Pain Management: Acute and Chronic

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Course Objectives

Upon completion of this presentation participants should be able to:

- Discuss the definition of pain, its prevalence
- describe the pharmacology of opioids useful in the management of acute and chronic pain
- describe the pharmacological management of opioids used for treating acute and chronic pain
- Understand the 3-Step WHO guidelines
- Prescribe proper doses of opioids and adjuvants
- Anticipate and treat potential side effects
- identify the indications for a referral or consultation with a pain specialist.
- discuss the role of the various health care professionals in the management of pain

Pain Facts

- 76.5 million Americans affected (26%)
- Annual cost to society 100 billion/year
- Low back pain-27%
- Migraine or severe headache- 15%
- Neck pain- 15%
- Pain is the most common complaint in primary care offices
- Uncontrolled pain = decreased quality of life and increased morbidity

Pain foundation website, 2007

Pain Management Barriers

- It is often under-reported
- Fear of addiction
- Physician misinformation
  - Fear of respiratory depression with use of opioids
  - Fear of patient addiction
  - Fear of legal implications

Pain Management Goals

- Treat acute pain aggressively and prevent chronic pain
- Identify and address the cause of pain
- Treat chronic pain continuously
- Improving function and sustaining quality of life
- Treat noninvasively as much as possible

Acute vs Chronic Pain

- Pain is an unpleasant feeling that is conveyed to the brain by sensory neurons as result of injury, disease, or emotional disorder.
- Acute Pain
  - Less than 6 months duration
  - Cause is usually known
  - Disappears when the injury heals
- Chronic Pain
  - More than 6 months duration
  - Persists after injury heals
  - Cause may or may not be known

International Association for the study of pain website, 2007

Types of Pain

- Neuropathic (burning, tingling, pins and needles sensation)
- Psychogenic
- Idiopathic
- Nociceptive (Bone, Muscle, Visceral)- tissue damage/injury, localized

Pain Assessment

- Comprehensive H&P
  - Assess pain for duration, intensity, location, aggravating and relieving factors, prior meds used, family or personal history of drug or alcohol abuse-very important, patient's goal for pain control.
- Labs- CBC, CMP, ESR, B12, Folate, HgbA1C, FBS, Rheumatoid factor
- Diagnostics (MRI, EMG, CT,X-ray)

Pain Assessment Tools

- Visual Analog Scale (VAS)
- Numerical Scale
- Pain Faces Scale
- Verbal Pain Intensity Scale
- Categorical Scale

NCCN website, 2007

Non-Pharmacological Pain Management

- Transcutaneous Nerve Stimulation (TENS)
- Cognitive and behavioral therapy
- Heat and Cold
- Physical and occupation therapy
- Rehabilitation
- Progressive Muscle Relaxation
- Psychotherapy
- Complimentary Medicine (massage, Accupuncture and Accupressure)
- Exercise therapy
- Lifestyle changes

Pain Management-Interventional

- Kyphoplasty/Vertebroplasty (with vertebral fractures)
- Epidural and caudal steroid injections (neck, back pain)
- Nerve root blocks and transforaminal injections (neck, back pain, migraines)
- Peripheral nerve injections (migraines, trigeminal neuralgia, shingles pain, localized pain, postsurgical incisional pain, post surgical neuropathic pain, localized neuropathic pain, muscle spasms)
- Disks and Discography (diagnostic, to find out where pain is originating)
- Radio-frequency lesioning (Rhizotomy)(neck, back pain)
- Spinal cord simulation (neck, back, arm, leg pain, or migraines)
- Spinal infusion/Spinal pumps (chronic pain)
- Sympathetic blocks (SRPS syndrome, shingles pain)
- Neurolytics of celiac plexus and cancer pain (abdominal pain)
- Surgery

Pharmacological Management of Pain

WHO Pain Treatment Ladder

- Mild Pain
  - Non-opioid Analgesics
  - Adjuvant Agents (optional)
- Moderate to Moderately Severe Pain
  - Weak opioid+ Non-opioid
  - Adjuvant Agents (optional)
- Severe Pain
  - Strong Opioid + Non-opioid
  - Adjuvant Agents (optional)

Treatment of Mild Pain- NSAIDs

- NSAIDs- Cox-2 inhibitors (Celebrex), Mobic, Naproxen, Relafen, Elector (Diclofenac) patch 1.3%, Diclofenac topical (Voltaren Gel) 1% , Solaraze 3% gel (Diclofenac)
- Inhibit pain sensitivity caused by Cox-2 peripherally at site of injury and centrally at spinal cord.
- Do not block transmission of pain
- Ceiling affect- increase in dose does not increase analgesia but increases side effects.
- Risks- GI toxicity (bleeding), renal toxicity (with dehydration), cardiovascular risks
- The last resort for people with cardiovascular disease- AHA recommendation

Treatment of Mild Pain- NSAIDs cont.

