

Switching From One Opioid to Another: (Example)	
1. Calculate the total 24h dose of patient's opioid regimen. (<i>morphine 30 mg q 4h = 180 mg/24h</i>)	
2. Locate new opioid on equianalgesic chart. (<i>HYDRomorphone 7.5 mg = 30 mg morphine</i>)	
3. Set-up equation. $\frac{180 \text{ mg}}{30 \text{ mg}} = \frac{X}{7.5 \text{ mg}}$ and cross multiply	
4. Divide the total daily dose of the new opioid by the number of doses given per day. (<i>45 mg divided by 6 doses = 7.5 mg q 4h</i>)	
5. Reduce calculated dose of new opioid by 25% -50% for incomplete cross tolerance; titrate up as needed.	

Opioid Equianalgesic Chart*5			
Opioids with no ceiling dose			
Opioid	Parenteral Route	Oral Route	Starting Dose for Opioid Naïve Adults
Morphine	10 mg	30 mg	7.5-15 mg po IR q4h prn. 1-4 mg IV q3-4h prn. ER tab/cap available for opioid tolerant. Avoid use in CKD.
FentaNYL	0.1 mg (100 mcg)	n/a	Several formulations exist outside IV. Should only be used for opioid tolerant: Buccal, lozenge, intranasal, sublingual, transdermal. For patch, 25 mcg is equal to approx. 50 mg of oral morphine q24h.
HYDRocodone ER	n/a	30-45 mg	Available as ER cap (12h) and ER tab (24h). Not for use in opioid naïve.
HYDRomorphone	1.5 mg	7.5 mg	2 mg po IR (1-4mg q4-6h prn). 0.4 mg IV (0.2-1mg q3-4h prn). ER tab for opioid tolerant.
Methadone	-	-	Consult with pain specialist before prescribing. Long half-life results in accumulation. Baseline EKG.
OxyCODONE	n/a	20 mg	5 mg po IR (5-15 mg q4-6h prn). ER tab/cap for opioid tolerant.
OxyMORphone ⁹	n/a	10 mg	5 mg po IR (5-10 mg q4-6h prn). ER tab/cap available. Must be taken on an empty stomach.
Opioids with ceiling doses			
HYDRocodone + acetaminophen or ibuprofen	n/a	30 mg	5 mg po (5-10 mg q4-6h prn); max 4g acetaminophen/24h; max 5 tabs, 1g ibuprofen/24h.
OxyCODONE + acetaminophen	n/a	20 mg	5 mg po (2.5-10 mg q4-6h prn); max 4g/24h of acetaminophen.
Tapentadol	n/a	100 mg	50-100 mg po IR q4-6h; ER: 50 mg po q12h. Max IR 600 mg/day, Max ER 500 mg/day. Mu opioid agonist and norepinephrine reuptake inhibitor.
TraMADol	-	120 mg	50 mg po IR (25-100 mg q4-8h prn); ER: 100 mg po q24h. Max 300-400 mg (300 mg in the elderly). Mu opioid agonist and serotonin and norepinephrine reuptake inhibitor. Lowers seizure threshold.

*Equianalgesic doses are approximate. Use the lowest effective dose. Titrate according to individual response. Doses may be lower in elderly, concomitant therapy, obstructive sleep apnea, hepatic and renal insufficiency.

