

Overview of Opioid Conversions

A. Converting Short-Acting (IR) → Long-Acting (ER) for well-controlled, chronic pain

*Patients may still be experiencing a recurrence of pain before the next scheduled dose

INSTRUCTIONS:

1. Calculate the total short-acting (IR) opioid dose used in 24 hours → Convert this total to a long-acting opioid
2. Add a short-acting “rescue dose” for breakthrough pain
 - Should be 10-20% of total daily dose (TDD)
 - If possible, try to use the same opioid for both IR and ER

CASE 1

MJ is a 47-year-old Hispanic female with chronic back pain. She was prescribed oxycodone/APAP 10-325mg 3 weeks ago, and is returning to the clinic for a follow-up appointment. She states that her pain is generally well-controlled, but that it tends to reoccur around 1 hour before her next scheduled dose. She is currently taking 2 oxycodone/APAP 10-325mg tablets every 4 hours around-the-clock.

20mg oxycodone (2 tablets x 10mg) x 6 times/day = **120mg oxycodone IR in 24 hours**

Equivalent ER dose = oxycodone ER 60mg q12h

*Add opioid rescue dose (range: 10-20% of 120mg) = 12-24 mg***

***Note: Check tablet availability and round if necessary*

ANSWER: Oxycodone ER 60mg q12h with oxycodone IR 10-20mg q4-6h prn breakthrough pain

B. Converting Short-Acting (IR) → Long-Acting (ER) for partially controlled/uncontrolled chronic pain

INSTRUCTIONS:

1. Calculate the total short-acting opioid (IR) used in 24 hours → Convert this total to a long-acting opioid
2. Increase the newly-converted long-acting opioid by 50%
3. Calculate the “rescue dose” (10-20% of TDD) based on NEW daily opioid dose

CASE 2

RL is a 56-year old white male with chronic pain in shoulder following multiple shoulder surgeries. Following his most recent surgery, he was placed on hydromorphone IR 2mg. He states he is currently taking 1 tablet q3h around-the-clock, however he is still rating his pain level a 7/10 (down from a 10/10). You would like to convert him to a long-acting formulation.

Hydromorphone IR 2mg x 8 times/day = **16mg hydromorphone IR in 24 hours**

Equivalent ER dose = hydromorphone ER 8mg BID

Increase hydromorphone ER by 25-50% → [16 + (16 x 25-50%)] = 16mg + 4-8mg = 20-24mg =

12mg hydromorphone ER BID (12mg tablets available)**

*Rescue dose (10-20% of 24mg) = 2 - 4mg***

***Note: Check tablet availability and round if necessary*

ANSWER: hydromorphone ER 12mg BID + hydromorphone IR 2-4mg q4-6h prn breakthrough pain

C. Using Rescue Doses to Increase Extended-Release Opioids

*Useful if patient reports consistent pain after 24-48 hours on an ER formulation

INSTRUCTIONS:

1. Ask patient to record all rescue doses taken in a 24-hour period
2. If total amount taken as a rescue dose is more than 25% of the total ER dose, then increase ER dose by the total amount taken as a rescue dose

CASE 3

KS is a 62-year-old African-American female with chronic rheumatoid arthritis who has failed all non-opioid pain management regimens. She was started on Morphine sulfate ER 30mg BID with morphine sulfate IR 15mg q6h for breakthrough pain three months ago. She returns to the office today for a follow-up, and states that she is consistently taking 4 morphine sulfate IR tablets per day for breakthrough pain.

Morphine sulfate 15mg IR x 4 tablets/24-hours = 60mg (total daily IR dose)

Morphine sulfate 30mg ER x 2 tablets/24-hours = 60mg (total daily ER dose)

60mg IR >25% of total ER dose (60mg)

New daily ER dose = 60mg + 60 mg = 120mg

New morphine sulfate ER dose = 60mg BID

Rescue dose (10-20% of 120mg) = 12-24mg**

**Note: Check tablet availability and round if necessary

ANSWER: Morphine sulfate ER 60mg BID + morphine sulfate IR 15mg q6h prn breakthrough pain

D. Changing Opioid Agents

*For patients who experience intolerable side-effects with a certain opioid, or if cost, preferred status or delivery methods necessitate a change in therapy

INSTRUCTIONS:

1. Calculate the patient's current 24-hour opioid dose
2. Use the equianalgesic ratio to calculate the new opioid dose
3. Reduce dose by one-half to one-third (1/2 to 1/3) for cross-tolerance

→Exact amount of cross-tolerance will differ depending on individual patient characteristics

CASE 4

TG is a 38-year old white female with chronic abdominal pain secondary to a soft tissue sarcoma. For the past year, she has been taking oxycodone ER 80mg BID with an occasional oxycodone IR 20mg q6h for breakthrough pain. Due to financial circumstances, oxycodone ER has become too expensive for the patient, and she would like to switch to something less expensive, such as morphine sulfate ER.

