Managing Pain in Older Adults

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Prevalence of pain in older adults

- Prevalence of any kind of pain is stable with increasing age
  - Scudds & Ostbye 2001, Thomas et al 2004
- Prevalence of persistent disabling pain increases with age
Pain Homeostenosis

- Diminished ability to effectively respond to the stress of persistent pain
  - Decreased cognitive reserves
  - Decreased opioid receptors, neurotransmitters
  - Altered pharmacokinetics/pharmacodynamics
  - Polypharmacy
  - Medical comorbidity
  - Social isolation, depression, loneliness
  - Impairments in ADL
PAIN

Inactivity

Deconditioning

Decreased function

Social Isolation

Independent Living

Quality of Life & Mood

Dependent Living
Brief Pain Inventory
Pain reports and cognitive impairment

Pain Assessment in Verbally Responsive Dementia Patients

- Focus on present pain
- Use verbal reports by staff and family
- Observations during care, mobilizing or other pain-inducing activities
Hierarchy of Data Sources

- Resident report *(if possible)*
- Prior pain history
- Painful diagnoses – don’t forget that organ failure causes pain
- Behavioral indicators
- Observer assessment
- Response to empirical therapy
Pain Management Options

- Non-pharmacologic
- Pharmacologic
- Complementary and Alternative Therapies
Non-pharmacologic therapies

- Heat
- Relaxation, hypnosis
- Exercise – PT/OT
  - Falls prevention clinics
  - Yoga
  - Swimming
- Devices to restore or assist function – PT/OT
- Manual therapies – caution in osteoporosis
- TENS unit – ongoing use with disabilities may be challenging
- Most therapies need adequate cognition to be safe and effective
WHO Analgesic Ladder

Adapted from The WHO 3 Step Analgesic Ladder, Cancer Pain Relief, 2nd Edition, World Health Organization

Mild Pain
- Acetaminophen
- ASA
- NSAIDs/COXIBs (+/- adjuvants)

Moderate Pain
- Codeine
- Oxycodone/acet (+/- adjuvants)

Severe Pain
- Fentanyl
- Hydromorphone
- Methadone
- Morphine
- Oxycodone (+/- adjuvants)

Increasing Pain
Using step-wise pain management regimen in agitated residents

- 352 residents in facility care
- Moderate to severe dementia with agitation
- Randomized: step wise protocol vs regular care
- Intervention was daily pain care using step-wise protocol
- Protocol used acetaminophen – morphine or buprenorphine patch + pregabalin
  - Husebo et al BMJ 2011
Using step-wise pain management in agitated residents

Husebo et al BMJ 2011

ADLs and cognition unchanged
Pharmacologic therapies

- Acetaminophen – drug of first choice for mild to moderate pain
  - Short trial to establish whether it is effective
- NSAID cause significant morbidity and mortality in the elderly
- NSAIDS poorly tolerated:
  - Highly protein bound
  - Can cause severe renal damage
  - Fluid retention can exacerbate CHF
  - COX 2 NSAIDS reduce GI side effects, not renal
  - Side effects related to duration and dose
NSAIDS and Adverse Drug Reactions (ADR)

- Adverse drug reactions increased with:
  - Age
  - Use of inappropriate medications
  - Polypharmacy
- ADR from NSAIDS usually either 1\textsuperscript{st} to 4\textsuperscript{th} in terms of frequency in elders
- No evidence that acetaminophen provides less analgesia
  - Barber & Gibson Drug Safety 2009
Why are opioids not regularly used to treat pain in older adults?
Figure 1. High-dose opioid dispensing rate (number of units per 1000 population), by province and year (2006-2011): Rates are presented nationally and stratified by province.

Gomes et al. Canadian Family Physician 2014

Figure 2. High-dose opioid dispensing rate (number of units per 1000 population), by province and opioid type: Rates are calculated as the average rate of dispensing between 2006 and 2011.

