Eastern Metropolitan Region
Palliative Care Consortium

Opioid Conversion Ratios - Guide to Practice 2013

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INSTRUCTIONS FOR USE

Printing: It is highly recommended these guidelines are printed in colour, to aid ease of use.

The access point for the current electronic version of these guidelines is at
Eastern Metropolitan Region Palliative Care Consortium www.emrpcc.org.au or Centre for Palliative Care www.centreforpallcare.org

DISCLAIMER

The information in this document is to be used as a guideline only. It is the responsibility of the user to ensure information contained in this document is used correctly. These guidelines reflect current palliative care practice in the eastern metropolitan region and available literature at the time of the guideline release. The current electronic version of the document available at www.emrpcc.org.au should always be referred to.

All medication doses derived from these guidelines should be checked and prescribed by a medical doctor with appropriate experience before administering. Medication doses should be modified in response to the patient/client's clinical situation and status, including previous exposure to opioids and concurrent medications. Adhere to all legislation and professional requirements including organisational policies and procedures regarding opioid medications and their administration.

All patients should be monitored closely until stable when commencing, adjusting dosage and/or switching opioid medications.

GENERAL NOTES (1,2,3)

- The guidelines are applicable to chronic pain for palliative care patients
- It is recommended that opioids be converted to the equianalgesic oral morphine as the first step
- Calculate the equianalgesic starting dose of the new opioid using the guidelines
- Apply a dose reduction of 25% to 50% to the equianalgesic starting dose to allow for cross-tolerance
- A dose reduction closer to 50% is appropriate if the patient is elderly or medically frail
- Also consider
    - dose and duration of previous opioid treatment
    - current pain severity
    - patient's ethnicity, for example, oxycodone may be metabolised differently by Caucasian, Asian and North African groups due to genetic polymorphism
    - renal and hepatic function
    - occurrence of adverse effects
    - direction of switch of opioid
- Provide supplemental opioid analgesia (breakthrough medication) during the titration process of 1/10th to 1/6th of the total daily opioid dose
- Frequently monitor for patient response and individual dose titration

ORAL MORPHINE TO OTHER ORAL OPIOIDS			
Oral to Oral	**Conversion Ratio**	**Comments**	**Reference**
Morphine to Tramadol	1:10	Oral Morphine 10mg = Oral Tramadol 100mg Tramadol has a limited role in managing moderate-severe pain in palliative care	3,4
Morphine to Codeine	1:10	Oral Morphine 6mg = Oral Codeine 60mg	4,5
Morphine to Methadone		CONSULTANT REQUIRED. See methadone conversion on p8 for more information.	
Morphine to Oxycodone	1.5:1	Oral Morphine 15mg = Oral Oxycodone 10mg The oxycodone component of Targin® should be considered in conversions	3,6
Morphine to Hydromorphone	5:1	Oral Morphine 5mg = Oral Hydromorphone 1mg	3,6

ORAL OPIOIDS TO PARENTERAL OPIOIDS– same drug to same drug					
Oral	**Parenteral**	**Conversion Ratio**	**Calculation**	**Comments**	**Reference**
Morphine	Morphine	2 to 3:1	Oral Morphine 30mg = Subcutaneous Morphine 10 to 15mg		3
Oxycodone	Oxycodone	2:1	Oral Oxycodone 10mg = Subcutaneous Oxycodone 5mg		3
Hydromorphone	Hydromorphone	3:1	Oral Hydromorphone 15mg = Subcutaneous Hydromorphone 5mg		CCG
Methadone	Methadone	2:1	Oral Methadone 20mg = Subcutaneous Methadone10 mg	Consultation with a palliative care service or pain clinic advised	3
Tramadol	Tramadol	1.2:1	Oral Tramadol 120mg = Parenteral Tramadol 100mg	Tramadol has a limited role in managing moderate to severe pain in palliative care	4,7

PARENTERAL MORPHINE TO OTHER PARENTERAL OPIOIDS					
Parenteral	**Parenteral**	**Conversion Ratio**	**Calculation**	**Comments**	**Reference**
Morphine	Fentanyl	100:1	Morphine 10,000micrograms (10mg) = Fentanyl 100 micrograms		6
Morphine	Hydromorphone	5:1	Morphine 10mg = Hydromorphone 2mg		3,8
Morphine	Tramadol	1:10	Morphine 10mg = Tramadol 100mg	Tramadol has a limited role in managing moderate to severe pain in palliative care	3,4
Morphine	Oxycodone	1:1	Morphine 10mg = Oxycodone 10mg		3