Adjuvant Analgesic Drugs ⁵ . Consider age, comorbidities, hepatic and renal status. With antiepileptics and antidepressants, monitor children and young adults for behavior change, suicidal ideation.				
Drug	Uses	Starting Dose	Dose Range	Comments
Antiepileptics				
Gabapentin (Neurontin)	Neuropathic pain	100-300 mg po TID. Increase by 100-300 mg q3d	IR: 300-1200 mg/day in three divided doses; ER: 900-3600 mg QD	Adjust dose for renal dysfunction. Can cause drowsiness. May require PDMP reporting.
Pregabalin (Lyrica)	Neuropathic pain, Post-herpetic neuralgia, Fibromyalgia	150 mg po in 2-3 divided doses (depending on indication)	50-600 mg/day (depending on indication)	Similar to gabapentin, often more rapid response than gabapentin; Schedule V controlled substance.
Antidepressants (often use lower doses to treat pain than to treat depression)				
Tricyclic Antidepressants				
Amitriptyline (Elavil)	Neuropathic pain, Post-herpetic neuralgia, Fibromyalgia	10-25 mg po hs (10 mg or less for elderly). Titrate dose every few days or longer to minimize side effects	Up to 100 mg/day hs or divided (side effects often limit dose)	Side effects: Dry mouth, drowsiness, dizziness, constipation, urinary retention, confusion. Obtain baseline EKG for history of cardiac disease.
Nortriptyline (Pamelor)	Neuropathic pain, Post-herpetic neuralgia	10-25 mg po hs. Titrate dose every 3-7 days.	Up to 100 mg hs (side effects often limit dose)	Side effects same as amitriptyline, to a lesser degree.
Selective Serotonin and Norepinephrine Reuptake Inhibitor (SSNRI) Antidepressant				
DULoxetine (Cymbalta)	Diabetic neuropathy, Chronic musculoskeletal pain, Fibromyalgia	20-30 mg. May titrate up in 1-2 weeks	Up to 120 mg in divided doses	Should not use with MAOIs. Consider lower starting dose (20 mg) for patients for whom tolerability is a concern.
Venlafaxine (Effexor XR)	Diabetic neuropathy	37.5-75 mg/day ER, titrate 75 mg weekly	75-225 mg/day ER	Should not use with MAOIs. Available as IR formulation.
Corticosteroids				
DexAMETHasone (Decadron)	Spinal cord compression, cancer-related pain, joint pain	4-10 mg po//iv up to 4x/day; Doses vary per indication	Minimal effective dose	High dose therapy should not exceed 72h. May improve appetite.
PredniSONE	Cancer-related pain, joint pain	5-30 mg/day, then taper; doses vary based on indication	Minimal effective dose	For cancer pain, continue treatment until side effects outweigh benefit.
Local Anesthetic				
Topical Lidocaine	Postherpetic neuralgia, Localized pain	Patch: 1-3 patches over painful area(s) Ointment/gel/cream: apply 3-4x/day	1-3 patches 12h on and 12h off	Patch may be cut to fit painful area(s). Place only on intact skin. Do not apply heat onto patch.
Anti-Spasmodics				
Baclofen	Muscle spasm, musculoskeletal pain, spasticity	5-10 mg po bid-qid	80-120 mg/day	Caution in renal insufficiency.
Cyclobenzaprine	Muscle spasms, musculoskeletal pain, fibromyalgia	5 mg po tid prn Fibromyalgia: 5-10 mg po hs	10 mg po tid; 15-30mg ER qd;	Sedation.
TIZANidine	Muscle spasm, musculoskeletal pain, spasticity	2-4 mg po q8-12h Spasticity: 2 mg po hs prn	Up to 24-36 mg/day	Can prolong QT interval, sedation, hepatotoxicity, hypotension (alpha-2 agonist).

Notes:



Pain Management Pocket Tool

Commonly Used Non-Opioid Analgesics ⁵			
Drug	Common Dose	Maximum Dose in 24h	Comments
Acetaminophen (Tylenol)	325-500 mg q4h 500-1000 mg q6-8h	4 g (<3 g in patients w/liver dysfunction and in the elderly)	Reduce maximum dose 50-75% with hepatic insufficiency or history of alcohol abuse. IV formulation is available.
Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)* <i>Use with extreme caution in the elderly. Thrombotic cardiovascular risk and GI bleeding risk for all.</i>			
Ibuprofen (Motrin, Advil)	400-600 mg q4-6h	3200 mg (2400 mg chronic use)	Caution with renal disease. IV formulation is available.
Indomethacin (Indocin)	IR: 25-50 mg q8-12h ER: 75 mg q12-24h	IR: 200 mg ER: 150 mg	Caution with renal disease.
Naproxen (Naprosyn, Aleve)	500 mg initial, then 250 mg q6-8h	1500 mg (1000 mg chronic use)	Caution with renal disease.
Meloxicam (Mobic)	Tab: 7.5-15 mg q24h Cap: 5-10 mg q24h	Tab: 15 mg Cap: 10 mg	Caution with renal disease. IV formulation is available.
Ketorolac (Toradol)	≥50 kg or <65 yr: 30 mg IV, then 15 mg IV q6h; 10 mg PO q4-6h <50 kg or ≥ 65 yr: 15 mg IV q6h; 10 mg PO q4-6h	≥50 kg or <65 yr: 120 mg IV, 40 mg PO <50 kg or ≥ 65 yr: 60 mg IV, 40 mg PO	Use restricted to 5 days. Caution with renal disease.
Celecoxib (Celebrex)	100-200 mg q12-24h	200-400 mg	Risk of cardiovascular events. Use lowest dose possible.

*Monitor for common adverse effects: GI ulceration and bleeding, decreased platelet aggregation, and renal toxicity. Caution with renal and hepatic disease. Celecoxib has a lower risk of significant GI ADEs and is less likely to have abnormal platelet function or prolonged bleeding time.

Patient Controlled Analgesia (PCA) Dosing ^{4,5} <i>Note: Continuous rate is not recommended for initial use in opioid naïve</i>				
Drug	PCA Dose	Lockout Interval	Continuous Rate	Maximum Cumulative Dose
Morphine	0.5-2 mg	6-20 min	0-2 mg/hr	7.5 mg in 1h or 30 mg in 4h
HYDROMORPHONE	0.1-0.4 mg	6-20 min	0-0.4 mg/hr	1.5 mg in 1h or 6 mg in 4h
FentaNYL	5-25 mcg	6-10 min	0-60 mcg/hr	75 mcg in 1h or 300 mcg in 4h

Use the lowest effective dose. Titrate according to individual response. Doses may be lower in elderly, concomitant therapy, and with obstructive sleep apnea. Reference your hospital specific PCA policy.

Management of Opioid Side Effects ^{5,6}	
Adverse Effect	Management Considerations
Constipation	Begin bowel regimen when opioid therapy is initiated. Include a mild stimulant laxative (e.g., sennosides) + stool softener (e.g., docusate) at bedtime, or in divided doses as routine prophylaxis. Peripheral mu opioid antagonists are available (e.g., methylnaltrexone, alvimopan).
Sedation	Tolerance typically develops. Hold sedatives/anxiolytics, dose reduction; consider CNS stimulants (e.g., increase caffeine intake, methylphenidate, dextroamphetamine or modafinil).
Nausea/ Vomiting ⁸	Dose reduction, opioid rotation; consider metoclopramide, prochlorperazine, promethazine, scopolamine patch, 5HT3 antagonists.
Pruritis	Dose reduction, opioid rotation; consider an antihistamine such as diphenhydramine. Non-sedating antihistamine such as loratadine. Also consider nalbuphine.
Hallucinations	Dose reduction, opioid rotation, consider neuroleptics (haloperidol or risperidone).
Confusion/ Delirium	Dose reduction, opioid rotation, neuroleptic therapy (haloperidol, risperidone).
Myoclonus ⁹	Dose reduction, opioid rotation, increase fluid intake; consider clonazepam, gabapentin, baclofen.
Respiratory Depression	Sedation precedes respiratory depression. Hold opioid. Administer an opioid antagonist (e.g., naloxone).

