

Opioid Generic name	receptor target	Route	TRADE Name(s)	Dosage Forms	Equivalent Dose	Interval ~ duration	Comparative Dose & Cost	\$ /30d	Comments
Morphine	mu	PO	M.O.S.; MS-IR; STATEX	Oral Soln: 1,5,10,20 mg/ml Tab:5,10,20,25,30,40,50,60mg	Oral 20-30mg in chronic dosing	4 h	20mg po q4h	\$76 \$75	<ul style="list-style-type: none"> ♦morphine: gold standard for opioids; {M-6-G metabolite-↑SEs if renal dysfx} ♦may sprinkle M-Esion or Kadian ♦MS Contin may also be given pr ♦↑side effects in pts with renal failure ♦MS Contin,PMS & RATIO Morphine SR are ONLY interchangeable SR products.
Morphine SR (12h)		PO	MS CONTIN/PMS & RATIO SR MOS-SR M-ESLON	Tab:(15,30,60) all 3 brands,100,200 ² mg Tab: 30,60mg Cap: 10,15,30,60,100,200mg		12 h (q8-12h)	60mg po q12h	\$78 \$76 \$75	
Morphine SR (24h)		PO	KADIAN	Cap: 10mg ² ,20,50,100mg		24 h	100mg po q24h	\$94	
Morphine Supp		PR	STATEX supp	Supp: 5, 10, 20, 30mg	(≤60mg in acute dosing)	4 h	20mg pr q4h	\$459	<ul style="list-style-type: none"> ♦addiction to opioids rare when no drug abuse hx & when used for pain management; consider guidelines for chronic pain & treatment agreements. ♦25ug/hr ≈ 90mg oral morphine/day ♦not suitable for opioid naive or acute pain
Morphine Inj.		SC/IM/IV	MORPHINE	Amp: 5,10,15,25,50 mg/ml Syringe: 50ml X 50mg/ml		4 h	10mg sc q4h	\$197	
Fentanyl	Transdermal mu		DURAGESIC	Patches: 25,50,75,100 ug/hr (initial onset delayed ~12-24hr)	see comments	72 h (q48-72h)	25ug/hr q72h 50ug/hr q72h	\$116 \$213	<ul style="list-style-type: none"> ♦quick acting & very short duration ♦may have less SE's than morphine in some patients (e.g. sedation, nausea,const.) ♦"SC Pain Pump" option ♦Palladone XL od 12,16,24mg cap²: (EtOH may dramatically ↑↑ levels)⁷ ♦use laxatives (e.g. senna, lactulose) to prevent constipation; consider short-term/prn antinauseant in patients at risk.
Fentanyl / Sufentanil - SL		X ⊗		♦sometimes injectable forms given SL for breakthrough/incidental pain (5min prior to transfers/position changes)					
Hydromorphone	mu	PO	DILAUDID	Tab: 1,2,4,8mg Oral Liquid: 1mg/ml	4-6mg	4 h	4mg po q4h	\$55 \$75	<ul style="list-style-type: none"> ♦use laxatives (e.g. senna, lactulose) to prevent constipation; consider short-term/prn antinauseant in patients at risk.
Hydromorphone SR (12h)		PO	HYDROMORPH-CONTIN	Cap: 3,6,12,18,24,30 mg (may sprinkle contents)		12 h (q8-12h)	12mg po q12h	\$122	
Hydromorphone Supp		PR	DILAUDID	Supp: 3mg		4 h	3mg pr q4h	\$459	
