Update on Pain:

Collaborative Care for the Complex Patient

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Objectives

- Standardized approach to patient care
- Multi-modal pain treatments for inpatients
- Pharmacology of specific medications

Pain Management in Health Systems

- Pain: The 5th Vital Sign?
  - JCAHO standard as of 1/1/2001
  - "Decade of Pain" 2000-10
    - Concerns that pain was being undertreated
    - Push for opioid prescribing
  - Consequences
    - Prescription drug abuse epidemic
    - Evidence-based medicine vs. Patient satisfaction

Prescription Drug Abuse Epidemic

- 2009 Monitoring the Future: Trends in Teen Use of Illicit Drugs and Alcohol
  - Prescription drug abuse second only to marijuana
- National Survey on Drug Use and Health
  - About 1/3 of people age 12+ using drugs for the first time in 2009 began by using a prescription drug non-medically
  - >70% of people who abused prescription pain relievers got them from friends or relatives (approx. 5% from drug dealer or the Internet)
- Number of opioid prescriptions dramatically increased
  - From 1997-2007 74mg/person to 369mg/person (402%)
  - 2000 = 174 million Rx; 2009 = 257 million Rx

Prescription Drug Abuse Epidemic

- $8.5 billion worth of opioid painkillers were prescribed and sold in the U.S. in 2010

  (Washington Post, 12/15/11)

- This is enough medication "to medicate every American adult around the clock for one month"

  (CDC, 2011)

- USA = 4.9% of world population
  - consumes 80% of narcotics
  - 99% of hydrocodone
  - 98% of oxycodone

Evidence-based Practice

- EDUCATION for ALL
  - Only 4% of medical schools in the U.S. teach pain management
  - Set realistic expectations for patients early and at every level of service
    - Service-line specific education
    - Nursing education at orientation
    - Patient education related to elective surgery

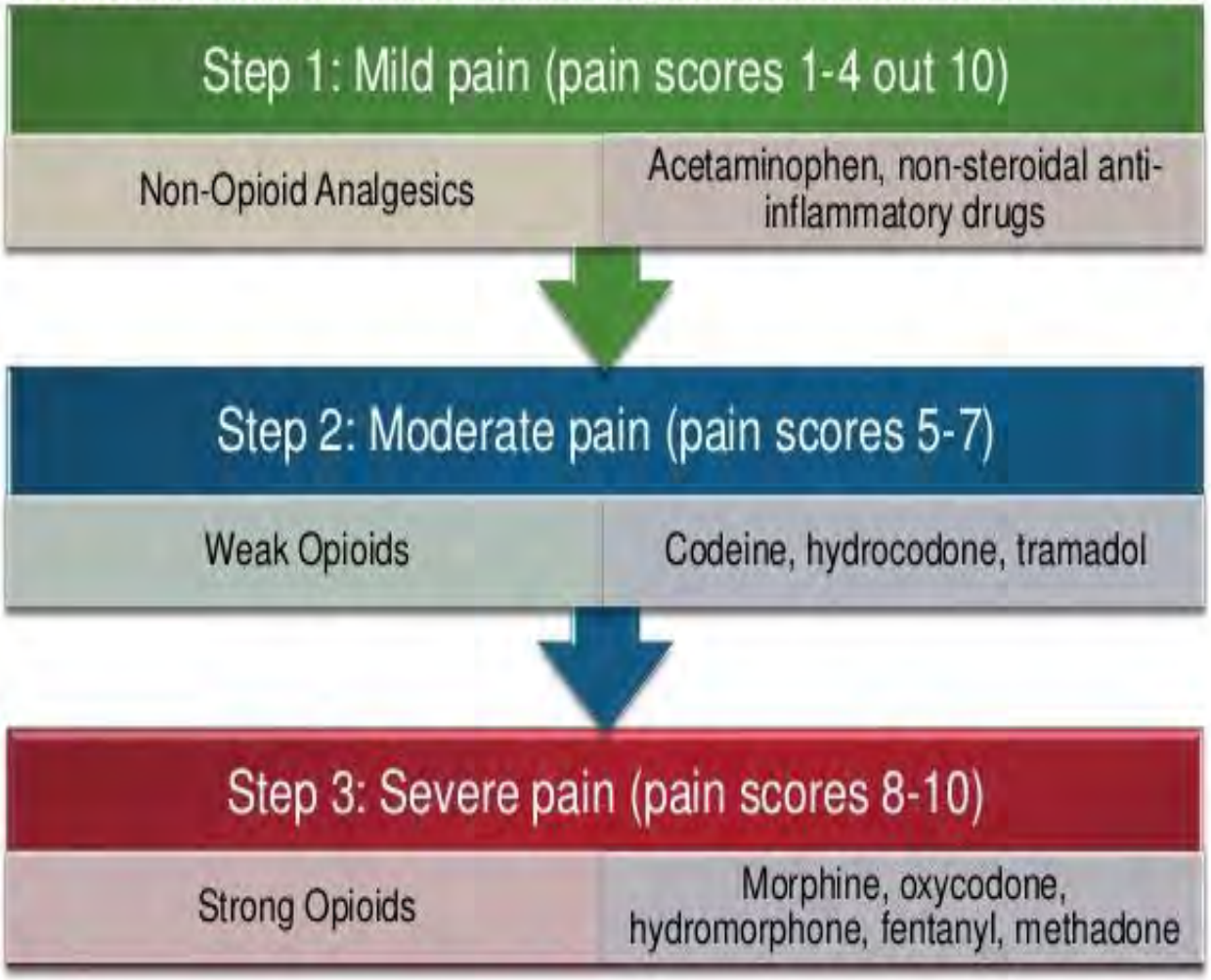
Comprehensive Approach

- Outpatient pain management center
- Interventional treatments
- Inpatient consult services

