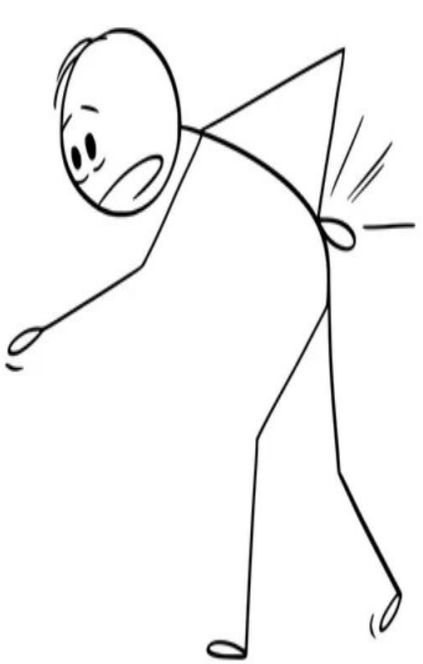
Opioid Conversion Made Easy



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Introduction

- Pain prevalence with older adults
- Opioid conversions
- Opioid history
- Opioid pharmacokinetics
- Opioid allergies
- Opioid use with older adults
- Reviewing the literature

Pain prevalence among older adults

- Pain prevalence among older adults estimates are 25% to 50% of community-dwelling elderly experience chronic pain.
- In long-term care settings, up to 85% of residents may have at least one pain-associated problem.
- Pain affects approximately 100 million American adults each year, resulting in a national cost of $635 billion annually.
- There is broad recognition that painful conditions warrant treatment, yet specific treatment protocols remain inconsistent across the medical community

Opioid use among older adults with chronic pain

- Management of chronic pain first with nonpharmacologic therapy and nonopioid pharmacologic therapy before initiating opioids.
- It is recommended that opioids be prescribed at the lowest effective dose, which is approximately **25% to 50%** of the adult recommended starting dose, and then slowly titrated to minimize adverse effects for patients **older than age 70 years.**
- The dosage should be reassessed 1 to 4 weeks after initiation or dose escalation. Immediate-release formulations of opioids should be initiated before extended-release or long-acting opioids are attempted.

Start low, Go Slow

- Lower doses (25%-50% of typical doses for younger adults) and gradually titrating based on efficacy and tolerability since older adults experience altered pharmacokinetics.

- The **American College of Surgeons Best Practices Guidelines for Acute Pain Management in Trauma Patients (2020)** recommends a decrease in the initial dose of an opioid **by 25% in 60-year-old** patients, and by **50% for 80-year-old** patients.

TABLE 1. Recommended Equivalent Starting Doses of Opioids for Elderly Patients

Opioid	Dose (mg)	Frequency
Tramadol	50	Every 4-6 h
Morphine	7.5	Every 4-6 h
Codeine	50	Every 4-6 h
Hydrocodone	5	Every 4-6 h
Hydromorphone	1-2	Every 4-6 h
Oxycodone	5	Every 4-6 h
Fentanyl transdermal	Not recommended for opioid-naive patients	
Methadone	Not recommended for opioid-naive patients	
Buprenorphine	5-μg/h patch changed every 7 d	

- Long-acting opioid formulations should be avoided in opioid-naive patients
- Codeine is not recommended due to poor metabolism to morphine in a high percentage of the population

Co-prescribing of opioids with CNS-active medications

- Co-prescribing of opioids with CNS-active medications is increasing among older adults in the US. Co- prescribing of opioids and opioid potentiators, such as benzodiazepines, Z-drugs and gabapentinoids, among US adults ≥65 years increased from 29.6 per 1,000 people in 2007-2008 to 35.8 per 1,000 people in 2017-2018.

- Veterans Health Administration population found that 77% of veterans who received chronic opioid therapy also received psychotropics.

- Concurrent use with **≥2 CNS-active medications** increased the likelihood of **falls/fractures by 18% and ER visits by 21%**

Common Approaches to Opioid Conversion

1. Common approaches to opioid conversion

Approach	Key characteristics
McPherson	Palliative care-focused approach emphasizing equianalgesic calculations, incomplete cross-tolerance, and individualized dosing
Traditional equianalgesic tables	Standard reference ratios for comparing opioids, often based on single-dose studies
Institutional protocols	Standardized conversion ratios and dose adjustments intended to promote consistency within a healthcare system

Traditional Equianalgesic Conversion Method

It is not named after one specific author

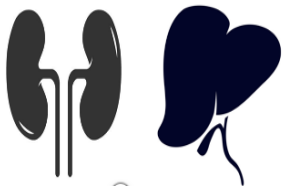
Several widely used references teach this rationale including Merl Manual, American Academy of Hof Hospice and palliative (AAHPM) and Palliative Care Network of Winsconsin (PCN).