Data from IMS Brogan Canadian CompuScript database by year between 2006 and 2011.
Delirium in Hip Fracture Patients

- 541 patients, no delirium at entry to study
- 16% of patients became delirious
- Subjects able to self-report pain
  - Severe pain prior to delirium
    - OR 9.0 p=0.01
  - Low doses of opioids (<10 mg of parenteral milligrams of mso4/day)
    - OR 4.4 p=0.03
  - Received meperidine (NS)
  - Increase in opioid dose after pain detected (NS)

- Subjects unable to self-report pain
  - Low doses of opioids (<10 mg of parenteral milligrams of mso4/day)
    - OR 4.0 p=0.004
  - Received meperidine
    - OR 3.4 p=0.001

What do I need to know to be a better prescriber in older adults?
General factors affecting absorption, distribution & elimination - Age

- Absorption: Changes in drug absorption tend to be clinically inconsequential.

- Distribution: Lean mass to fat ratio can change with age resulting in higher concentrations of fat-soluble drugs.

- Serum albumin decreases so in a patient with malnutrition, this may enhance drug effects because serum concentrations of unbound drug are increased.
General factors affecting absorption, distribution & elimination - Age

- Hepatic metabolism: mass and blood flow decreases which can affect hepatic drug elimination.

- The hepatic metabolism is reduced and clearance can fall by 30 to 40%.

- However, the rate of drug metabolism can vary greatly from person to person. The possibility of hepatotoxicity is generally enhanced in the elderly.
General factors affecting absorption, distribution & elimination - Age

- Many drugs produce active metabolites in clinically relevant concentrations. Examples are some benzodiazepines, amitriptyline and opioid analgesics such as morphine.

- The accumulation of active metabolites can cause toxicity in the elderly due to age-related decreases in renal clearance. Toxicity is likely to be severe in those with renal disease.
Are all opioids the same?
- Opioids bind to three opioid receptors with differing effects
- There are at least two distinct classes of opioids based on structure
- Methadone also targets NMDA receptors
- There are two pathways of metabolism for opioids
- Two opioids are lipophilic and the rest are more hydrophilic
Opioids of choice in frail elderly and renal failure

- Hydromorphone
- Oxycodone
- Fentanyl
- Methadone
- Buprenorphine
Glucuronidation
10% of codeine becomes morphine

Morphine and hydromorphone are both glucuronated to active metabolites.

The metabolites cause neuroexcitation

Hydromorphone metabolites are cleared more quickly than morphine
Fentanyl patch

- Fentanyl is highly lipophilic and poorly absorbed orally
- A 25mcg fentanyl patch = 100mg morphine/day = 20 Tylenol #3 per day
- Takes 12 hours for onset of analgesia
- Need adequate subcutaneous tissue for absorption
- Takes 24 hours to reach maximum effect
- Change patch every 72 hours
- Dosage change after six days on patch
New fentanyl formulations

- Buccal, sublingual and nasal formulations
- All have fairly rapid onset and last up to approx. 1 hour
- Patient-related factors will decide which formulation works best
- None of these have been funded by Pharmacare
Sufentanil for incident pain

- Well absorbed through buccal, sublingual and nasal mucosa
  - Onset is 5-10 minutes
  - Cleared in 30 minutes
  - 12.5mcg- 25mcg starting dose
  - Up to 100mcg per dose
  - For sublingual use must be able to follow directions
- If unable to follow directions may use intranasally
OxyNeo replaces OxyContin

- Oxycodone in a new formulation
- Turns to gel on contact with water
  - not injectable
  - can’t delay swallowing
- Extremely crush resistant
- Pharmacare does not cover at this time
Targin

- Oxycodone with core of naloxone
- Lower incidence of constipation
- Naloxone not absorbed from the gut – no effect on analgesia
- Comes in 5, 10, 20, 40mg oxycodone size
- Not covered by Pharmacare but may have other coverage
Buprenorphine

- Partial agonist of mu receptor
- Requires metabolism to become analgesic
- Slow onset, highly bound to receptor
- Can be started in opioid naïve patients
- Ceiling effect – consider as a weak opioid
- Comes in patch that lasts 7 days
- Useful for moderate pain
- BuTrans Patch currently not reimbursed by Pharmacare – may have other coverage
Methadone in older adults

- Well tolerated and effective
- Starting dose 1mg q12hr
- Well absorbed orally and bucally
- Titrate once weekly only
- Use other short acting opioid for breakthrough pain while titrating methadone
- Use methadone for breakthrough dose bid-tid once on stable dose
  - Gallagher Pain Med. 2009
Methadone in older adults