TRANSDERMAL BUPRENORPHINE TO ORAL MORPHINE			
Patch Strength	**Delivery Rate**	**Oral Morphine Dose**	**Reference**
Buprenorphine 5 mg/7 days 120 micrograms/24 hours	5 micrograms/hour	9 to 12 mg/24 hours	Conversion ratio 1:75 (6) and 1:100 (3)
Buprenorphine10 mg/7 days 240 micrograms/24 hours	10 micrograms/hour	18 to 24 mg/24 hours	Conversion ratio 1:75 (6) and 1:100 (3)
Buprenorphine 20 mg/7 days 480 micrograms/24 hours	20 micrograms/hour	36 to 48 mg/24 hours	Conversion ratio 1:75 (6) and 1:100 (3)

CONVERSION CALCULATION – TRANSDERMAL BUPRENORPHINE TO ORAL MORPHINE

5 mg patch = 5 micrograms buprenorphine per hour
5 mcg x 24 = 120 micrograms over 24 hours
120mcg buprenorphine x 75 (conversion) = 9000mcg or 9mg oral morphine
120mcg buprenorphine x 100 (conversion) = 12000mcg or 12mg oral morphine

TRANSDERMAL FENTANYL TO MORPHINE					
Patch Strength	**Dose**	**Oral Morphine equivalent (mg/24 hours)**	**Parenteral Morphine equivalent (mg/24 hours)**	**Breakthrough immediate release Oral Morphine (mg) – 1/6th of daily dose**	**Reference**
Fentanyl Patch 12 microgram/hour	288mcg/24 hours	<44mg	< 15mg	5mg	3,9,10
Fentanyl Patch 25 microgram/hour	600mcg/24 hours	45 to 89mg	15 to 30mg	7.5 to15mg	3,9,10
Fentanyl Patch 50 microgram/hour	1200mcg/24 hours	90 to 149mg	30 to 50mg	15 to 25mg	3,9,10
Fentanyl Patch 75 microgram/hour	1800 mcg/24 hours	150 to 209mg	50 to 70mg	25 to 35mg	3,9,10
Fentanyl Patch 100 microgram/hour	2400 mcg/24 hours	210 to 269mg	70 to 90mg	35 to 45mg	3,9,10

CONVERSION CALCULATION – TRANSDERMAL FENTANYL TO ORAL MORPHINE

25 micrograms/hour fentanyl patch

25 mcg / hour x 24 = 600 mcg / 24 hours

600mcg x 100 (conversion) = 60000 micrograms morphine = 60 mg oral morphine

CONVERTING TO TRANSDERMAL FENTANYL (3,11)	
From	**To Transdermal Fentanyl***
4 hour immediate release (IR) oral opioid	Give regular doses IR oral opioid for the first 12 hours after applying patch
12 hour controlled release (CR) long acting oral opioid	Apply the patch at the same time as administering the final 12 hour (CR) dose
24 hour controlled release (CR) long acting oral opioid	Apply the patch twelve hours after administering the final 24 hour (CR) dose
Continuous subcutaneous infusion morphine (syringe driver)	Continue the syringe driver unchanged for 8 to 12 hours after applying the patch, then cease
Continuous subcutaneous infusion fentanyl (syringe driver)	Continue the syringe driver for 3 hours after applying the patch, decrease the dose in the syringe driver by 50% for 3 hours, then cease

*Effective systemic analgesic concentrations are generally reached in less than 12 hours for fentanyl

PARENTAL FENTANYL TO TRANSDERMAL FENTANYL - same drug to same drug				
		Conversion Ratio	**Calculation**	**Reference**
Parenteral Fentanyl	Transdermal Fentanyl	1:1	Fentanyl 600 micrograms / 24 hours = Fentanyl patch 25 micrograms/hour	11

TRANSMUCOSAL FENTANYL

Fentanyl transmucosal (Actiq®) offers a faster onset of relief than oral morphine in breakthrough pain. Transmucosal fentanyl should only be used in patients who are already receiving opioids, and are opioid tolerant. A patient should be receiving at least 60mg of oral morphine equivalents per day, or 50 micrograms transdermal fentanyl per hour, if transmucosal fentanyl is to be considered for breakthrough pain. There is no direct conversion ratio between morphine and transmucosal fentanyl. Refer to Product Information for further information.