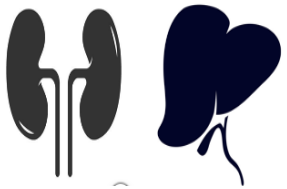
Any one Travel abroad ?

What's your currency reference to assess how expensive cheap or affordable anything is ?

In world of opioids what is the reference ??

Reference is Oral Morphine





Methadone

x10

Oral (Liquid or tablet)

Morphine (SR,IR)

x3

IV

Oral (Liquid or tablet)

x20

x4

x1.5

Dilaudid (Hydromorphone) (IR)

x5

IV

Oral (Liquid or tablet)

Oxycodone (SR,IR)

Oral (Liquid or tablet)

x2 & remove the C

Fentanyl

Patch (mcg)

IV (mcg)

Slide 6: Conversion Table Example

Opioid	Route	Equianalgesic Dose (mg)	Conversion Factor
Morphine	Oral	30	1:1
Morphine	IV	10	3:1
Oxycodone	Oral	20	1.5:1
Hydromorphone	Oral	7.5	4:1
Fentanyl (transdermal)	Patch	0.1 mg IV morphine/hour	100:1

Slide 6: Conversion Table Example

Opioid	Route	Equianalgesic Dose (mg)	Conversion Factor
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Morphine	IV	10	3:1
Oxycodone	Oral	20	1.5:1
Hydromorphone	Oral	7.5	4:1
Fentanyl (transdermal)	Patch	0.1 mg IV morphine/hour	100:1

Morphine

- **IV Morphine is 3 times stronger than oral morphine**
- **Example 2 mg IV morphine is equivalent to 6 mg oral morphine**
- **My** Mnemonics is …….. ☺ M for mother which represents trinity in Christianity, so that is how I always remember it is a 3:1 ratio.
- **There are 2 forms of morphine SR (Sustained release) and IR (immediate release).**

History of Morphine

1. Discovery and Early Use

- **Origins:** Morphine is derived from the opium poppy (**Papaver somniferum**), a plant that has been used for medicinal purposes for thousands of years. The use of opium, dates back to **ancient civilizations**.

- **Isolation of Morphine:**

- First **isolated** in **1804** by a German pharmacist, **Friedrich Sertürner**. He named the compound after **Morpheus**, the Greek god of dreams, due to its ability to induce sleep and relieve pain.

History of Morphine

2. Morphine in the 19th Century

- **Commercial Production:**

- In **1827**, the German pharmaceutical company **Merck** began the commercial production of morphine. It became a cornerstone of pain management and was used extensively for treating soldiers' injuries during conflicts like the **American Civil War** (1861–1865)

- **Introduction of the Hypodermic Needle:**

- Hypodermic **needle** in the **1850s** revolutionized the use of morphine.

- **"Soldier's Disease":** By the end of the American Civil War, many soldiers who had been treated with morphine for their injuries became addicted.

Dilaudid (Hydromorphone)

- **IV Diladud is 5 times stronger than oral Dilaudid**
- **Example 1 mg IV Dilaudid is equivalent to 5 mg oral morphine**
- **My** Mnemonics is …… ☺ the other name of Dilaudid is hydromorphone and H for high five, so that is how I always remember it is a 5:1 ratio.
- **There is no extended or sustained release Dilaudid so it is a short acting IR (immediate release) medication for breakthrough pain.**

History of Dilaudid

1. Origins and Early Development (1920s)

- **Discovery:** Hydromorphone first synthesized in **1924** by a German pharmaceutical company. It was derived from **morphine**.

- **Commercial Introduction:** In **1926**, the drug was introduced under the brand name **Dilaudid**, which is derived from “di-hydromorphinone.” Its name reflects its chemical relationship to morphine, and it quickly became a popular pain-relief medication in Europe and the U.S.

Oxycodone

- **Oral Oxycodone is 1.5 times stronger than oral morphine**
- **Example 10 mg Oxycodone is equivalent to 15 mg of oral morphine**
- **No** Mnemonics ☹
- **There are 2 forms of oxycodone SR (Sustained release) and IR (immediate release).**

History of Oxycodone

1. Early Development (Early 1900s)

Origins: Oxycodone was first developed in **1916** in Germany. Chemists Martin Freund and Edmund Speyer at the University of Frankfurt.

Purpose: Goal was to create a less addictive and more effective alternative to **morphine** and **heroin**.

2. Adoption in the U.S. (1930s-1950s)

Introduction in the U.S.: Oxycodone entered U.S. market in **1930s**, initially in combination with other drugs such as **aspirin** or **acetaminophen**. One common brand at the time was **Percodan** (oxycodone combined with aspirin).