Inpatient Consult Services

- Non-surgical patients
  - Interventional treatments if indicated
  - Medication regimens with minimal to no opioids
  - ***NO IV OPIOIDS*** unless specific criteria are met
- Regional anesthesia follow-up
- Complicated post-operative pain patients
  - Acute on chronic/addiction issues
- Cancer-related pain
  - Neurolytic blocks
  - Intrathecal infusion pump implants
  - Coordinate with Palliative Care or Hospice

Pain Management: WHO Analgesic Ladder



Non-Opioid Analgesic Drugs for Pain Management

- Acetaminophen
- NSAIDs
- Adjuncts
  - Muscle relaxants
  - Antidepressants
  - Anticonvulsants
  - Corticosteroids
  - Others

Pain Management Admission Algorithm

Check OARRS report OR NARx Check in epic

If patient being treated for chronic pain?

* Resume non-narcotic & narcotic home prescriptions unless contraindicated by condition
* **NO IV narcotics unless patient NPO**
* Add non-narcotic pain medication as needed based on patient complaint and co-morbidities

Achy dull pain:

* Scheduled acetaminophen/NSAID's

Muscle Spasms:

* Scheduled Robaxin 500 mg every 8 h

Burning, shooting, stabbing pain:

* Neurontin 300 mg every 8 h
* Cymbalta 30 mg every 12 or 24 h

If patient is having new onset pain?

* During workup try non-narcotic options first based on patient's complaint and co-morbidities.

Achy dull pain:

* Scheduled acetaminophen/NSAID's

Muscle Spasms:

* Scheduled Robaxin 500 mg every 8 h

Burning, shooting, stabbing pain:

* Neurontin 300 mg every 8 h
* Cymbalta 30 mg every 12 or 24 h

* If needed give oral narcotics
* **NO IV narcotics unless patient NPO**

Complex Patients

- Acute on Chronic pain
  - Important to discuss expectations of treatment
  - Continue baseline dose of medications
  - Utilize adjuncts to decrease need for increased opioids
- Drug Abuse/Addiction
  - Need comprehensive inpatient addiction medicine service to assist with medication management and coordinate outpatient follow-up care

Complex Patients

- General concepts for Post-operative care
  - Identifying difficult patients pre-operatively is ideal
    - Pre-op consultation significantly decreases patient anxiety
  - Standardizing treatment protocols can improve outcomes
  - Regional techniques whenever possible
    - Epidural
      - Thoracic and abdominal/pelvic cases
    - Adductor canal
      - Knee replacement
    - Fascia iliaca blocks
      - Hip replacement and fracture

Pharmacologic Agents

- Ketamine
- Methadone
- Suboxone

Ketamine

- N-methyl-d-aspartate (NMDA) receptor antagonist
  - Prevents central sensitization in dorsal horn
  - Inhibits nitric oxide synthase, thus decreasing pain perception
- Other mechanisms of action
  - Weak mu & kappa opioid
    - Hallucinogenic effects could be related to kappa activity
  - Serotonin reuptake inhibitor
    - ?anti-depressant activity
  - Dopamine and norepinephrine uptake inhibitor
    - Attenuates hyperalgesia
  - Blocks voltage-gated Na^{+} and Ca^{++} channels

Ketamine

- Side effects
  - Hallucinations, nightmares, confusion
  - Blurred or double vision
  - Bradycardia or respiratory depression

- Appropriate patients
  - Difficult post-operative or cancer pain
    - No significant mental health issues
    - Chronic pain history or addiction issues

- Contraindications
  - MI or head injury within 6 months
  - PTSD
  - Schizophrenia

Case #1

- 34 y/o male presents w/low back pain, saddle anesthesia/urinary incontinence
  - Had been told of need for immediate surgery a year earlier but declined
  - Was using street drugs including cocaine, marijuana, ketamine, methadone/misc. opioids and most recently heroin 1-2gm/day for pain
- Scheduled for emergent L4-5 laminectomy

Case #1 (cont.)

- Multi-modal ORAL medication regimen
  - Acetaminophen 1000mg q8h
  - Methocarbamol 500mg q8h
  - Gabapentin 200mg q8h
  - Oxy IR 10-15mg q4h prn
- Pain scores 5-6/10 on this regimen
- Patient more concerned about opioid withdrawal; requested methadone

Case #1 (cont.)