INTRANASAL FENTANYL

Intranasal Fentanyl solutions are being administered in some clinical settings to provide rapid management of breakthrough pain. Use is not confined to palliative care. Fentanyl is well absorbed into the nasal mucosa with approximately 70% bioavailability. Administration is with an atomisation device. Further information is available in Therapeutic Guidelines (eTG complete) *fentanyl analogues* section.

METHADONE

Conversion to methadone from other opioids is complex, and *should not* be attempted without consultation with a specialist experienced in the use of methadone. Consultation is of particular importance for the higher doses shaded in red below. It is *strongly* recommended that Methadone therapy be initiated in the inpatient setting where patients can be closely monitored for signs of cumulative toxicity (commonly sedation or confusion).

Methadone is lipophilic - care must be taken to avoid toxicity as it may take several days to reach steady-state plasma concentrations. Elimination half-life is lengthy and **highly variable** between individuals.
Conversion methods used by palliative care physicians **vary considerably** and there is no clear-cut evidence to support one method over another.
Conversions should be based on current daily oral morphine equivalent dosage.

Method: (12,13))

1. Stop original opioid when commencing methadone.
2. Days 1 and 2 - give calculated daily dose (see table below) plus 25 to 50% extra (as loading, to saturate tissues), give in 4 divided doses (6 hourly). Omit loading dose in frail, elderly or in those on long-acting sedatives.
3. Days 3 and 4 – give calculated daily dose (without the loading) in 3 divided doses (8 hourly).
4. Day 5 onwards – give calculated daily dose in 2 divided doses (12 hourly).
5. Use short-acting opioids for breakthrough pain (e.g. oxycodone, morphine)

Royal Perth Methadone Conversion Protocol (12)

METHADONE CONVERSION RATIO		
Daily oral morphine equivalent dose	**Conversion Ratio**	**Daily oral methadone dose**
Less than 100 mg	3:1	I.e. 3 mg morphine: 1 mg methadone 0 to 30 mg methadone
101 mg to 300 mg	5:1	20 mg to 60 mg methadone
301 mg to 600 mg	10:1	30 mg to 60 mg methadone
601 mg to 800 mg	12:1	50 mg to 65 mg methadone
801 mg to 1000 mg	15:1	50 mg to 65 mg methadone
More than 1000 mg	20:1	50 mg methadone

The EMRPCC gratefully acknowledges the following palliative care physicians for their contribution to the methadone section in the 2008 guidelines(14)**:** Shirley Bush; Kate Jackson; Brian Le; Peter Martin; Greg Mewett and Peter Poon.

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The EMRPCC Clinical Group welcomes feedback regarding the planned formal review process in 2016. Please send comments to:
Consortia Manager, Eastern Metropolitan Region Palliative Care Consortium
PO Box 2110 Rangeview VIC 3132 Australia or Email: consortiumamanager@epc.asn.au

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Opioid Conversion Ratios - Guide to Practice 2013
Summary Chart

The entire document must be viewed at www.emrpcc.org.au

ORAL MORPHINE TO OTHER ORAL OPIOIDS		
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Morphine to Tramadol	1:10	Oral Morphine 10mg = Oral Tramadol 100mg
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Morphine to Methadone	-	CONSULTANT REQUIRED
Morphine to Oxycodone	1.5:1	Oral Morphine 15mg = Oral Oxycodone 10mg
Morphine to Hydromorphone	5:1	Oral Morphine 5mg = Oral Hydromorphone 1mg

ORAL TO PARENTERAL – same drug to same drug			
Oral	**Parenteral**	**Conversion Ratio**	**Example**
Hydromorphone	Hydromorphone	3:1	Oral Hydromorphone 60mg = Subcutaneous Hydromorphone 20mg
Morphine	Morphine	2 to 3:1	Oral Morphine 30mg = Subcutaneous Morphine 10 to 15mg
Methadone	Methadone	2:1	Oral Methadone 20mg = Subcutaneous Methadone 10mg
Oxycodone	Oxycodone	2:1	Oral Oxycodone 20mg = Subcutaneous Oxycodone 10mg

PARENTERAL MORPHINE TO OTHER PARENTERAL OPIOIDS		
Parenteral	**Conversion Ratio**	**Example**
Morphine to Fentanyl	100:1	Morphine 10mg = Fentanyl 100mcg
Morphine to Hydromorphone	5:1	Morphine 10mg = Hydromorphone 2mg
Morphine to Tramadol	1:10	Morphine 10 mg = Tramadol 100 mg
Morphine to Oxycodone	1:1	Morphine 10 mg = Oxycodone 10 mg

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