History of Oyxodone

3. OxyContin and the Opioid Epidemic (1990s-Present)

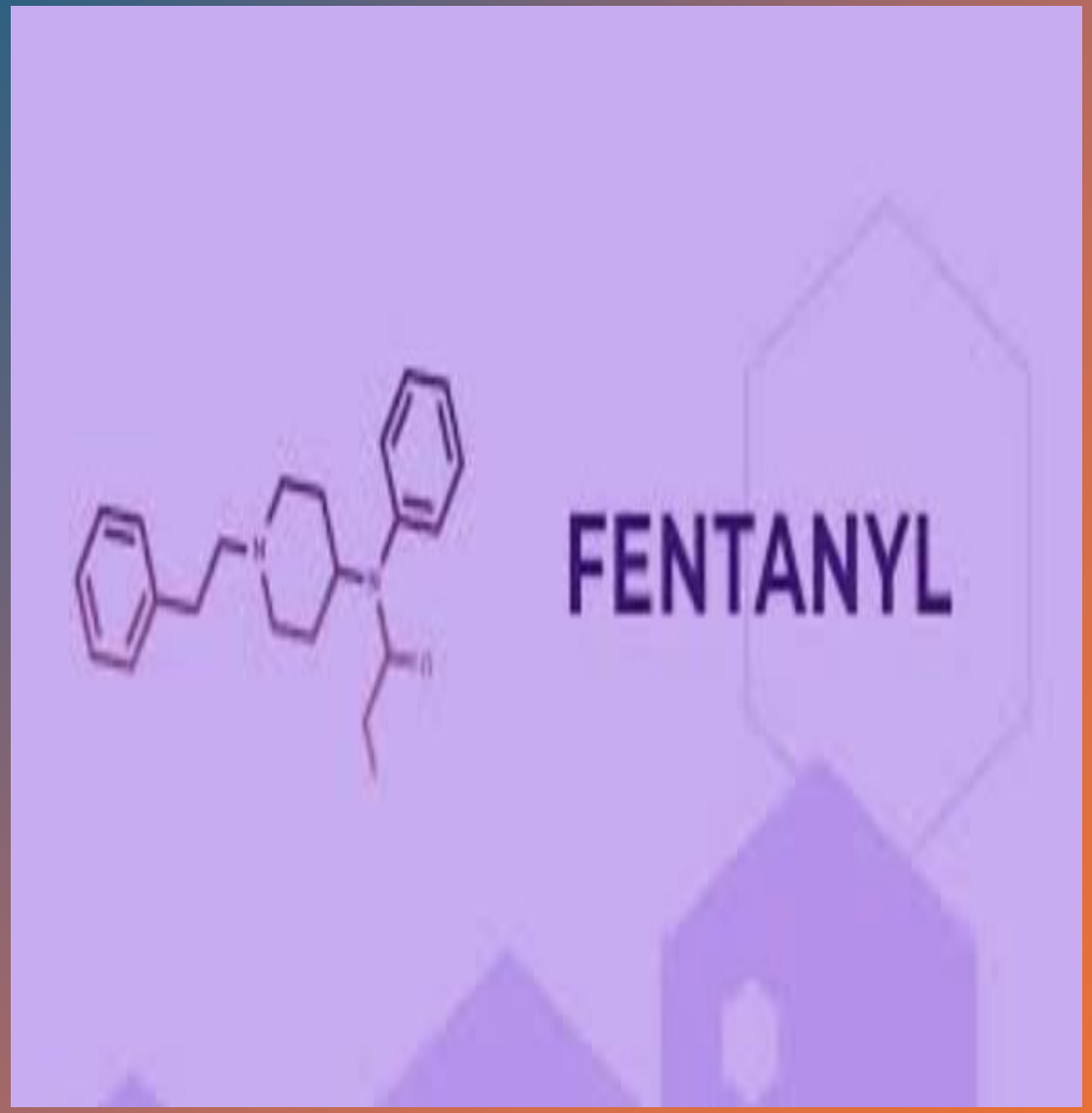
OxyContin:

- In **1996**, Purdue Pharma introduced **OxyContin**, a time-released formulation of oxycodone. OxyContin was promoted as being less addictive because of its slow-release mechanism.

Rise in Prescriptions:

- Throughout late 1990s and early 2000s, prescriptions for OxyContin soared. The medical community shifted toward more liberal opioid prescribing for chronic pain, and OxyContin was seen as a safer option.

OxyContin and the Opioid Epidemic (1990s-Present)



Fentanyl

- Fentnayl is 100 times stronger than morphine. Remember that it is in mcg.
- 1000mcg = 1mg
- Example 1 (PATCH): 100 mcg/h fentanyl patch → 0.1mg/h→ x100→10mg/hr → patch over 24 hours, so 24x10→240mg oral morphine.
- Not a Mnemonic but a fast and easy way to convert is by x2 and removing C. Example 100 mcg fentanyl patch → 200 mg oral morphine.
- Example 2 (IV): 100 mcg IV fentanyl → 0.1mg IV →x100→10 mg IV morphine which is 30 mg oral morphine.