- Many potential interactions but few are clinically significant
- Clinically significant:
  - Clarithromycin, rifampin
  - Carbamazepine, phenytoin
  - Fluconazole, ketoconazole
- QTc prolongation in doses greater than 100-200mg per day
Titrating opioids

- Increase dose by 15-20% each time if symptom not controlled
- Starting with long acting opioids?
  - Officially NO but in reality.....
  - In residential care inadequate staff to do q4hr opioids
  - Oxycodone SR 5mg = 1.5 Tylenol #3 Hydromorphone SR 3mg = 3 Tylenol #3
  - Methadone 1mg q12 hrs = 2 Tylenol #3
  - ½ 12mcg patch = 5 Tylenol #3
Treating constipation

- Docusate not useful
- Senna helpful but can cause cramps
- Lactulose works well but horrible taste
- PEG 3350 (Laxaday) works well and can be mixed with drink of choice. Takes a few days to establish a best dose
Topical Opioids

- Ischemic ulcers, pressure ulcers, fungating tumors
- Morphine 1% concentration in intra-site gel
- Methadone 1% concentration in inert wound powder
Strategy for managing pain in residential care

[Diagram showing the strategy for managing pain in residential care with stages of opioid rotation, behavioral and environmental interventions, adjuvant non-NSAID medications, and ongoing monitoring of distress behavior.]
Interventional pain management

- Epidural steroid injections: for spinal stenosis, facet joint, nerve compression secondary to OA
- Nerve root steroid injection for radiculopathy
- Facet joint degeneration – diagnostic block followed by radio frequency ablation of facet nerve
- Vertebroplasty for lumbar compression fractures causing uncontrollable pain/disability
- Prolotherapy: chronic tendonitis or joint dysfunction
- Trigger point injections: for myofascial pain
Neuropathic Pain Adjuvants

- NNT for gabapentin 4.1-6.8
- NNT for opioids 1.9-3.4
  - Finnerup et al. Pain 2005
- Anticonvulsants not well tolerated in oldest adults – ie gabapentin, pregabalin, topiramate
  - 32% withdrawal from study of pregabalin in neuropathic pain
  - Dworkin et al Neurology 2003
Neuropathic Pain Adjuvants

- TCAs have intolerable side effects
  - In a trial of TCA vs opioids for neuropathic pain both were effective but patients preferred opioids (54%) to TCAs (30%) to placebo (10%) p=0.02
    - Raja et al Neurology 2003
- SNRIs are likely the best option for older adults with neuropathic pain
  - Study of >80 years old found it safe and efficacious for depression
    - Baca et al Int J Geriatr Psychiatry 2006
The Cannabinoid System

- There is a complete cannabinoid system in the body.
- Regulates various physiological processes in CNS, PNS and peripheral tissues.
- Cannabinoid receptors found in similar locations to opioid receptors
- Important role in synaptic neurotransmitter release and neuroprotection (glutamate inhibition, Ca++ channels).
Pain and depression

- Study of 524 older adults
- Pain hinders recovery from depression
  - Mavandadi et al JAGS 2007
- Disabling chronic low back pain and depression were independent factors that increased the prevalence of each other
  - Meyer et al Spine 2007
- Anxiety is also a predictor of pain
  - Feeney J. Anxiety Disord 2004
Clinical Experience

- Is it pain or depression?
  - Pattern of pain variable, unusual
  - Doesn’t respond to usual medications
- Somatic manifestation of depression?
  - Persist with titration of antidepressant
  - SNRI/atypical are the best choice
- Treat both pain and depression
  - Low dose opioid and antidepressant
Take Home Messages

- Older adults with chronic pain are not the same as younger patients with pain
- There is “pain homeostenosis” (less ability to respond effectively to the stress of chronic pain)
- Older adults are more likely to lose function with chronic pain if there is a lack of timely intervention
- Older adults with good cognitive function can benefit from non-pharmacologic therapies
Take Home Messages

- Minimize polypharmacy
- Opioids are a safer choice in older adults
- Opioids with no active metabolites are a better choice in older adults
- If patients with dementia and pain become drowsy with opioid try reducing neuroleptics
- Analgesic trials while monitoring behaviour
- Analgesic trials need to include opioids
iPal

- Essential information for palliative care
- Web-based app works on any smart phone
- http://ipalapp.com
- Developed by Providence Health Care Palliative Care Program
WHAT IS IPAL?