- Screened and cleared for Ketamine
  - Currently only available to be ordered by pain service and managed on specific nursing units
  - Bolus prior to incision 0.3mcg/kg
  - Infusion started in PACU based on ideal body weight (mcg/kg/hr)
  - Adjuncts were continued; Dilaudid PCA was used immediately post-op/overnight

Case #1 (cont.)

- POD #1
  - Ketamine and PCA discontinued
  - Patient ambulating and sitting comfortably; still more concerned about withdrawal from heroin than pain
  - Only 3 doses of prn IV Dilaudid, otherwise all oral regimen
  - D/C home POD #2 w/adjuncts and Oxy IR 10mg #10 pills (we suggested NO opioids)

Methadone

- Available in United States since 1947
- Dual activity
  - Levo-isomer (8-50x more potent) = mu agonist
  - Dextro-isomer = NMDA antagonist
    - May account for increased benefit for neuropathic pain compared to other opioids
- Half-life 10-60h
  - Used in "maintenance doses" for opioid addiction
  - Can take 3-5 days for full effect
  - Should not escalate too quickly
  - Baseline EKG (can cause QT interval prolongation)

Case #2

- 27 y/o female with 10yr hx/o advanced ovarian cancer
  - Dx in 2006; multiple surgeries/chemo
  - 2013 admitted to hospice; on TPN
  - Admitted on 2/18/16 for ex-lap/lysis of adhesions/ileostomy to relieve bowel obstruction
    - Complex post-operative course requiring trach and extended ICU stay

Case #2 (cont.)

- Home regimen
  - MS Contin 60mg BID = 120 MEQ
  - MS IV 10mg q4h prn = 180 MEQ
  - MS Elixir 10mg q2h prn = 120 MEQ
    - **420 MEQ oral morphine/day**
- Post-operative regimen
  - Fentanyl infusion 100-300 mcg/hr 2/18-3/8
  - Fentanyl 100 mcg/hr = 30 MEQ oral morphine/hr
    - **720 MEQ oral morphine/day**
- Gabapentin 100mg elixir TID
- Benadryl 25mg IV q6h prn anxiety

Case #2 (cont.)

- D/C Home 3/31/16
  - Methadone 15 mg every 8 hours
  - MS IR 15 mg every 4 hours prn
  - Acetaminophen 1000 mg every 8 hours
  - Baclofen 5 mg every 8 hours
  - Neurontin 800 mg every 8 hours
  - Cymbalta 30 mg bid

Suboxone

- Used for the treatment of opioid addiction
  - Buprenorphine
    - Semi-synthetic derivative of thebaine
    - Partial mu agonist and kappa antagonist
  - Naloxone
    - Minimally active when taken sublingual
    - If any attempt at abuse by injection, will be fully activated

Suboxone

- Pre-operative protocol
  - PAT generates letter to prescribing physician about upcoming surgery
  - Advise discontinuation 5-7 days prior to surgery; prescribing physician can suggest alternate plan at their discretion
  - Replace with opioid as appropriate
  - Follow-up with prescribing physician after surgery to restart treatment (2-3 weeks post-op)

Case #3

- 57 y/o F presents at SV with respiratory failure/altered mental status requiring intubation
- Self-extubated later that night and admitted to inhaling heroin earlier in the day
  - Initially prescribed opioids for fibromyalgia several years ago; lost insurance 2 years ago; started buying Norco on the street and then started inhaling heroin because it was cheaper
  - Hx/o alcohol abuse x10 years about 20 years ago

Case #3 (cont.)

- EKG changes = cath = 3-vessel disease
  - Transferred to KMC for CABG
  - Nothing done to treat acute heroin withdrawal
  - Started on Norco 5/325 q6h prn after transfer
- Post-operative course
  - Patient extubated late at night
    - Morphine IV 10mg q2h; received total of 72mg
    - Percocet 5/325 x 4 tabs
    - Percocet 7.5/325 x 2 tabs
    - still complaining of severe pain; threatened to leave AMA if she did not get more medication

Case #3 (cont.)

- POD #1
  - D/C Percocet - elevated liver enzymes
  - Start Oxycodone 15mg q4h prn
  - Decrease Morphine to 4mg IV q4h prn
  - Start Methocarbamol 500mg q6h
  - Start Gabapentin 300mg q8h
- POD #2 – still crying in pain
  - Addiction medicine consult recommended
  - Increased ORAL meds; D/C IV morphine

Case #3 (cont.)

- POD #3 and 4
  - Pain better controlled
  - Opioid dosing weaned
  - Adjuncts increased
  - Consult addiction medicine for opioid substitution recommendations
- POD #5
  - Patient expressed desire to be off opioids
  - D/C home with dated Rx for opioid taper

Team Approach

- Collaboration is the key to success
  - "No man is an island,..."
    - Knowledge of basic principles of pain management by all services is critical to ensure that patient receive the best possible care
    - Communication between all providers important to maintain unified message to patients
- If we focus on providing evidence-based care, we will achieve the best outcomes AND patient satisfaction will be high