History of Fentnayl

1. Development and Early Use (1960s)

- **Discovery**: Fentanyl was first synthesized in **1960** by **Dr. Paul Janssen**, founder of Janssen Pharmaceutica, a Belgian pharmaceutical company.

- **Medical Use**: **100 times more potent than morphine**. Fentanyl was initially used for pain management, particularly in surgical settings, where its rapid onset and powerful effects were ideal for anesthesia.

History of Fentnayl

2. Commercialization and Medical Applications (1970s-1990s)

- **Anesthetic Use:** Fentanyl became widely adopted as a surgical anesthetic under the brand name **Sublimaze**.

- **Introduction of Duragesic Patch:** In **1990**, **Duragesic patch**, a transdermal system that slowly releases fentanyl over time for patients suffering from chronic pain.

- **Lozenges and Lollipops:** Fentanyl lollipop approved for severe, breakthrough cancer pain in the 1990s. These innovations expanded fentanyl's use beyond surgery, making it an important tool in palliative care.

The Opioid Crisis and Fentanyl's Role (2010s-Present)

Methadone

- Methadone conversion to morphine is challenging due to methadone's non-linear pharmacokinetics and the fact that its potency increases with higher doses.

Variable Potency:

- Methadone is estimated to be **approximately 3 to 10 times more potent** than oral morphine when given orally, depending on the dose.

Daily oral morphine equivalent	*Conversion ratio of oral morphine: oral methadone*
<100 mg	3:1
100–300 mg	5:1
301–600 mg	10:1
601–800 mg	12:1
801–1000 mg	15:1
Over 1000 mg	20:1[a]

History of Methadone

1. Origins and Development

- **World War II**:

- Methadone was first synthesized in **Germany** in the late 1930s. During **World War II**, due to shortages of morphine and other opioids.

- **Introduction to the United States**:

- After the war, the formula for methadone was brought to the United States as part of post-war reparations.
- In 1947, the drug was introduced in the U.S. under the name **Dolophine** (a name that some believe was derived from the Latin word “dolor,” meaning pain).

History of Methadone

- **Opioid Addiction Crisis**:

- By the 1960s, the U.S. was facing a growing heroin addiction crisis. During this time, methadone was explored as a potential treatment for heroin dependency.

- **Pioneering Research**: **Drs. Vincent Dole** and **Marie Nyswander** at **Rockefeller University** in New York were among the first to advocate for methadone as a treatment for heroin addiction. This discovery led to the establishment of methadone **maintenance therapy** (MMT) in the mid-1960s.

Full Agonist versus Partial Agonist

FULL AGONISTS:

- MORPHINE
- METHADONE
- FENTANYL
- MEPERIDINE
- CODEINE
- HYDROCODONE
- OXYCODONE

also...

- HEROIN

COMMON PARTIAL AGONISTS:

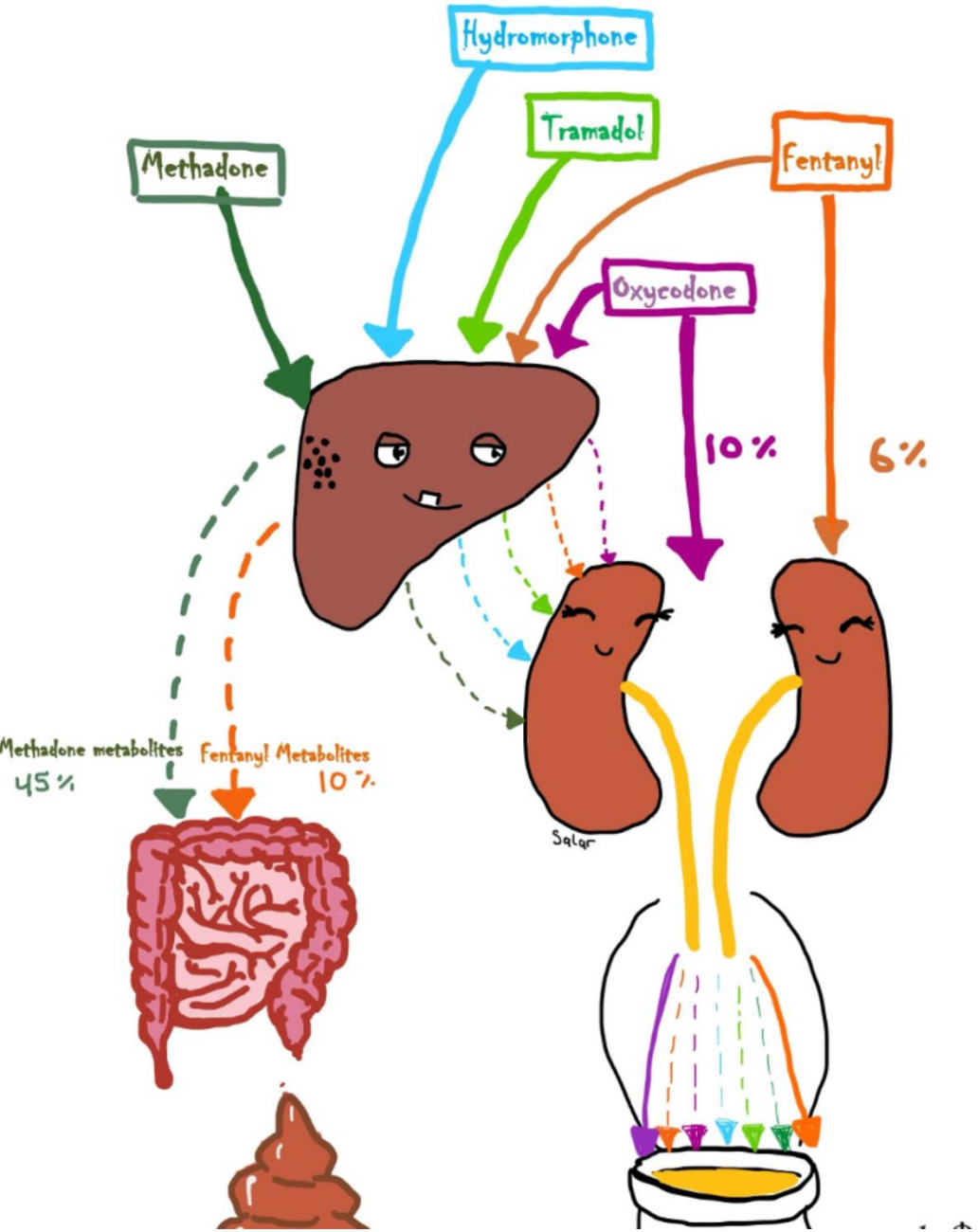
MIXED AGONIST-ANTAGONISTS

- BUPRENORPHINE → PARTIAL AGONIST at MU; ANTAGONIST at KAPPA
- BUTORPHANOL → PARTIAL AGONIST at KAPPA; ANTAGONIST at MU
- PENTAZOCINE → PARTIAL AGONIST at MU & KAPPA

→ MODERATE PAIN

- TRAMADOL → PARTIAL AGONIST at MU → MODERATE to SEVERE PAINS (e.g. after surgery)

*1



Carbonara GM. Opioids in patients with renal or hepatic dysfunction.]Accessed December 2, 2017.

Table 1

Opioid Recommendations in Patients With Renal Insufficiency

Medication	Recommendation and Special Concerns
Fentanyl	Safe for use in patients with renal insufficiency. The metabolites are inactive. The parent compound may accumulate in renal insufficiency, but it does not appear to cause adverse effects
Methadone	Safe for use in patients with renal insufficiency, but should be prescribed only by clinicians with previous experience. The dose may need to be reduced in patients with severe renal failure. There are no active metabolites formed, and a negligible amount of plasma accumulation has been found in renal failure
Hydromorphone	Use with caution in patients with renal insufficiency. Hydromorphone's metabolite can cause central nervous system toxicity due to accumulation. Do not use in patients whose glomerular filtration rate is <30 mL/min
Oxycodone	Use with caution in patients with renal insufficiency. Oxymorphone, the active metabolite, can accumulate and lead to sedation and central nervous system toxicity
Morphine	Use with caution in patients with renal insufficiency. Doses must be adjusted as appropriate because the metabolite is a more potent analgesic that can accumulate and cause more sedation
Meperidine & codeine	Neither is recommended because of toxicity from metabolites

Table 2

Opioid Recommendations in Patients With Hepatic Insufficiency

Medication	Recommendation and Special Concerns
Fentanyl	Safe for use in patients with hepatic insufficiency. The pharmacokinetics of fentanyl are not affected in patients with cirrhosis
Hydromorphone & oxycodone	Caution in patients with hepatic insufficiency. The dose should be reduced to one-third to one-half of the usual amount because of decreased elimination and reduced conversion to metabolites. Avoid use in severe cirrhosis
Morphine	Caution in patients with hepatic insufficiency. Owing to decreased clearance, increased half-life, and oral bioavailability, the dose and frequency of administration should be decreased
Codeine	Not recommended for use in patients with hepatic insufficiency owing to impaired conversion of codeine to morphine in the liver
Meperidine	Not recommended for use in patients with hepatic insufficiency owing to accumulation of toxic metabolite, normeperidine, which may cause central nervous system toxicity
Methadone	Not recommended for use in patients with severe liver disease because of the risk of accumulation of the parent drug