Hydromorphone Inj.		SC/IM/IV	DILAUDID	Inj: 2mg/ml; 10mg/ml; 20mg/ml; 50mg/ml; Sterile Powder: 250mg	2-3mg	4 h	1.5-2mg sc q4h	\$250	
Oxycodone SR (12h)		PO	OXYCONTIN	Tab: 10,20,40,80mg; (5mgX ⊗)	10-15mg	8-12 h	20mg po q12h	\$95	<ul style="list-style-type: none"> ♦biphasic; some may require q8h [Percocet⁵ = oxycodone 5mg + acetamin.325mg] [Percodan² = oxycodone 5mg + ASA 325mg]
Oxycodone regular	mu & κ	PO PO/PR	OXY-IR SUPEUDOL	Tab: 5 ⁵ ,10 ⁵ ,20 ⁵ mg Tab: 5 ⁵ ,10 ⁵ mg; Supps:10,20mg		4-6h	15mg po q6h (cost based on 1½ x 10mg)	\$86	
Methadone	1 ⁵ ,5 ⁵ ,10 ⁵ ,25 ⁵ mg tab ² ; 1mg/ml susp	PO		♦useful for opioid rotation & pain+addiction strategies; require special license ; long acting & complicated dosing. (SK drug coverage-palliative care)					mu, δ, NMDA
Meperidine	mu & NMDA	PO	DEMEROL	Tab: 50 ⁵ mg (poorly absorbed!)	300mg	2-3 h	100mg po q3h	\$75	<ul style="list-style-type: none"> ♦not for chronic pain: short acting & requires frequent dosing. Toxic metabolites accumulate esp. in ↓renal fx ⇒ CNS toxicity (tremor, seizures, etc.)
Meperidine Inj.	or Pethidine	IM/SC/IV	DEMEROL	Amp:50,100mg/ml; (25,75 mg/ml) ²	75mg	2-3 h	50mg im q3h	\$253	
Propoxyphene		PO	642	Tab: 65mg	100mg?	2-3 h	65mg po q4h	\$30	<ul style="list-style-type: none"> ♦Max 390mg prop. plain/day; abuse risk ♦Dis!!: alcohol & CNS depressants.
Propoxyphene napsylate		PO	DARVON-N	Cap: 100mg (=65mg propox.)	150mg?	2-3 h	100mg po q4h	\$50	
Codeine	mu	PO	CODEINE	Tab: 15,30 ⁵ mg; Syrup: 5mg/ml	200mg	4 h	60mg po q4h	\$40	<ul style="list-style-type: none"> ♦Codeine: weak opioid; avoid doses over 800mg po; practical analgesic ceiling ≈200mg po or 120mg im/d where low doses of stronger opioids may be more effective & better tolerated than codeine ♦antitussive at dose of ≥15mg q4-6h ♦may cause ↑ constipation & GI upset ♦caution with combination agents: -risk of: hepatotoxicity with >4g/d of acetaminophen; GI bleed with ASA
Codeine SR (12h)		PO	CODEINE CONTIN	Tab: 50,100 ⁵ ,150 ⁵ ,200 ⁵ mg		12 h	150mg po q12h	\$70	
Codeine Inj.		IM	CODEINE	Amp: 30,60mg		4 h	30mg sc q4h	\$190	
Acetaminophen (A.) +Codeine (C.) +/- Caffeine (Cf)		PO	TYLENOL + C. Elixir TYLENOL #1 Non-Rx ² TYLENOL #2 TYLENOL #3 Ratio-EMTEC-30 TYLENOL #4	Elix: A. 320mg+C. 16mg/10ml Tab: A. 300mg+C. 8mg +Cf. Tab: A. 300mg+C. 15mg +Cf. Tab: A. 300mg+C. 30mg +Cf. Tab: A. 300mg+C. 30mg Tab: A. 300mg+C. 60mg	≤200mg C.	4+ h	20ml po q6h ii tab po q4-6h	\$243 \$55 \$33 \$35 \$63 \$66	
ASA/Codeine/Caffeine		PO	292 282	Tab: 375mg/30mg/30 ⁵ mg 375mg/15mg/30 ⁵ mg	≤200mg C.	4+ h	ii tab po q4-6h	\$80	