Oxycodone ER 80mg x 2 times/day = 160mg oxycodone ER in 24 hours

Conversion factor: 1mg oral oxycodone = 1.5mg oral morphine

→ 160 mg oxycodone = 240mg morphine

Cross-Tolerance Reduction: $\frac{1}{2}$ (240mg morphine) - $\frac{1}{3}$ (240mg morphine)

→ 120mg - 160mg Morphine sulfate ER

New morphine sulfate ER dose: 75mg BID

Rescue Dose (10-20% of 150mg) = 15-30mg morphine sulfate IR

ANSWER: Morphine sulfate ER 75mg BID + morphine sulfate IR 15-30mg q4-6h prn breakthrough pain

E. Conversions with Methadone

- Methadone is inexpensive and effective in certain patient populations.
- Prescribers should wait at least 3 days before altering doses, as methadone has a long half-life
- When changing from other opioids to methadone, dose should be reduced by **50%** for cross-tolerance

CASE 5

DR is a 70-year old Hispanic male with metastatic prostate cancer. He was started on Morphine sulfate ER 100mg BID with morphine sulfate IR 30mg q4h prn pain four weeks ago. He states that the medication has helped with control of his pain, but he complains of excessive itching, as well as periodic hallucinations. Due to these side-effects, you would like to switch him to methadone.

$$[\text{Morphine sulfate ER } 100\text{mg} \times 2 \text{ times/day}] + [\text{morphine sulfate IR } 30\text{mg} \times 6 \text{ times/day}] \\ = 380\text{mg morphine in 24 hours}$$

Conversion Factor: **Methadone conversion factors change depending on the morphine equivalent dose please refer to methadone conversion literature**

Remember Cross-Tolerance Reduction: $\frac{1}{2}$ (XXmg morphine) = XXmg methadone/day**

F. Complicated/Multiple Opioid Conversions

INSTRUCTIONS:

1. Calculate total daily dose of each opioid
2. Convert each opioid to its morphine equivalent
3. Add all morphine equivalents together
4. Convert to new opioid
5. Reduce by $\frac{1}{2}$ to $\frac{1}{3}$ for cross-tolerance ($\frac{1}{2}$ if converting to methadone)

CASE 6

YC is a 72-year-old White male with chronic hip and back pain, as well as neuropathy, due to an accident many years ago. He has seen several different specialists over the years, and he now takes a complex pain regimen that you would like to simplify. His current medications include: Oxycodone ER 60mg BID, hydromorphone ER 16mg BID, fentanyl patch 50mcg/hr, and morphine sulfate IR 15mg q6hr prn pain.

Opioid Name	Total Daily Dose	Morphine Equivalent
oxycodone ER	(2 tablets x 60mg) = 120mg	180mg
hydromorphone ER	(2 tablets x 16mg) = 32mg	128mg
fentanyl patch	(1 patch x 50mcg/hr)	150mg
morphine sulfate IR	(4 tablets x 15mg) = 60mg	60mg

Add morphine equivalents together: 180mg + 128mg + 150mg + 60mg = **518mg total morphine equivalents/day**

Convert to desired new opioid: 518mg morphine x $\frac{20\text{mg oxycodone}}{30\text{mg morphine}}$ = 345mg oxycodone/day

Cross-Tolerance Reduction ($\frac{1}{2}$ to $\frac{1}{3}$): **172.5mg-230mg****

**Note: Check tablet availability and round if necessary

New oxycodone ER dose: 110mg BID (80mg tablet + 30mg tablet BID)

Rescue dose (10-20% of 220mg) = **22-44mg****

**Note: Check tablet availability and round if necessary

**Answer: oxycodone ER dose = 110mg BID (80mg tablet + 30mg tablet)
+ oxycodone IR 20mg, 1 tablets q4-6h prn breakthrough pain**

Oral & Transdermal Long-Acting Opioids

buprenorphine patch (<i>Butrans</i>)	5mcg/hr, 7.5mcg/hr, 10mcg/hr, 15mcg/hr, 20mcg/hr
fentanyl patch (<i>Duragesic</i>)*	12mcg/hr, 25mcg/hr, 50mcg/hr, 75mcg/hr, 100mcg/hr
hydrocodone ER (<i>Hysingla ER</i>)	20mg, 30mg, 40mg, 60mg, 80mg, 100mg, 120mg
hydrocodone ER (<i>Zohydro ER</i>)	10mg, 15mg, 20mg, 30mg, 40mg, 50mg
hydromorphone ER (<i>Exalgo</i>)*	8mg, 12mg, 16mg, 32mg
methadone (<i>Dolophine</i>)*	5mg, 10mg, 40mg; 10mg/5mL oral sol, 5mg/5mL oral sol, 10mg/mL oral sol
morphine sulfate ER (<i>MS Contin</i>)*	15mg, 30mg, 60mg, 100mg, 200mg
morphine sulfate ER (<i>Avinza</i>)*	30mg, 45mg, 60mg, 75mg, 90mg, 120mg
morphine sulfate ER (<i>Kadian</i>)*	10mg, 20mg, 30mg, 40mg, 50mg, 60mg, 80mg, 100mg, 200mg
morphine sulfate/naltrexone (<i>Embeda</i>)	20-0.8mg, 30mg-1.2mg, 50mg-2mg, 60-2.4mg, 80-3.2mg, 100-4.0mg
oxycodone ER (<i>Oxycontin</i>)*	10mg, 15mg , 20mg, 30mg , 40mg, 60mg , 80mg (Bold =available brand only)
oxymorphone ER (<i>Opana ER</i>)*	5mg, 7.5mg, 10mg, 15mg, 20mg, 30mg, 40mg
tapentadol ER (<i>Nucynta ER</i>)	50mg, 100mg, 150mg, 200mg, 250mg

*Generic available

Note: Refer to Preferred Drug List for preferred and non-preferred agents and associated criteria