complications
  - Wound infection, intra-abdominal sepsis or distension

› Patient factors
  - Anxiety or Fear
  - Previous unpleasant experience with hospital
  - Family and Social support
  - Coping skills
Adverse Effects of Untreated Postop Pain\textsuperscript{2,5}

- Clinical and Psychological changes may increase morbidity & mortality and cost of treatment
- Endocrine: stress hormone release
- Cardiovascular: tachycardia, hypertension
- Respiratory: hypoventilation, basal pulmonary atelectasis resulting in hypoxia and infection (pneumonia)
- Delayed mobilization with risk of DVT, decubitus ulcers
- Delayed gastric motility/ileus, decreased oral intake
Pain Relieving Modalities

- Local/Regional Anesthesia (OnQ, Epidural, Intrathecal, Exparel)
- Narcotic Agents
- non-Narcotic Agents (Tylenol, NSAIDS)
- Combination or multi-modal therapy
- Preemptive Analgesia; Basal-Bolus Analgesia
- Behavioral: positioning, relaxation, acupuncture, distraction, biofeedback, chiropractic, TENS, etc
- Botulinum toxin (Botox) – possible use in severe post herpetic neuralgia
Opioid/Narcotic Agents

- **Codeine, Morphine** (Avinza, Kadian, MS Contin, Roxanol), **Hydrocodone** (Lortab, Vicodin), **Hydromorphone** (Dilaudid), **Oxycodone** (Percocet, Tylox, Oxycontin, Oxy-IR, OxyFast), **Oxymorphone** (Numorphan, Opana)
- **Fentanyl** (Duragesic, Lazanda), **Sufentanil** (Sufenta), **Remifentanil** (Ultiva)
- **Methadone**

Other Agents:
- **Tramadol** (Ultram, Ultracet)
- **Tapentadol** (Nucynta)

Mixed Agonist/Antagonist
- **Butorphanol** (Stadol)
- **Nalbuphine** (Nubain)
Neuropathic pain: Pharmacologic approach

Neuropathic pain

Nonpharmacologic therapy (eg, neuromodulation)  Pharmacologic therapy  Specific diagnosis: targeted diagnosis-specific treatment

First line agents (use with adjunctive topical agents as appropriate, eg, capsaicin, lidocaine)

Calcium channel alpha 2 delta ligands (eg, pregabalin, gabapentin)  SNRIs (eg, duloxetine, venlafaxine)  TCAs (eg, amitriptyline, nortriptyline)

Second line agents

Other antiepileptics (eg, valproic acid)  Opioids  Tramadol

Third line agents

NMDA antagonists (eg, dextromethorphan)  Combinations of analgesics  Tizanidine Baclofen

Fourth line
For ineffective analgesia

Consider botulinum toxin injection  Consider intrathecal ziconotide

SNRI: serotonin-norepinephrine reuptake inhibitor; TCA: tricyclic antidepressant; NMDA: N-methyl-D-aspartate.
Nociceptive pain: Pharmacologic approach

Risk factors:
- Chronic kidney disease, advanced age - avoid NSAIDs and COX-2 inhibitors
- Peptic ulcer disease, glucocorticoid use - avoid NSAIDs
- Hepatic disease - avoid NSAIDs, COX-2 inhibitors, and acetaminophen (APAP); use TCAs or duloxetine first line
- Cardiovascular disease or risk - use lowest effective dose of NSAIDs; in patients who require treatment, suggest naproxen

NSAID: nonsteroidal anti-inflammatory drug; COX-2: cyclooxygenase 2 inhibitor; APAP: acetaminophen/paracetamol; TCA: tricyclic antidepressant; PPI: proton pump inhibitor.
Postop Considerations\textsuperscript{2,8}

› Methods
  – Oral/Rectal Analgesia
    › Tylenol, NSAIDS, Opioids
    › Combination therapy
  – IM, SubQ, Transdermal, IV
  – Intrathecal, Regional Blocks
    › Timing considerations postop
  – Epidural
    › Do not give PO/IV pain meds
    › Hypotension, Resp Depression
  – PCA
    › Rapid onset
    › Fewer side effects, more consistent effect than IV/IM/SubQ
    › Sedation, Resp Depression

› Chronic Pain Patient
  – Obtain full history of use
  – May require 30-100% more than opioid naïve patient
  – Maintain total daily dose plus postop pain control dose
  – Consider leaving patches on
  – Adjuvants
    › Clonidine, Dexmedetomidine, muscle relaxants, IV Tylenol, benzodiazepines, Gabapentin
  – Monitor for opioid withdrawal
    › N/V, diarrhea, cramps, restless, anxiety, irritability, sleeplessness, sweating, dilated pupils, flushing, hot/cold, increased BP and pulse
Adverse Effects of Opioids

› Constipation
› Sedation (drowsy to excessive sedation)
› Nausea/vomiting
› Respiratory Depression
   – Opioid-Induced Excessive Respiratory Depression
Opioid-Induced Respiratory Depression

› Risks for postop hypoxia
  – Patient factors
    › Extreme obesity
    › Age over 70 years
    › Albumin level, BUN >30
  – Impaired Ventilation
    › ASA over 2 (severe systemic disease)
    › COPD, Sleep Apnea, CHF
    › Obstruction of upper airway
      – Tongue fall, large uvula, laryngeal spasm, vocal cord palsy, tracheal collapse
    › Obstruction of lower airway
      – Secretions
      – Bronchospasm
      – Atelectasis

› Opioids blunt response to
  – Carbon Dioxide & Oxygen
  – Prolongs exhalation time
  – Supresses depth of respiration

› Increase upper airway resistance by decreasing pharyngeal tone

› Hypoventilation imairs gas exchange which increases CO (hypercapnia) & decreases O2 (hypoxia) & pH (respiratory acidosis)
  – Self-Potentiating cycle

› Know when pt at highest risk
  – Peak effect of opioid
  – State of consciousness

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Self-Potentiating cycle

Know when pt at highest risk

- Peak effect of opioid
- State of consciousness
Resources

1. www.medicinenet.com

2. Mgmt of Post Operative Pain — Dr. S Vashisht, Hillingdon Hospital


QUESTIONS?