

OPIOID CONVERSIONS

The conversions below are approximate and vary between individuals. At higher doses these variations require the consideration of a reduction in the dose when converting from one strong opioid to another as there is a risk of sedative side effects.

NB. The breakthrough dose of any opioid except fentanyl should be one sixth of the total daily dose. See note below on renal failure.

Oral weak opioids

Drug/Preparation	Maximum daily dose	Equi-analgesic dose of oral morphine in 24 hours to maximum daily dose of preparation
Codydramol*	8 tablets	8mg
Cocodamol 8/500*	8 tablets	5mg
Cocodamol 30/500*	8 tablets/capsules	20mg
Codeine phosphate	240mg	20mg
Dihydrocodeine	240mg	25mg
Tramadol	400mg	40mg

*Contains paracetamol 500mg per tablet/capsule

Oral and subcutaneous strong opioids

Drug	Conversion ratio from oral morphine	Equi-analgesic dose to 30 mg oral morphine	Example conversions (These apply to single doses or total daily dose)
Morphine (oral)	1	30mg	1. To convert 60 mg of oral Morphine to subcutaneous Morphine divide by 2 to give 30 mg.
Morphine (sc)	2 to 1	15mg	
Morphine (iv)	3 to 1	10mg	
Diamorphine (sc)	3 to 1	10mg	
Oxycodone (oral)	1.5-2 to 1	15-20mg	
Oxycodone (sc)	3 to 1	10mg	2. To convert 30 mg of oral Morphine to oral Oxycodone divide by 2 To give 15mg
Alfentanil (sc)	30 to 1	1mg	
Fentanyl (sc)	150 to 1	200mcg	
Hydromorphone (oral)	7.5 to 1	4mg	
Hydromorphone (sc)	15 to 1	2mg	

Transdermal opioids

Fentanyl patch (mcg/hr)	Buprenorphine patch (mcg/hr)	24 hour oral morphine dose (mg)	Breakthrough oramorph dose (mg)
12		<60	5-10
25	35	61-90	10-15
37	52.5	91-134	15-20
50	70	135-224	30
75	105	225-314	40
100	140	315-404	60
125	This is debated – may be stronger than recorded here	405-494	80
150		495-584	90
175		585-674	100
200		675-764	120
225		765-854	130
250		855-944	150

NB. At lower doses, fentanyl conversions are less accurate.

Choice of opioid

This is obviously dependent on the individual patient, but as a general rule, use:

- Morphine as first line opioid via oral and subcutaneous routes
- Oxycodone as second line (oral or subcutaneous) when an opioid rotation is required for reasons of lack of efficacy or intolerable side effects from morphine.
- Alfentanil is another alternative via the subcutaneous route
- If volume of subcutaneous morphine or oxycodone becomes an issue at larger doses, consider changing to diamorphine or alfentanil
- Reduce doses of oral opioids in renal impairment
- Use alfentanil as first line in renal impairment requiring syringe driver, with fentanyl for subcutaneous 'as required' doses

Syringe driver volumes

It is standard practice at The Rowans Hospice to use a 30ml syringe in drivers, giving a drug volume capacity of up to 22mls, although it is possible to use a 50ml syringe (32ml capacity for drugs), or to use two syringe drivers.

Volume is likely to be an issue for morphine doses approaching 600mg (30mg/ml) and oxycodone doses approaching 200mg (10mg/ml), less if there are other drugs in the syringe driver. Diamorphine or alfentanil should be considered in these circumstances.

Prescribing in renal impairment

The safest drugs to use subcutaneously in renal failure are alfentanil and fentanyl (recommended in The Renal Liverpool Care Pathway). Alfentanil has a very short duration of action so is not suitable as a breakthrough medication - Fentanyl is the most appropriate for breakthrough. The breakthrough dose is 1/8th rather than the usual 1/6th of the total daily dose, and the conversion from alfentanil to fentanyl is to divide by five. To find the breakthrough dose of fentanyl therefore, divide the total alfentanil dose by five to get the fentanyl dose over 24 hours, then by eight for the breakthrough dose.

Divide alfentanil dose by 40 to find fentanyl breakthrough dose

Example – morphine 150mg/24hours = alfentanil 5mg/24hours = fentanyl 1mg/24hours which gives a breakthrough dose of 125mcg fentanyl for stats (1mg divided by 8)

Opioid	Renal impairment		Hepatic impairment	
	Moderate	Severe	Moderate	Severe
Morphine	Reduce dose	Avoid	Normal dose	Reduce dose
Diamorphine	Reduce dose	Avoid	Normal dose	Reduce dose
Oxycodone	Reduce dose	Avoid	Reduce dose	Avoid
Alfentanil	Normal dose	Normal dose	Normal dose	Reduce dose
Fentanyl	Normal dose	Normal dose	Normal dose	Reduce dose
Methadone	Normal dose	Normal dose	Normal dose	Reduce dose
Hydromorphone	Reduce dose	Reduce dose	Reduce dose	Avoid
Buprenorphine	Normal dose	Normal dose	Normal dose	Reduce dose

Opioid preparations

Morphine

Newly recommended for use first line both orally and subcutaneously. At doses approaching 600mg/24hours it may be preferable to switch to diamorphine for reasons of volume.

Morphine sulphate injection 10mg, 15mg, 20mg, 30mg per 1ml ampoule.

Immediate release oral morphine:

- Oramorph liquid 10mg/5ml, 100mg/5ml.
- Sevredol tablets 10mg, 20mg, 50mg.

Modified release oral morphine:

- Zomorph capsules† 10mg, 30mg, 60mg, 100mg, 200mg (q12h).
- MST Continus tablets 5mg, 10mg, 15mg, 30mg, 60mg, 100mg, 200mg (q12h).
- MST Continus suspension 20mg, 30mg, 60mg, 100mg, 200mg (q12h).
Contents of sachets to be mixed with water. Expensive.
- Morphgesic SR tablets 10mg, 30mg, 60mg, 100mg (q12h).
- MXL capsules† 30mg, 60mg, 90mg, 120mg, 150mg, 200mg (q24h).

† indicates that capsule can be opened and contents sprinkled on food or drink

Morphine suppositories 10mg, 15mg, 20mg, 30mg.

Diamorphine

Recommended for use when volumes of Morphine subcutaneously are becoming an issue. Maximum recommended concentration is 250mg/ml. Subcutaneous diamorphine is 2 to 3 times more potent than oral morphine, and at The Rowans Hospice a 3 to 1 conversion is used.

- Ampoules 5mg, 10mg, 30mg, 100mg, 500mg. Dissolve in water for injection.

Oxycodone

Available for oral and injectable use, and may be useful in those who cannot tolerate morphine, although the side effect profile is similar. At doses greater than 200mg/24hours it may be preferable to switch to diamorphine for reasons of volume.

- OxyNorm liquid, 5mg/5ml, 50mg/5ml.
- OxyNorm capsules, 5mg, 10mg, 20mg.
- OxyContin tablets, 5mg, 10mg, 20mg, 40mg, 80mg (modified release, q12h).
- OxyNorm injection, 10mg/ml.

Alfentanil

- 500mcg/ml, 2ml and 10ml ampoules available
- Also available as a special order from Pharmacy – 5mg in 5ml spray for incident pain – one spray (0.14ml) buccally as required, titrating up. There is no specific conversion rate from other opioids.

Fentanyl

- 50mcg/ml, 2ml and 10ml ampoules available.

References: *Palliative Care Formulary (PCF3) Twycross et al (2007)*
CMO document on Opioid Potency Ratios (2005)
The Palliative Care Handbook 6th Edition, Wessex SPCT (2007)