- Ketorolac (Toradol) 30mg IV q6h prn pain not to exceed total 5 days- use only for moderate to severe pain
- Voltaren Gel 1% (Diclofenac)
  - UE 2 g qid; Max 32g/day; Total 8g/joint/day
  - LE 4 g qid; Max 32g/day; Total 16g/join/day
- Mobic 7.5 (qd or bid), 15mg mg qd. Not GI protective as Celebrex, but good choice if patient does not tolerate Celebrex.
- Relafen- harder on GI, good for acute pain for short term use
- Solaraze 3% gel (Diclofenac) tid prn
- Elector patch 1.3% bid

Mild Pain Management- Acetaminophen (Tylenol)

- Centrally acting increases pain threshold
- Full mechanism of action not known
- Well-tolerated
- Minimal anti-inflammatory effects
- Fewer GI side effects than NSAIDS
- Risks- hepatotoxicity at high doses. Caution using with meds that increases P450 system activity (phenytoin, carbamazepine, rifampin, isoniazid, phenobarbital, barbiturates). Caution with alcohol use.
- Patients not to exceed 3 grams/day (for chronic pain)

Adjuvants

- Lidoderm patch (Lidocaine 5%)
  - Indicated for peripheral neuropathy
  - 1-3 patches once daily for 12 hours
  - Well tolerated
- Capsaicin cream 0.025% or 0.075%
  - Tid/qid prn
- Muscle relaxants- Flexeril, Skelaxin, Baclofen, Robaxin, Soma
  - Sedation main concern
  - Bid, tid, qid dosing
  - Robaxin least sedating, followed by Skelaxin and Flexeril
  - Baclofen most effective but most side effects, start at slow doses
  - Soma very potent but can be addictive, give only short-term, unless all others failed

Adjuvants cont.

- Anticonvulsants- Neurontin, Lyrica, Carbamazepine- for neuropathic component of pain or as adjuvants to pain medications
  - Neurontin- cheaper, tid/qid dosing, high dose titration, increased s/e, longer titration time.
  - Lyrica,expensive, newer, fast titration, bid/tid dosing, less s/e.
  - Carbamazepine- excellent medication for trigeminal neuralgia
  - Sedation and dizziness- the main concern these medications resolves over time.
  - Start at bedtime to deal with side effects

Adjuvants cont.

- Antidepressants-Tricyclics, MAOIs, Serotonin Reuptake Inhibitors (Cymbalta).
  - Elavil- for depression,neuropathic component of pain and for insomnia. Do NOT give to patients with heart disease or emotionally unstable/suicidal. Check EKG prior ordering this drug. Can change cardiac conduction.
  - Cymbalta works well for neuropathic component of pain and depression.
  - Sedation is side effect for these medications

Moderate to Severe Pain-Opioids

- Morphine Sulfate (Moprhine, MSIR, MSContin, Roxanol, Kadian, Avinza) IR/ER
- Oxycodone (Oxycontin, OxyIR) IR/ER
- Oxymorphone (Opana) IR/ER
- Fentanil (Duragesic) (IR/ER)
- Methadone
- Tramadol (Ultram, Ultracet) IR/ER
- Hydromorphone (Dilaudid) IR
- Hydrocodone/Acetaminophen (Vicodin, Lorset, Lortab, Norco) IR
- Percocet (Oxycodone/Acetaminophen) IR

Moderate to Severe Pain- Opioids cont.

