

## OPIOIDS

OPIOID ANALGESIC	SOURCE OF CHEMICAL	MORPHINE RELATED STRUCTURE WITH 6-OH GROUP	RELATED STRUCTURAL GROUP
<b>PHENANTHRENES</b>			
Morphine	Natural	Yes	Morphine
Codeine	Natural	Yes	Morphine
Hydromorphone	Semi-synthetic	No	Morphine
Oxycodone	Semi-synthetic	No	Morphine
Oxymorphone	Semi-synthetic	No	Morphine
Hydrocodone	Semi-synthetic	No	Morphine
Levorphanol	Semi-synthetic	No	Morphine
Buprenorphine	Semi-synthetic	No	Morphine
Butorphanol	Synthetic	No	Morphine
Nalbuphine	Semi-synthetic	Yes	Morphine
Pentazocine	Synthetic	---	Morphine
Dezocine	Synthetic	---	Morphine
<b>PHENYLPIPERIDINES</b>			
Meperidine	Synthetic	---	Meperidine
Fentanyl	Synthetic	---	Meperidine
Sufentanil	Synthetic	---	Meperidine
Alfentanil	Synthetic	---	Meperidine
<b>PHENYLHEPTANONES (DIPHENYLHEPTANES)</b>			
Methadone	Synthetic	---	Unique
Propoxyphene	Synthetic	---	Methadone

## EQUIANALGESIC CONVERSIONS

DRUG	APPROXIMATE EQUIANALGESIC DOSE		
	ORAL	IV	RECTAL
<b>OPIOID AGONIST</b>			
Morphine	30 mg	10 mg	N/A
Codeine	130 mg	75 mg	N/A
Hydromorphone (Dilaudid®)	7.5 mg	1.5 mg	3 mg
Levorphanol (Levo-Dromoran®)	4 mg	2 mg	N/A
Meperidine (Demerol®)	300 mg	75 mg	N/A
Methadone (Dolophine®, others)	20 mg	10 mg	N/A
Oxymorphone (Numorphan®)	10 mg	1 mg	10 mg
<b>COMBINATION OPIOID/NSAID PREPARATIONS</b>			
Hydrocodone	30 mg	N/A	N/A
Oxycodone	20 mg	N/A	N/A
<b>OPIOID AGONIST-ANTAGONIST AND PARTIAL AGONIST</b>			
Buprenorphine (Buprenex®)	N/A	0.3 – 0.4 mg	N/A
Butorphanol (Stadol®)	N/A	2 mg	N/A
Nalbuphine (Nubain®)	N/A	10 mg	N/A
Pentazocine (Talwin®, others)	50 mg	30 mg	N/A

\*\* If changing opioids because of **poor pain relief** suspected to be due to **tolerance**, reduce dose by 50% to convert

\*\* IV values should mainly be used when converting from IV to other forms of administration- if starting IV use, always use small doses frequently and titrate up

## CONVERTING MORPHINE TO TRANSDERMAL FENTANYL

1. Studies have not been performed to determine relative potency of fentanyl to morphine and other opioids
2. Patients requiring a 24-hr dose of morphine (~50mg) to control pain should experience the same degree of pain control with a dose of 25mcg/hr of fentanyl. This extrapolates to the addition of a 25mcg/hr transdermal fentanyl patch for every 50mg of oral morphine.

Oral Morphine (mg/24 hours)	Transdermal fentanyl (mcg/hr)
50 mg	25 mcg/hr
100 mg	50 mcg/hr
150 mg	75 mcg/hr
200 mg	100 mcg/hr

3. A conversion chart is provided by manufacturer of Duragesic®, but the relative potency data are based on a 6:1 conversion of parenteral morphine to oral and should not be used
4. Onset of effect is delayed for 12-24 hours: must continue other agents to prevent pain
5. Must supply immediate-acting products for breakthrough pain
6. Is easiest to have patients titrated to acceptable pain relief on short-acting opioids prior to starting transdermal fentanyl

### STEPS FOR CONVERSION:

1. Calculate 24-hour dose of medication. Make sure to total all narcotics given in the previous 24 hours
2. Convert 24-hour equivalent dose of morphine
3. Convert equivalent morphine dose to desired opioid
4. Divide new opioid dose by the number of times per day the drug will be administered
5. After application of the patch, it takes 12-16 hours to see a substantial therapeutic effect and 48 hours to achieve steady-state blood concentrations
6. Do not use for breakthrough pain
7. Do not cut patches