References: 1) American Pain Society (2008). Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain, 6th ed. 2) Fishman SM, et al. (2013). Core Competencies for Pain Management: Results of an Interdisciplinary Consensus Summit. Pain Medicine 2013; 14: 971-981. 3) National Comprehensive Cancer Network Clinical Practice Guideline: Adult Cancer Pain (v. 2.2015). 4) Grass JA. Patient controlled analgesia. Anesth Analg. 2005;101:S44-61. 5) Lexi-Drugs. Lexicomp app. UpToDate Inc. Accessed Jan-Apr 2023. 6) Swegle JM, Logemann C. Am Fam Physician. 2006; 74:1347-54. 7) Smith HS, Laufer A. Eur J Pharmacol. 2014; 722:67-78. 8) Wilson RK, Weissman D. #58 Neuroexcitatory Effects of Opioids: treatment. Palliative Care Network of Wisconsin. Accessed online March 7, 2023. <https://www.mypcnow.org/fast-fact/neuroexcitatory-effects-of-opioids-treatment/>. 9) McPherson ML. Demystifying opioid conversion calculations: a guide for effective dosing, 2nd ed. Bethesda: ASHP; 2018.

Disclaimer: The intent of this guide is to provide a brief summary of commonly used analgesics. It is not a complete pharmacological review. All medications should be administered only with physician or licensed allied health provider orders. No liability will be assumed for the use of this tool.

For more information about Massachusetts Pain Initiative, please visit www.masspaininitiative.org

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Principles of Pain Management	
1. Ask the patient about the presence of pain.	
2. Accept the patient's report of pain.	
3. Perform a comprehensive pain assessment, including:	
<ul style="list-style-type: none"> Onset, duration, and location Intensity (use appropriate scale) Effect on function and quality of life What makes the pain better or worse Risk assessment for abuse/misuse 	<ul style="list-style-type: none"> Quality Patient's goals Response to prior treatment History/physical exam
4. Do not use I.M. route. Avoid concurrent use of benzodiazepines. Avoid meperidine.	
5. Treat persistent pain with scheduled medications until pain improves.	
6. Ordinarily two drugs of the same class (e.g., NSAIDs) should not be given concurrently; however, one long acting and one short acting opioid may be prescribed concomitantly.	
7. Use multi-modal analgesia: Use an opioid, non-opioid and/or adjuvant to improve relief.	
8. Assess, reassess pain frequently, anticipate and manage opioid side effects aggressively.	
9. Most opioid agonists have no ceiling dose for analgesia; titrate to relief and assess for side effects.	
10. With older adults, start low, go slow, but go!	
11. Discuss goals and plans with patient and family. Use an opioid agreement for long-term opioid use. Check PMP.	
12. Misuse, abuse or relapse may occur in those with a history of substance use disorders; the hallmarks include a) compulsive use, b) loss of control, c) use despite harm.	
13. Include non-pharmacologic strategies, i.e. reiki, ice/heat, acupuncture.	
Management of Breakthrough Pain	
When using long-acting opioids around-the-clock for persistent pain, obtain order for a short-acting opioid (rescue) for breakthrough pain.	
<ul style="list-style-type: none"> The rescue dose is 10-15% of the 24h total daily dose. Oral rescue doses should be available every 1-2h; parenteral doses every 15-30 minutes. If patient is consistently using 3 or more rescue doses daily, consider increasing the around-the-clock dose. Whenever the around-the-clock dose is increased, the rescue dose will need to be recalculated. Consider using the same drug for both scheduled and breakthrough doses when possible (e.g., long-acting morphine + short-acting morphine). 	
Examples: Oral dosing: breakthrough pain	
Pt. is on Morphine CR 30 mg q12h.	
1. Total daily dose: (30 mg x 2 = 60 mg morphine/24h)	
2. Calculate 10 to 15% of 24h dose for rescue dose. (10% = 6 mg, 15% = 9 mg short acting morphine)	
3. Rescue dose = 6 - 9 mg of morphine q1- 2h.	
Parenteral dosing continuous infusion:	
Calculate rescue dose based on 25-50% of hourly infusion.	