

OPIOID EQUIVALENCIES AND CONVERSIONS

All opioid equivalencies should be considered approximations only and can be affected by interpatient variability, type of pain (eg, acute vs. chronic), chronic administration, tolerance, etc. Patients should be monitored for efficacy and adverse reactions and the dose adjusted accordingly.

Morphine Milligram Equivalent (MME) represents the potency of an opioid dose relative to morphine. MME/day determines cumulative intake of opioids, and helps identify patients who may benefit from closer monitoring, reduction of opioid dose, tapering of opioids, or other measures to reduce risk of overdose. The Centers for Disease Control and Prevention cautions when considering increasing dosage to ≥ 50 MME/day, and should avoid increasing dosage to ≥ 90 MME/day unless justified.

Generic ¹	Equianalgesic Dose		Opioid Oral MME Conversion Factor ³
	Oral	Injection (IM/IV/SC) ²	
NATURAL OPIATES			
morphine ⁴	30mg (60mg)	10mg	1
codeine	200mg	100mg	0.15
SEMISYNTHETIC OPIOIDS			
hydrocodone ⁵	30mg	—	1
hydromorphone	7.5mg	1.5mg	4
oxycodone ⁵	20mg	—	1.5
oxymorphone	10mg	1mg	3
SYNTHETIC OPIOIDS			
fentanyl injection	—	0.1mg (100mcg)	—
fentanyl transdermal (mcg/hr)	12mcg/hr patch	—	2.4 ⁶
levorphanol	2mg	—	11
meperidine	300mg	100mg	0.1
methadone	10–20mg ⁷	5–10mg	4–12 ⁸
tapentadol	75mg	—	0.4
tramadol	300mg	—	0.1

NOTES

¹ Doses are in mg/day unless otherwise specified.

² Although controlled studies are not available, in clinical practice it is customary to consider the doses of opioids given IM, IV, or SC to be equivalent. There may be some differences in pharmacokinetic parameters such as C_{max} and T_{max} .

³ Not to be used to determine dosage for converting one opioid to another or for converting between fentanyl products.

⁴ The conversion ratio of 10mg parenteral morphine = 30mg oral morphine is based on clinical experience in patients with chronic pain. The conversion ratio of 10mg parenteral morphine = 60mg oral morphine is based on a potency study in acute pain.

⁵ Available as a single-entity product and combination products.

⁶ The conversion factors for other fentanyl formulations are as follows: buccal or SL tab/lozenge/troche (mcg) = 0.13; film or oral spray (mcg) = 0.18; nasal spray (mcg) = 0.16. For transdermal patches, the conversion factor needs to be multiplied by 3 since the patch remains in place for 3 days.

⁷ There is limited evidence and no consensus on the conversion of methadone. A 3:1 equianalgesic dose ratio (morphine:methadone) at lower doses, but higher conversion ratios that increase at higher doses (eg, 5:1, 8:1, 10:1, 12:1, 15:1) have been used.

⁸ The conversion factor for methadone increases at higher doses: 1–20mg/day = 4; 21–40mg/day = 8; 41–60mg/day = 10; ≥ 61 –80mg/day = 12

REFERENCES

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