- Morphine Sulfate IR/SR
- Metaboline (morphine 3-glucuronide)
- Adverse events - seizures, myoclonus, pruritis, risk increased with low GFR
- Avoid in renal failure
  - SR- MS Contin, Kadian, Avinza
  - IR- MSIR, Roxanol, Morphine
    - MS Contin bid dosing can be given tid, about 30% immediate release component, not good choice for patients with history of drug abuse.
    - Kadian qd or bid dosing can be given through NG tube, no immediate release component better choice for patients with personal or family history of drug abuse
    - Avinza qd dosing can be given bid (but devide qd dose into bid dosing), about 10% releases immediately, good choice for patients with personal or family history of drug abuse to be given once a day.
    - Roxanol is liquid form given to those who have difficulty taking pills (used in hospice frequently)
    - MSIR starts at 15 mg do not give to opioid naïve patients

Moderate to Severe Pain- Opioids cont.

- Methadone- tid/qid dosing
- NMDA antagonist, inhibits serotonin and norepinephrine, works well for neuropathic component of pain
  - Cheap
  - Very dangerous if patient is noncooperative, can result in death.
  - 36-72 hours half-life, sedation occurs day 2 or3 taking medication main s/e.
  - Adverse events: sedation, dizziness, n/v, urinary retention, QT prolongation and multiple medication interactions with other meds (SSIRs, quinolones, Lyrica, TCAs, Rifampin, Phenytoin, Phenobarbital, some CCBs, macrolides, anteretrovirals, antifungals and others)
  - NOT a prn drug. Dosing tid/qid, effects last between 4-8 hours, onset within 30 minutes.
  - Quick dosing can result in death. Dosing start slow 2.5 mg bid/tid elderly, and 5 mg bid/tid adults then titrate every 4-7 days by 30-50%, watch patient reaction, sedation. See patient weekly for evaluation. Have office call a patient on days 2 and 3 and inquire regarding s/e.
  - Available in po, liquid and IV form.
  - IV form does not have 36-72 hour half-life, sedation effects are immediate. Potent drug for pain management.
  - Methadone gtt excellent for managing severe chronic pain, especially cancer pain can be managed within 24 hours and patient discharged to home.
  - 80% oral biovailability
  - Lipophillil
  - Excretion mostly fecal therefore advantageous to use in renal failure

Moderate to Severe Pain- Opioids cont.

- Fentanyl IR/SR- parenteral, trandermal, transmucosal, spinal, nebulized
- Lipophillic, high 1st pass effect, low oral bioavailability,
  - SR-Duragesic, transdermal patch q3day dosing
    - excellent choice for patients with memory problems
    - Excellent choice for patients with history of drug abuse
    - Less side effects than pills
    - Not a good choice if patient is active in sports, fever, obese due to altered absorption
  - IR- Fentora, and Actiq, transmucosal/buccal
    - For breakthrough cancer pain
    - No more than 4 doses a day. May redose in 30 minutes.
    - 200-400mcg Actiq=100mcg Fentora
    - Onset of action within 15 minutes
    - NEVER give to opiod naive patients, respiratory depression is a concern.
    - Actiq comes in lollipop form, suck between cheek and lower gum. Be very careful giving it to patients who have pets or children around. Start with 200 mcg/unit
    - Fentora comes in tablet form. Place the tablet above rear molar between upper cheek and gum and allow to dissolve. Do not chew, suck or swallow. Start with 100mcg.

Moderate to Severe Pain- Opioids cont.

- Oxycodone IR/SR
  - SR- OxyContin bid/tid dosing
  - Renally safer than Morphine
    - About 37% is in immediate release form
    - Not a good medication for people with history of substance or drug abuse.
    - Can be given to opioid naive patients in severe pain (start at 10 mg bid)
    - Most sought after drug by drug abusers and on the market
    - Literature says it has the same potential for addiction as other long-acting pain medications- I tend to disagree based on my professional experiences.
  - IR-OxyIR
    - I usually give this drug if a patient is allergic to hydrocodone, failed hydrocodone, or cannot take tylenol (liver disease) in Percoset.

Moderate to Severe Pain- Opioids cont.

- Opana (Oxymorphone HCI) IR/SR, bid dosing
  - Long half-life (9-11h)
  - Extended release (5, 10, 20,40mg)
- Opana IR (5, 10mg)
- NOT to be given to opioid naive patients.
- Not to be given if allergic to codeine (metabolite of oxycodone)
- Respiratory depression is a risk
- Strenth 2x oxycodone, 3x morphine
- Must take 1 hour prior or after meals (can increase blood levels dangerously)
- Structurally related to hydromorphone (Dilaudid)
- Injectable form Numorphan/Opana inj (10mg/ml)

Moderate to Severe Pain- Opioids cont.

