

The Use of Fentanyl in a Syringe Pump in Palliative Medicine

**Warning: Fentanyl should not be confused with alfentanil
To ensure safety Fentanyl will be prescribed in micrograms**

Indications for Use	Pain in patients with renal failure or intolerable adverse effects from alternative opioids.																																
Pharmacokinetics	<p>Fentanyl is a strong μ-opioid receptor agonist. It has a relatively low molecular weight and is lipophilic (unlike morphine) which allows for easy transfer across the blood brain barrier.</p> <p>It is sequestered in body fats, including epidural fat and the white matter of the CNS. After systemic redistribution, fentanyl acts supra-spinally mainly in the thalamus.</p> <p>When converting morphine to fentanyl, there is a decrease in opioid molecules outside the CNS. This explains why peripherally-mediated withdrawal symptoms are sometimes seen.</p>																																
Preparations	<p>Sublimaze® 50 micrograms/mL (a 2 mL ampoule contains 100 micrograms).</p> <p>Fentanyl 1000 micrograms = Fentanyl 1 mg</p>																																
Conversion ratios	Selection of a single conversion ratio is made difficult owing to the lack of evidence and indeed the complex pharmacokinetics of fentanyl, particularly when considering single doses versus prolonged use. The literature suggests conversion ratios from parenteral morphine to parenteral fentanyl of 50-150:1.																																
Dose Conversion	<p>The conversion ratio favoured in OLH&CS considers subcutaneous (SC) fentanyl to be approximately 100 times as potent as oral (PO) morphine i.e. PO morphine to SC fentanyl 100:1</p> <p>This equates to a conversion ratio of SC morphine to SC fentanyl of 50:1</p> <table border="1"> <thead> <tr> <th>MORPHINE PO MG</th> <th>MORPHINE SC MG</th> <th>FENTANYL SC MG</th> <th>FENTANYL SC MICROGRAMS</th> </tr> </thead> <tbody> <tr> <td>5 mg</td> <td>2.5mg</td> <td>0.05 mg</td> <td>50 micrograms</td> </tr> <tr> <td>10 mg</td> <td>5mg</td> <td>0.1 mg</td> <td>100 micrograms</td> </tr> <tr> <td>25 mg</td> <td>12.5mg</td> <td>0.25 mg</td> <td>250 micrograms</td> </tr> <tr> <td>50 mg</td> <td>25mg</td> <td>0.5 mg</td> <td>500 micrograms</td> </tr> <tr> <td>100 mg</td> <td>50mg</td> <td>1 mg</td> <td>1,000 micrograms</td> </tr> <tr> <td>200 mg</td> <td>100mg</td> <td>2 mg</td> <td>2,000 micrograms</td> </tr> <tr> <td>400 mg</td> <td>200mg</td> <td>4 mg</td> <td>4,000 micrograms</td> </tr> </tbody> </table>	MORPHINE PO MG	MORPHINE SC MG	FENTANYL SC MG	FENTANYL SC MICROGRAMS	5 mg	2.5mg	0.05 mg	50 micrograms	10 mg	5mg	0.1 mg	100 micrograms	25 mg	12.5mg	0.25 mg	250 micrograms	50 mg	25mg	0.5 mg	500 micrograms	100 mg	50mg	1 mg	1,000 micrograms	200 mg	100mg	2 mg	2,000 micrograms	400 mg	200mg	4 mg	4,000 micrograms
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Breakthrough Doses	<ul style="list-style-type: none"> The use of subcutaneous fentanyl 'as required' for the treatment of breakthrough pain is complex due to the pharmacokinetics of fentanyl. The duration of action of fentanyl is reported to be short after single doses in fentanyl-naïve patients (30-60minutes). However, with high or repeated doses it becomes longer acting due to a lengthening elimination half-life. Thus, the use of subcutaneous fentanyl 'as required' for breakthrough pain should only be prescribed by a specialist experienced in its use. Consideration may be given to the use of an alternative opioid e.g. morphine, oxycodone. Transmucosal preparations of fentanyl are available and may be considered for use in the treatment of episodic pain. They require individual titration as the effective dose cannot be reliably predicted from the maintenance dose of opioid. 																																
Hepatic Impairment	Dose reductions are not usually required; however fentanyl undergoes hepatic metabolism. Empirical dose adjustment may be required. The metabolites of fentanyl are non-toxic and inactive.																																
Renal Failure	Dose reductions are not usually required; however accumulation in chronic use has been reported. Empirical dose adjustment may be required.																																
Diluents	Sodium Chloride 0.9% or Water for Injection may be used.																																
Compatibility Information	Compatibility information is limited. Please consult with pharmacy. Please report any incompatibilities to the pharmacy.																																
Drug Interactions	Fentanyl is metabolised by CYP3A4 and is susceptible to drug interactions. Please consult with pharmacy. Please consult product information available from www.medicines.ie or www.hpra.ie																																
Issues for Discharge	Sublimaze® 50 micrograms/1 mL are not currently reimbursable on the medical card or Drug Payment Scheme. Therefore, the patient may have to incur the cost. Please liaise with the pharmacist or the patient's community pharmacy.																																