Table 1

Opioid Recommendations in Patients With Renal Insufficiency

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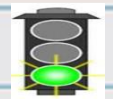
Fentanyl		Safe for use in patients with renal insufficiency. The metabolites are inactive. The parent compound may accumulate in renal insufficiency, but it does not appear to cause adverse effects
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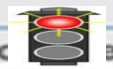
Meperidine & co		Neither is recommended because of toxicity from metabolites

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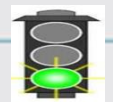
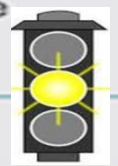
Fentanyl		Safe for use in patients with hepatic insufficiency. The pharmacokinetics of fentanyl are not affected in patients with cirrhosis
Hydromorphone & oxycodone		Caution in patients with hepatic insufficiency. The dose should be reduced to one-third to one-half of the usual amount because of decreased elimination and reduced conversion to metabolites. Avoid use in severe cirrhosis
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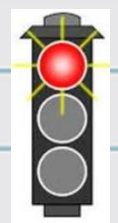
Codeine		Not recommended for use in patients with hepatic insufficiency owing to impaired conversion of codeine to morphine in the liver
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Q.1

Max is a 72-year-old man with hyperparathyroidism, renal failure, and severe osteoporosis. He has been receiving long-term opioid therapy with oxycodone at 10 mg taken orally every 8 hours around the clock for hip pain following fracture and surgery. His creatinine level increased from 1.2 mg/dl to 2.4 mg/dl in 1 week. His daughter reports that he has been very drowsy and irritable recently. His pain control has also been poor. What is the best possible opioid to switch to?

A. Morphine
B. Hydromorphone

C. Codeine
D. Methadone

ALLERGIES

- **Morphine**, codeine, hydrocodone, **Hydromorphone**, **Oxycodone**, and belong to a class of opioids called **Phenanthrenes.**

- **Fentanyl** belong to a class of opioids called **Phenylpiperidines .**

- **Methadone** belong to a class of opioids called **Phenylheptylamines**.

Q.2

- Mr. K is a 68-year-old man with lung cancer and metastasis to the spine. He is currently receiving chemotherapy. He had an allergic reaction to morphine in the past that included rash, hives, itching, and some swelling of his tongue. He has back pain that is not resolved by taking ibuprofen. His oncologist has recommended that acetaminophen not be used on a regular basis. What would you recommend for managing his severe pain from bone metastasis?

A. Morphine

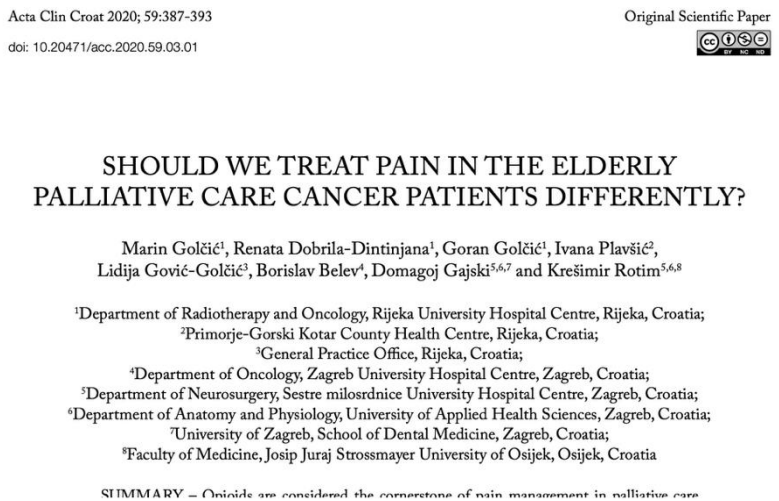
B. Codeine

C. Oxycodone

D. Fentanyl

Should we treat pain with Elderly Cancer patients differently ?

LETS REVIEW THE LITERATURE



Acta Clin Croat 2020; 59:387-393
doi: 10.20471/acc.2020.59.03.01

Original Scientific Paper

SHOULD WE TREAT PAIN IN THE ELDERLY PALLIATIVE CARE CANCER PATIENTS DIFFERENTLY?

Marin Golčić[1], Renata Dobrila-Dintinjana[1], Goran Golčić[1], Ivana Plavšić[2], Lidija Gović-Golčić[3], Borislav Belev[4], Domagoj Gajski[5,6,7] and Krešimir Rotim[5,6,8]

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[6]Department of Anatomy and Physiology, University of Applied Health Sciences, Zagreb, Croatia;
[7]University of Zagreb, School of Dental Medicine, Zagreb, Croatia;
[8]Faculty of Medicine, Josip Juraj Strossmayer University of Osijek, Osijek, Croatia

SUMMARY – Opioids are considered the cornerstone of pain management in palliative care

Methods

- **Study Design**: Prospective observational study conducted in a hospice in Rijeka, Croatia.
- **Population**: The study included 137 patients, aged over 18 years, with a life expectancy of less than three months. Patients were divided by age, using 65 years as the cutoff for "elderly."
- **Exclusion Criteria**: Delirium, inability to consent, or cognitive impairments that precluded accurate pain assessment.
- **Evaluation Tools**: Assessment utilized the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire Core 15 Palliative (EORTC QLQ-C15-PAL) and the Edmonton Symptom Assessment System (ESAS).
- **Analgesic Use**: Doses of opioids were converted to mg/day of oral morphine equivalent (OME) for standardized comparison.