- Hydromorphone (Dilaudid)- IR.
  - Synthetic opioid
  - Metabolite hydromorphone 3-glucuronide- same adverse events as Morphine but much more potent.
  - Caution with renal failure
- Hydrocodone (Vicodin, Lorcet, Lortab, Norco)-IR
- Acetaminophen/Oxycodone (Percocet)- IR

Moderate to Severe Pain- Opioids cont.

- Meperidine (Demerol)- IR, use no more than 2-3 days, short half-life (2.5-3.5hours)
  - neurotoxic metabolite formation can cause seizures with impaired renal function.
- Tramadol (Ultram)- IR/SR, combination with acetaminophen (Ultracet), as potent as codeine
  - Mu-receptor agonist
  - Blocks reuptake of serotonin and norepinephrine
  - Caution with SSRIs or SNRIs risk of serotonin syndrome.
  - Adverse effects- somnolense, dizziness, seizures, HTN.
    - Ultram ER qd dosing 100, 200, 300
    - Ultram/Tramadol IR 50mg 1-2 po tid/qid prn (Can order Tylenol 325-500 mg with each dose if patient cannot afford Ultracet or if not on formulary)
    - Ultracet 1-2 po tid/qid prn- more expensive than Tramadol

Moderate to Severe Pain- Opioids cont.

- IONSYS. Patient controlled transdermal system- new medication on the market
- Credit card size with 80 doses of fentanyl
- Pre-programmed and disposable
- Can be used for acute pain
- Battery charged system when used pushes pre-programmed amount into dermis
- Placed on upper outer area of chest where patient can reach the button
- Leave in place for 24 hours

Managing Moderate to Severe Pain

- Give baseline medications round the clock
- Give 10% of total daily dose prn
- If taking more than 2 doses of prn's/24h then increase baseline by total of prn's
- Opioid naive patients stabilize pain with short-acting medications first
- ½ usual starting dose in special populations
  - Elderly 65 years or older
  - Patients with hepatic or renal disease
- Opioid Conversion
  - Calculate equianalgesic doses
  - Reduce the dose by 30-50%

Opioids- Potential Risks

- Nausea, vomiting, stomach upset
- Respiratory depression
- Constipation
- Dizziness, delirium, amnesia
- Itching, hives
- Addiction, dependence, tolerance
- Hyperalgesia- pain out of proportion

Managing Opioid Risks

- Most side effects resolve with continued use of medications except constipation.
- Treat constipation with laxatives, stool softeners (Colace, Pericolace, Miralax, Senocot, Senocot S), encourage patient to drink fluids and eat fiber reach foods
- Somnolence treat with stimulants (Provigil, Ritalin)
- Pruritis treat with antihistamines
- Respiratory depression- titrate medications slowly by 20-30%, in elderly (65 years or older) by 15-20%. “Start low, go slow”. Narcan is the last resort only.
- Treat nausea, vomiting with nausea medications (Reglan, Zofran, Phenergan).

Opioids

- Opioids can relieve moderate to severe pain
- No ceiling effect
- For continuous pain use long-acting meds
- For breakthrough pain use short-acting meds
- If taking meds 10 days or longer on regular bases withdrawal symptoms may occur, wean off meds slowly.

Preventing and Managing Withdrawals

- Withdrawal results in hypertension, nausea, vomiting, body aches, diarrhea, anxiety, tremors, tachycardia, diaphoresis, abdominal pain.
- Preventing-Taper off meds slowly by 50% first 2-4 days, then by 20-30% every 2-4 days.
- Managing – Dr. Hilliard's RX
  - Clonidine (Catapres) 1 patch x7days #1
  - Librium 10 mg 1 po tid prn #21 or Klonopin 1 mg tid prn #21

Equianalgesic Dose Table

- Morphine is used as a gold standard in opioid conversion
- Morphine 1 mg IV = 3 mg PO
- Dilaudid IV 20 times stronger than IV Morphine and PO 4-7 times stronger than PO Morphine
- Oxycodone PO 1.5 times stronger than PO Morpine
- Fentanyl patch 100 times stronger than Morphine
- 1 mg IV MSO4=10mcg IV Fentanyl=50mcg Actiq
- Intrathecal dose is 100 times stronger than IV dose
- Oxycontin 20 mg PO = Dilaudid 7.5 mg.

