

Equianalgesic Dose Calculations


The eviQ opioid conversion calculator was designed to support clinicians in managing patients on opioids. The calculator draws from the 'cautious conversions' end of the spectrum. Presented below are some examples of how to utilise the calculator.

Exercise 1: Converting from Oral Morphine to Sustained Release Oral oxycodone



Mrs Jones is a terminally ill lung cancer patient and her current pain medication is oral morphine sulfate sustained release 45 mg every 12 hours. Additionally, Mrs Jones takes 10 mg of immediate release morphine every four hours as breakthrough medication. During a recent assessment Mrs Jones complained of muscle twitching since her morphine dose was increased to 45 mg every 12 hours. Subsequently, her creatinine was found to be elevated. Using the eviQ conversion calculator, convert the current morphine sulphate dose into an equianalgesic dose of sustained release oxycodone.

Step 1 – Current regular opioid therapy

First determine the total 24 dose of current regular opioid. Mrs Jones is receiving morphine sulfate 45 mg every 12 hours, therefore her current 24 hour total dose of oral morphine: $45 \text{ mg} \times 2 = 90 \text{ mg}$.

Complete **Step 1** of the calculator using this information then select the 


Patient details			
Patient name	Gender	Date of birth	Medical record number
Betty Jones	<input type="radio"/> Male <input checked="" type="radio"/> Female	1 / 1 / 1960	123456



Current treatment		
Step 1: Current regular OPIOID therapy		
Opioid	Dosage	Actions
MS Contin 90mg (PO)	90mg x 1 = 90mg of Morphine (PO)	
--None Selected--	in 24 hours	

Formula: (mg/day of current opioid) x (conversion factor) = Oral Morphine (PO) Equivalent mg/day

Step 2 – Current breakthrough opioid therapy

Additionally, Mrs Jones is prescribed 10 mg of immediate release morphine every four hours. She generally takes three doses of breakthrough medication in a 24 hour period. Therefore her 24 hour total breakthrough dose is $10 \text{ mg} \times 3 = 30 \text{ mg}$. (Note: the breakthrough opioid dose entered should be what the patient is actually taking rather than what the patient has been prescribed).

Complete **Step 2** of the calculator using this information then select the 

Step 2: Current BREAKTHROUGH opioid therapy		
Opioid	Dosage	Actions
Morphine 30mg (PO)	30mg x 1 = 30mg of Morphine (PO)	
--None Selected--	in 24 hours	

Note: current breakthrough opioid entered to be what the patient is actually taking rather than what has been prescribed.

Formula: (mg/day of current opioid) x (conversion factor) = Oral Morphine (PO) Equivalent mg/day

Step 3 – Convert to final opioid


Mrs Jones clinician has prescribed sustained release oxycodone as an alternative opioid. Select the desired formulation (OxyContin) from the drop down and select the **Calculate** button to display the 24 hour equianalgesic dose of OxyContin with suggested breakthrough dosing recommendations.

New treatment	
Step 3: Convert to final opioid	
Opioid	Dose reduction for incomplete cross-tolerance ?
OxyContin mg (PO)	none
<div>CalculateReset</div>	
Results	
Total equivalent 24 hour dose of Morphine (PO)	150mg of Morphine (PO)
Result of equivalent regular dose of final opioid (OxyContin mg (PO))	100.5mg/24hours
Recommended breakthrough dosing	16.75mg of Oxycodone (PO) every 4 hourly
Additional notes	Give half of the calculated final opioid total daily dose 12-hourly. Immediate-release oxycodone should be provided as "breakthrough" with Oxycontin. This should be prescribed as ~ one sixth of the total daily oral oxycodone equivalent dose given every 4 hours PRN. Controlled release preparations should not be crushed, as this is likely to convert them to an immediate-release product



Exercise 2: Converting from Oral OxyContin to Fentanyl Transdermal Patch

Mr. John Smith, a terminally ill prostate cancer patient has pain that is well controlled on OxyContin 80 mg, every 12 hours with no breakthrough opioid required. Mr. Smith is now unable to swallow, so the OxyContin needs to be converted into a transdermal fentanyl patch. Using the eviQ conversion calculator, calculate the strength of the fentanyl patch.

Step 1 – Current regular opioid therapy


First determine the total 24 dose of current regular opioid. Mr. Smith is receiving OxyContin 80 mg every 12 hours, therefore his current equivalent 24 hour total dose of oral morphine: $80 \text{ mg} \times 2 = 160 \text{ mg}$. Complete **Step 1** of the calculator using this information then select the 

Patient details			
Patient name	Gender	Date of birth	Medical record number
John Smith	<input checked="" type="radio"/> Male <input type="radio"/> Female	2 / 2 / 1958	123



Current treatment		
Step 1: Current regular OPIOID therapy		
Opioid	Dosage	Actions
OxyContin 160mg (PO)	160mg x 1.5 = 240mg of Morphine (PO)	
--None Selected--	in 24 hours	

Formula: (mg/day of current opioid) x (conversion factor) = Oral Morphine (PO) Equivalent mg/day

Step 3 – Convert to final opioid

Select the fentanyl transdermal patch from the drop down and select the  button.

New treatment	
Step 3: Convert to final opioid	
Opioid	Dose reduction for incomplete cross-tolerance ?
Fentanyl microgram/hour (Transdermal)	none

As there is no direct conversion between fentanyl and morphine doses, use the 24 hour dose of oral morphine that is displayed in the results box and refer to the table to determine the equianalgesic fentanyl patch dose. Mr Smith is to be prescribed a 75 mcg/hour fentanyl patch with the suggested breakthrough medication of morphine 40 mg every 4 hours.

Results	
Total equivalent 24 hour dose of Morphine (PO)	240mg of Morphine (PO)
Recommended breakthrough dosing	40mg of Morphine (PO) every 4 hourly
Additional notes	* Refer to the table below for Fentanyl patch strength, based on the result of the 24 hour dose of morphine* Immediate-release morphine (other immediate-release opioids may be use if morphine contraindicated) should be provided as "breakthrough" with transdermal fentanyl. This should be prescribed as ~ one sixth of the total daily oral morphine equivalent dose given every 4 hours PRN.

As there is no direct conversion between Fentanyl and Morphine doses, consult the table below and use clinical judgement.

ALWAYS prescribe breakthrough doses of oral morphine (or any other immediate release opioid) for all patients on transdermal fentanyl to meet any change in analgesic requirement.

Recommended Fentanyl Dose Based on Daily Morphine (PO) Dose (from Durogesic® product information)	
Oral 24 hour morphine (mg/day)	Fentanyl patch doses (micrograms/hour)
< 60	12*
60 - 134	25
135 - 224	50
225 - 314	75
315 - 404	100
405 - 494	125
495 - 584	150
585 - 674	175
675 - 764	200

* Based on dose proportionality and not clinical trial data on dose conversion