Results

- **Demographics**: The mean age of participants was 71.8 years, with the most common cancer types being lung, gastrointestinal, and hepatobiliary cancers.
- **Pain Scores**: Younger patients exhibited significantly higher pain scores than older patients (5.14 vs. 3.59, p=0.01).
- **Analgesic Use**:
  - Older patients used opioids less frequently (68.8% vs. 85.7% in younger patients) and at lower doses (mean of 95.42 mg OME vs. 115.19 mg OME on admission).
  - By the last week of care, older patients had a mean daily dose of 109.95 mg OME compared to 165.61 mg for younger patients (p=0.03).
  - Notably, older patients used non-steroidal anti-inflammatory drugs (NSAIDs) less frequently, while the use of paracetamol was more common.
- **Survival Rates**: No significant differences in survival between the age groups were found (17.36 days for younger patients vs. 17.58 days for older patients).

Conclusion

- The findings suggest that elderly cancer patients in palliative care utilize lower doses of opioids and different analgesics without resulting in higher pain levels or shortened survival.
- This indicates that a strategy of starting at lower doses and cautiously titrating opioids may be beneficial, reinforcing the principle of "start low, go slow."

EVIDENCE | PROSPECTIVE OBSERVATIONAL STUDY

Do Older Hospice Patients Need Less Opioid?

137 patients with advanced cancer • Single hospice in Croatia • Age cutoff: 65 years

110 mg

Older adults (≥65)

166 mg

Younger adults (<65)

Mean daily oral morphine equivalents in final week (p=0.03)

Older patients reported lower pain scores (3.59 vs 5.14; p=0.01). Survival was similar.

Interpretation: Association only—not proof that lower opioid doses are superior or that pain was equally treated.

Source: Golčić M, et al. Acta Clin Croat. 2020;59:387–393. doi:10.20471/acc.2020.59.03.01

Geriatric Palliative Pain: Practical Prescribing

START	Use individualized, often lower initial doses for frail, opioid-naïve older adults.
TITRATE	Reassess frequently; escalate based on pain, function, and adverse effects.
CHECK	Consider kidney/liver function, delirium, sedation, constipation, and drug interactions.
DO NOT UNDERTREAT	Age alone is not a reason to cap analgesia; opioid-tolerant or severe-pain patients may need higher doses.

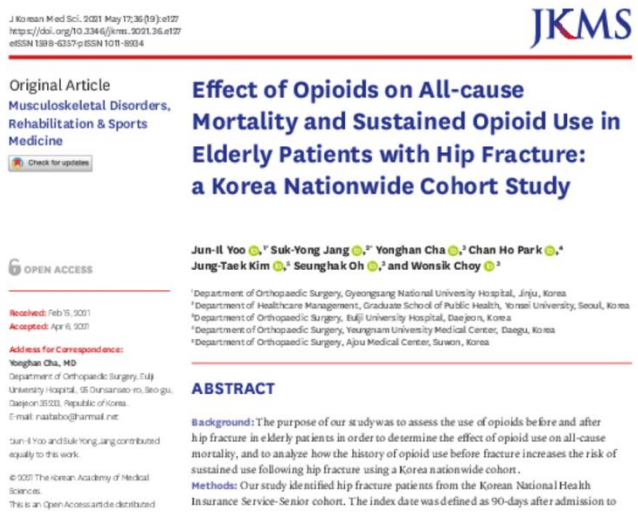
Take home message

“Start low when appropriate—but do not stay low when the patient is still suffering.”

References: Scottish Palliative Care Guidelines, Choosing and Changing Opioids; NCCN Adult Cancer Pain; NICE CG140. AGS Beers Criteria exclude hospice/end-of-life settings.

Does Opioid use increase all-cause mortality in elderly population following a hip fracture ?

LETS REVIEW THE LITERATURE



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JKMS

Original Article
Musculoskeletal Disorders, Rehabilitation & Sports Medicine

Check for updates

Effect of Opioids on All-cause Mortality and Sustained Opioid Use in Elderly Patients with Hip Fracture: a Korea Nationwide Cohort Study

Jun-il Yoo [1], Suk-Yong Jang [2], Yonghan Cha [2], Chan Ho Park [4], Jung-Taek Kim [4], Seunghak Oh [3], and Wonsik Choy [3]

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ABSTRACT

Background: The purpose of our study was to assess the use of opioids before and after hip fracture in elderly patients in order to determine the effect of opioid use on all-cause mortality, and to analyze how the history of opioid use before fracture increases the risk of sustained use following hip fracture using a Korea nationwide cohort.