Acetaminophen 325mg + Tramadol 37.5mg TRAMACET X ⊗: New in Canada²⁰⁰⁵. 2 tablets po q4-6h ~ \$170/mo (Max 8tabs/day). Low affinity for mu receptors & also ↑serotonin & noradrenaline. Metabolized by CYP2D6.
 Pentazocine TALWIN - Tab: 50⁵mg (50mg po q4h \$80; Max: 600mg/d po); Amp: 30mg (30mg im q4h \$200; Max: 360mg/d im) ♦less effective than NSAIDs & other opioids; agonist-antagonist (mu & κ); can cause withdrawal in pts on opioids.

with chronic admin., equivalent po morphine dose is ~2-3X the inj. dose but in acute pain, it may be ≤ 6X; † =dose listed not equivalent =EDS Sask X =Non Formulary SK Cost=to consumer in SK c=scored tab d =day †=prior NIHb ▼covered NIHb
 CTZ=chemoreceptor trigger zone OTC=over the counter. Adverse Rx's: nausea, vomiting, constipation, sedation, confusion/CNS effects, resp depression, myoclonus, urine retention, dry mouth, hormonal (e.g. ↓ testosterone & cortisol, ↑ prolactin)
 Use short acting formulations PRN for breakthrough pain. Chronic opioid therapy in pts with renal dysfunction = may lead to accumulation of toxic metabolites (esp. meperidine); switching opioids or opioid rotation strategies may be useful. Drug Interactions: CNS depressants (e.g. alcohol, sedatives, neuroleptics). Patients intolerant to the side effects of one opioid may be changed to a ≤ dose of another; True morphine allergy is very rare.
 Switching opioids, often 25-50% less than equivalent is given to account for incomplete cross-tolerance. SC Pain Pumps available. Adjunct Options NSAIDs, antidepressants^{TCA}, anticonvulsants, dexamethasone 10mg sc/po bid.
 Antinauseants: metoclopramide 10mg po/sc q4h prn, domperidone 5-10mg po tid ac (effect CTZ & GI motility); haloperidol 0.5-1mg po/sc bid prn (CTZ); prochlorperazine 5-10mg im/iv/po/pr q6h prn (effects CTZ but sedating); dimenhydrinate 25-50mg po/im/iv/sc/pr q6h prn
 Opioid immunoassay: Synthetics (meperidine, fentanyl series, propoxyphene, methadone) will be opiate negative and must be ordered independently. Semi-synthetics (hydrocodone, oxycodone, hydromorphone, oxymorphone, buprenorphine) may be opiate positive or negative, depending on the threshold. Interpret false negatives with caution. Drug specific confirmatory testing may be required.

Pregnancy Category

↑

C/D

↑

B/D

Strong Opioids

Weak Opioids

C/D

↓

¹ Ballantyne JC, Mao J. Opioid Therapy for Chronic Pain. N Engl J Med. 2003 Nov 13;349(20):1943-1953.

² Micromedex 2005

³ Hansten, PD and Horn JR. Drug Interactions Analysis and Management. Applied Therapeutics Incorporated. Vancouver, WA. 2005.

⁴ Drugs in Pregnancy & Lactation 7th edition, 2005.

⁵ Morrison, R. Sean, Meier, Diane E., Palliative Care. N Engl J Med 2004 350: 2582-2590.

⁶ Gilron I, Bailey JM, Tu D, et al. Morphine, gabapentin, or their combination for neuropathic pain. N Engl J Med. 2005 Mar 31;352(13):1324-34. (InfoPOEMs: The combination of gabapentin & morphine provides a small but clinically unimportant benefit over either drug alone. Tricyclic antidepressants have been shown in other studies to be as effective as gabapentin & much less expensive, but were not studied in this trial. (LOE = 1b))

⁷ Health Canada Aug 2005 http://www.hc-sc.gc.ca/ahc-asc/media/advisories-avis/2005/2005_84_e.html

Additional references:

Eisenberg E, McNicol ED, Carr DB. Efficacy and safety of opioid agonists in the treatment of neuropathic pain of nonmalignant origin: systematic review and meta-analysis of randomized controlled trials. JAMA. 2005 Jun 22;293(24):3043-52. CONCLUSIONS: Short-term studies provide only equivocal evidence regarding the efficacy of opioids in reducing the intensity of neuropathic pain. Intermediate-term studies demonstrate significant efficacy of opioids over placebo for neuropathic pain, which is likely to be clinically important. Reported adverse events of opioids are common but not life-threatening. Further RCTs are needed to establish their long-term efficacy, safety (including addiction potential), and effects on quality of life.

Kokki H, Lintula H, Vanamo K, et al. Oxycodone vs placebo in children with undifferentiated abdominal pain: a randomized, double-blind clinical trial of the effect of analgesia on diagnostic accuracy. Arch Pediatr Adolesc Med 2005;159:320-25. (InfoPOEMs: Giving analgesics to children with abdominal pain does not obscure the surgical diagnosis. We don't need to make kids suffer while waiting for a surgeon to evaluate their abdominal pain. (LOE = 2b))

See also RxFiles Newsletter – Fall, 2005 - Opioids in Chronic Non-Malignant Pain Troubleshooting Drug Therapy Issues www.RxFiles.ca