

## Opioid conversion tips

### Calculating the rescue dose

1. Calculate 10% of the provided total daily opioid dose as an immediate-release formulation.

### Opioid adjustments

1. Calculate the total oral 24-hour opioid taken by adding the amount of the sustained-release and immediate-release rescue doses.
2. Divide total daily dose into appropriate intermittent doses based upon the specific opioid dosing intervals found in the “Dosing and Conversion Chart for Opioid Analgesics.”

### Changing to another oral opioid

1. Calculate the total daily dose of current opioid (add the long-acting and rescue doses).
2. Use the “Dosing and Conversion Chart for Opioid Analgesics” to calculate the equivalent total daily oral dose of the alternative opioid.
3. Divide total daily dose of the alter-

native opioid into appropriate intermittent doses based upon the specific opioid dosing intervals found in the “Dosing and Conversion Chart for Opioid Analgesics.”

4. Modify by reducing dose by 25%-50% for incomplete cross-tolerance

### Changing an oral opioid to its IV/SQ route

1. Calculate the total amount of oral opioid taken per 24 hours (add long-acting and rescue doses).
2. Use the “Dosing and Conversion Chart for Opioid Analgesics” to calculate the equivalent total daily parenteral dose.
3. Divide the dose by 24 to get the hourly drip rate.

### Changing an oral or IV opioid to transdermal fentanyl

1. Calculate the total opioid dose.
2. Use the “Dosing and Conversion Chart for Opioid Analgesics” to

calculate the equivalent total daily morphine dose.

3. Use the “Morphine to Fentanyl Equivalents” chart to determine the equianalgesic dose of transdermal fentanyl.

### Changing an opioid agent and route (oral to IV)

1. Calculate the total daily dose of the original opioid (add long-acting and rescue doses).
2. Use the “Dosing and Conversion Chart for Opioid Analgesics” to convert from an oral to IV dose.
3. Use the “Dosing and Conversion Chart for Opioid Analgesics” to convert original opioid to an alternative, equivalent IV dose.
4. Adjust the dose for incomplete cross tolerance by reducing dose by 25%-50%.
5. Divide adjusted dose by 24 to obtain hourly opioid infusion rate.

## Changing to another oral opioid

### Question:

*A patient is taking sustained-release oxycodone, 100 mg every 12 hours, but has developed intolerable sedation. She would like to try an immediate-release opioid agent, hydromorphone. What is the equivalent dose of hydromorphone?*

### Answer:

The “Dosing and Conversion Chart for Opioid Analgesics” will help you calculate the equivalent dose of the new opioid, but you must allow for the incomplete nature of cross tolerance to opioid side effects.

After patients take the same opioid dose for a week or two, they become tolerant of the opioid’s sedative and respiratory depressive effects. When another opioid is substituted for the original opioid, patients will not be completely tolerant to the new opioid’s side effects, which can lead to over-sedation or confusion. You must calculate the equianalgesic dose of

the new opioid, and then reduce the dose by 25%-50%.

The single exception to this rule is when prescribing fentanyl. The equianalgesic tables for fentanyl have been adjusted, so you can use the doses given in the “Conversion to Transdermal Fentanyl (Duragesic)” fentanyl/morphine conversion tables without further adjustment. Calculate the total daily dose of oxycodone:

$$100 \text{ mg} \times 2 = 200 \text{ mg}$$

Use the “Dosing and Conversion Chart for Opioid Analgesics” to calculate the equivalent oral hydromorphone dose (the conversion ratio of

oxycodone to hydromorphone is 20:7.5, or 2.6:1):

$$200 \text{ mg oxycodone} / 2.6 = 77 \text{ mg oral hydromorphone (round off to 75 mg)}$$

Adjust the total 24-hour oral hydromorphone dose downward by 25%-50%:

$$75 \text{ mg} \times 2/3 = 50 \text{ mg}$$

Divide the total daily dose of hydromorphone into appropriate intermittent doses based upon the “Dosing and Conversion Chart for Opioid Analgesics”:

$$50 \text{ mg} / 6 \text{ doses per day} = 8 \text{ mg every 4 hours}$$

## Dosing and Conversion Chart for Opioid Analgesics

Drug	Route	Equianalgesic Dose (mg)	Duration (h)	Plasma Half-Life (h)
Morphine	IM	10	4	2-3.5
Morphine	PO	30	4	4
Codeine	IM	130	4	3
Codeine	PO	300	4	
Oxycodone	IM	-		
Oxycodone	PO	30	3-4	4
Hydromorphone (Dilaudid)	IM	1.5	4	2-3
Hydromorphone (Dilaudid)	PO	7.5	4	
Meperidine	IM	75	3-4	2
Meperidine	PO	300	3-4	normeperidine
Methadone	IM	10*	6-8†	12-24
Methadone	PO	20*	6-8†	20-200
Fentanyl	IV	0.1		
Hydrocodone	IM	-		
Hydrocodone	PO	30	3-4	4

Adapted from Foley KM. The treatment of cancer pain. *N Engl J Med.* 1985;313:84-95. (PMID: 2582259)

\*The equianalgesic dose of methadone compared to other opioids is extremely variable with chronic dosing. Conversion from oral morphine to oral methadone may range from 4 to 14:1.

† Risk of CNS depression with repeated use; accumulation in elderly or persons with impaired renal function with regular dosing. Monitor for patient variability in duration of efficacy.

## When is it addiction?

How can you tell if your patient is truly addicted to opioids? The following definitions are jointly from The American Academy of Pain Medicine, the American Pain Society, and the American Society of Addiction Medicine:

**Addiction:** Addiction is a primary, chronic, neurobiologic disease, with genetic, psychosocial, and environmental factors influencing its development and manifestations. It is characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.

**Physical Dependence:** Physical dependence is a state of adaptation that is manifested by a drug-class-specific withdrawal syndrome that can be produced by abrupt cessation, rapid dose reduction, decreasing blood level of the drug, and/or administration of an antagonist.

**Tolerance:** Tolerance is a state of adaptation in which exposure to a drug induces changes that result in a diminution of one or more of the drug's effects over time.