Methods: Our study identified hip fracture patients from the Korean National Health Insurance Service-Senior cohort. The index date was defined as 90-days after admission to

Methods

- A retrospective observational cohort study was conducted involving patients from the Korean National Health Insurance Service-Senior cohort.
- The study included patients aged 65 years and older with acute hip fractures from 2002 to 2015.
- Patients were categorized into past opioid users, current users, and those who sustained use (opioids used 3-12 months after fracture).
- Generalized estimating equations and multivariable-adjusted Cox proportional hazards models were employed to analyze the outcomes, measuring adjusted rate ratios (aRR) and hazard ratios (HR) for mortality.

Results

- The cohort comprised 12,927 patients with a mean age of 77 years; 57.12% were past opioid users, while 88.71% reported current use post-fracture.
- No significant difference in mortality rates was observed between current and non-current users of opioids across all measured time frames (30 days to 1 year).
- Among survivors, past opioid use increased the likelihood of sustained opioid usage by 1.52 times (aRR: 1.52, 95% CI: 1.45–1.58; $P < 0.001$).
- The shift in opioid use saw a rapid initial increase following fracture, followed by a decline at three months post-injury.

Conclusion

- Both current and past opioid use did not correlate with increased all-cause mortality in the elderly population following hip fractures.
- The study indicates that prior opioid use substantially raises the risk of continued opioid consumption post-fracture.
- These findings emphasize the necessity of careful monitoring and management strategies for opioid use within this demographic.

Opioids, Mortality & Hip Fracture: What Did the Study Find?

Korean nationwide retrospective cohort | 12,927 adults aged 65–99 | Operatively treated hip fractures

88.7%

Received opioids in first 3 months

55.5%

Used opioids during months 3–12

1.52×

Sustained-use association with prior exposure

MORTALITY RESULT

No statistically significant difference in adjusted all-cause mortality between opioid exposure groups and nonusers in the analyzed cohort (P > .05).

Critical qualifier: Patients who died within 90 days of hip fracture were excluded.

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Clinical Interpretation: Using Evidence Carefully

WHAT THIS STUDY SUPPORTS

- No observed increase in later adjusted mortality among analyzed opioid users.
- Previous opioid exposure predicts longer-term use.
- Reassess ongoing opioid need during recovery.

WHAT IT DOES NOT PROVE

- It does not establish opioid safety in the first 90 days.
- It did not measure pain control or function.
- Observational claims data cannot prove causation.
- Findings are not directly generalizable to hospice or terminal illness.

Take home message

Take-home: Treat pain appropriately; individualize dosing, monitor adverse effects, and reassess continued opioid use as goals of care evolve.

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Thank you

References

1. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *MMWR Recomm Rep*. 2016;65:1-49.

2. Institute of Medicine. Relieving pain in America: a blueprint for transforming prevention, care, education, and research. June 2011. www.nap.edu/resource/13172/reportbrief.pdf. Accessed December 2, 2017.

3. Cavalieri T. Managing pain in geriatric patients. *J Am Osteopathic Assoc*. 2007;107:ES1-ES16.

4. Throm MJ, Fudin J, Otis JA. Managing chronic pain: an analysis of the use of opioids. www.pharmacytimes.com/publications/issue/2005/2005-07/2005-07-9738. Accessed December 2, 2017.

5. Asih S, Hulla R, Hartzell M, Bradford E, et al. Pain management in the elderly: etiology and special considerations. www.practicalpainmanagement.com/treatments/pain-management-elderly-etiology-special-considerations. Accessed December 2, 2017.

6. Koda-Kimble M, Young L. *Applied Therapeutics: The Clinical Use of Drugs*. 7th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2001.

7. Carbonara GM. Opioids in patients with renal or hepatic dysfunction. www.practicalpainmanagement.com/treatments/pharmacological/opioids/opioids-patients-renal-hepatic-dysfunction. Accessed December 2, 2017.

8. Holle LM. Pharmacist perspective on the CDC guideline for prescribing opioids for chronic pain. www.modernmedicine.com/sites/default/files/images/DrugTopics/UCONN/drtp0317_CE.pdf. Accessed December 2, 2017.

9. Pergolizzi J1, Böger RH, Budd K, et al. Opioids and the management of chronic severe pain in the elderly: consensus statement of an International Expert Panel with focus on the six clinically most often used World Health Organization Step III opioids (buprenorphine, fentanyl, hydromorphone, methadone, morphine, oxycodone). *Pain Pract*. 2008;8:287-313.

10. National Initiative for the Care of the Elderly. Opioids, benzodiazepines and the elderly: a pocket guide. www.nicenet.ca/de.aspx?id=499. Accessed February 13, 2018.