Equianalgesic Dose Conversion

- Formula
  - current 24h dose divided by equivalent dose= new 24h dose divided by number of times drug to be given per day (bid, tid, qid) = new individual drug dose.
- Examples
- Converting Oxycontin to MS Contin
  - Patient is taking 60 mg bid MSContin. Total 24 hour dose = 120mg. Oxycontin is 1.5 times stronger than MSContin. 120mg x1.5 = 180mg Morphine/24 hours. 180 divided by 2 =90 mg bid dosing
- Converting MSContin to IV Dilaudid
  - Patient is taking 60 mg MSContin/24h. 60mg divided by 3 (po MSO4 3 mg =1 mg IV) = 20 mg IV Morphine x 0. 15 (dilaudid equanalgesic dose) = 3mg/day Dilaudid. 3mg divided by 24 hours = 0.125mg basal rate dilaudid for PCA for continuos background long-acting med in addition to prn PCA Dilaudid.
- Converting MSContin PO to IV
  - Patient is taking MSContin 60 mg bid. 60mg x2=120mg/24h. 120mg divided by 3 (3mg po Morphine=1 mg IV Morphine)= 40mg IV Morphine/24h. Morphine IV is given every hour. 40mg divided by 24h = 1.66mg/h can be given as basal rate to PCA in addition to PCA prn.

Drug Dependency vs Addiction vs Pseudo-addiction

- Physical Dependence
  - Physiological Problem
- Addiction
  - Psychological Problem
  - Behavior Pattern of Drug Abuse
    - Hoarding medications
    - Seeking prescriptions from multiple providers
    - Requesting more medications
- Pseudo-addiction
  - Due to undertreatment of pain
  - Mimics addiction behavior
  - Resolves once pain is treated

Preventing Drug Abuse

- Written consents/treatment agreements with patients
- Teach patients on how to dispose unused medications or request patients to bring unused medications and dispose them in your office
- Have guidelines in place on preventing diversion of prescribed medications
- Urine screening
- Regular visits and pill counts during those visits
- Know which pharmacy your patient uses to obtain medications
- Use patient risk assessment tools (CAGE, ORT, SOAPP)
- Use multidisciplinary approach- refer patients to other members of health care team- pain management specialist, addictionologist, OT/PT, Rehab, alternative treatment specialists.

Pain Management- Legal Aspects

- DEA and licensing board scrutiny are a result of poor documentation
- Document, document, document- very important
- Must cover 5 areas when documenting
  - H&P
  - Informed consent and treatment agreement
  - Treatment plan
  - Reassess patient on regular bases
  - Consultation and referrals when needed (pain management specialist, Rehab/physiatrist, OT/PT, addictionologist, psychologist, psychiatrist, alternative medicine etc).

Pearls

- NEVER give long-acting opioids to opioid naive patients except Oxycontin 10 mg bid if patient is in severe pain and is poorly managed with PRN meds.
- Always start low and go slow
- When converting from one opioid to another always decrease dose by 25-50%
- When giving Narcan, dilute it with 10 cc NS and give it at 2 cc increments/min- will prevent rebound pain
- If patient has preference or insists on certain opioid that is a red flag (addiction maybe an issue).
- Any suspicion of drug abuse refer to psychologist for evaluation for drug abuse, if report confirms drug abuse refer to addictionologist
- Document, document, and document- very important

Pearls cont.

- Patients with addiction are treated the same way as non-addicted patients, but they must see addictionologist, if history of alcohol abuse, must attend AAA meetings (must provide phone number for a group leader) monthly visits for f/u, and closer monitoring, avoid short-acting drugs and drugs with immediate release component (OxyContin, MSContin), Kadian, Avinza and Methadone are better choices
- Use combination of non-pharmacological modalities along with pharmacological modalities in treating pain
- Random urine drug screen at least twice a year-never let a patient know when it is going to occur. If patient states cannot give urine, then insist on serum drug screen
- Hold prescription until patient provides specimen for drug screen
- When titrating medications always start or add dose at bedtime first, that way if they have s/e they will sleep through them

Pain Management

- Questions?

Pain Management

- THANK YOU!