

MORPHINE for palliative care

For other indications, refer to [Morphine \(sulfate and hydrochloride\)](#)

Indication		• Palliative care • Consult with Children's Health Queensland Palliative Care Service (1800 249 648)
ORAL	PALLIATIVE CARE	
	Presentation	• Oral solution 1 mg in 1 mL 2 mg in 1 mL 5 mg in 1 mL 10 mg in 1 mL
	Dosage	• Starting dose 0.05 mg/kg (50 microgram/kg) every 4–6 hours ◦ Titrate to achieve symptom control with regular monitoring and palliative care team involvement
	Preparation	• Dilution not required but if volume adjustment indicated ◦ Draw up 0.5 mg (500 microgram) and make up to 5 mL total volume with water for injection ◦ <i>Concentration now equal to 0.1 mg/mL (100 microgram/mL)</i>
	Administration	• Draw up prescribed dose into oral/enteral syringe • Oral/OGT/NGT without regard to feeds
INTRAVENOUS	PALLIATIVE CARE IV INJECTION	
	Presentation	• Ampoule: 5 mg in 1 mL 10 mg in 1 mL ◦ Morphine hydrochloride may be substituted at equivalent dosage
	ANALGESIA	
	Dosage ^{1,2}	• 0.05–0.1 mg/kg (50–100 microgram/kg) every 1–2 hours ◦ May commence at lower dose of 0.02 mg/kg (20 microgram/kg) ◦ Titrate to achieve symptom control with regular monitoring and palliative care team involvement
	RESPIRATORY DISTRESS	
	Dosage	• 0.02 mg/kg (20 microgram/kg) every 15 minutes as necessary ◦ May commence at lower dose of 0.01 mg/kg (10 microgram/kg) • Titrate to achieve symptom control with regular monitoring and palliative care team involvement
	Dilution	• Draw up 5 mg (5000 microgram) and make up to 10 mL total volume with 0.9% sodium chloride ◦ <i>Concentration now equal to 0.5 mg/mL (500 microgram/mL)–the maximum concentration</i>
Administration	• Draw up prescribed dose • IV injection over at least 5 minutes³	
PALLIATIVE CARE IV INFUSION		
Dosage ^{1,2,4}	• Start at 0.01 mg/kg/hour (10 microgram/kg/hour) ◦ Titrate to achieve symptom control with regular monitoring and palliative care team involvement	
Dilution	<u>Single strength</u>: refer to Quick guide for other strength preparations • Draw up 1 mg/kg (1000 microgram/kg) and make up to 50 mL total volume with compatible fluid ◦ <i>Concentration now equal to 0.02 mg/kg/mL (20 microgram/kg/mL)</i>	
Administration	• Prime the infusion line and administer at prescribed rate via syringe driver pump ◦ <i>Single strength infusion of 0.02 mg/kg/mL (20 microgram/kg/mL) infused at 0.5 mL/hour delivers 0.01 mg/kg/hour (10 microgram/kg/hour)</i>	

SUBCUT

PALLIATIVE CARE SUBCUT INJECTION	
Presentation	- Ampoule: 5 mg in 1 mL 10 mg in 1 mL - Morphine hydrochloride may be substituted at equivalent dosage
ANALGESIA	
Dosage ^{2,4}	0.05–0.1 mg/kg (50–100 microgram/kg) every 2–4 hours - May commence at lower dose of 0.02 mg/kg (20 microgram/kg) - Titrate to achieve symptom control with regular monitoring and palliative care team involvement
RESPIRATORY DISTRESS	
Dosage	0.02 mg/kg (20 microgram/kg) every 15 minutes as necessary - May commence at lower dose 0.01 mg/kg (10 microgram/kg) - Titrate to achieve symptom control with regular monitoring and palliative care team involvement
Dilution	- Draw up 5 mg (5000 microgram) and make up to 10 mL total volume with 0.9% sodium chloride - Concentration now equal to 0.5 mg/mL (500 microgram/mL) - If the dose is less than 0.25 mL, make up to 0.25 mL total volume with 0.9% sodium chloride
Administration	Draw up prescribed dose and administer by subcutaneous injection into anterior aspect of the thigh, abdomen or upper arm



SUBCUT	PALLIATIVE CARE SUBCUT INFUSION (via NIKI™ syringe driver)		
	Presentation	- Ampoule: 5 mg in 1 mL 10 mg in 1 mL - Morphine hydrochloride may be substituted at equivalent dosage	
	Dosage⁴	- Prescribe as a 24 hour <u>daily dose</u> using a subcut prescribing chart - Start at 0.24 mg/kg/day (equivalent to 10 microgram/kg/hour) - Titrate to achieve symptom control with regular monitoring and palliative care team involvement	
	Dilution	- Draw up the 24 hour total dose required - Make up to maximum recommended syringe capacity with compatible fluid - Refer to Quick guide below	
	Administration	Prime the infusion line and administer by subcutaneous infusion the volume over 24 hours	

BUCCAL	PALLIATIVE CARE		
	Presentation	Oral solution 1 mg in 1 mL 2 mg in 1 mL 5 mg in 1 mL 10 mg in 1 mL	
	Dosage	- Starting dose 0.05 mg/kg (50 microgram/kg) every 4–6 hours - Titrate to achieve symptom control with regular monitoring and palliative care team involvement	
	Preparation	- Dilution not required - If volume adjustment indicated - Draw up 0.5 mg (500 microgram) and make up to 5 mL total volume with water for injection - Concentration now equal to 0.1 mg/mL (100 microgram/mL)	
	Administration	- Draw up prescribed dose into oral syringe - Administer slowly between lower gum and inner cheek (buccal mucosa) - For larger dose volumes, split between cheeks	

Contraindication Caution	• Contraindication - o Known hypersensitivity • Caution (<i>consider lower commencement dose and monitor carefully</i>) - o If severe hepatic impairment, bioavailability is increased - o If significant renal impairment, metabolites accumulate and can cause drowsiness and respiratory depression after 24 hours
Special considerations	• S8 high risk medication. Errors may result in significant harm • Optimal dosing in response to symptoms and aimed at maintaining comfort does not hasten death • Review dosing regularly and adjust based on symptom relief and side effects - o If repeated single doses required, consider infusion⁵ and increase the maintenance dose² • More frequent dosing may be considered to achieve adequate symptom control⁵ - o IV: 15 minutes after previous dose - o Subcutaneous: 30 minutes after previous dose - o Breakthrough pain dose: approximately 10% of total daily dose oral or IV² • Combine pharmacological and non-pharmacological comfort measures to optimise relief and family involvement in care • Refer to Queensland Clinical Guideline: Palliative and end-of-life care for babies⁶
Monitoring	• Use validated assessment tools and clinical judgment to monitor and evaluate symptoms (e.g. COSA, PIPP-R)
Compatibility	• Fluids - o 5% glucose⁷, 10% glucose (sulfate only)⁷, 0.9% sodium chloride⁷, 0.45% sodium chloride (sulfate only)⁷ • Y site morphine sulfate <i>and</i> morphine hydrochloride - o Amiodarone^{7,8}, caffeine citrate^{7,8}, calcium gluconate^{7,8}, cefazolin^{7,8}, cefotaxime^{7,8}, ceftazidime^{7,8}, ceftriaxone^{7,8}, dexmedetomidine^{7,8}, digoxin^{7,8}, dobutamine^{7,8}, dopamine^{7,8}, epinephrine^{7,8}, fluconazole^{7,8}, foscarnet^{7,8}, heparin sodium^{7,8}, hydrocortisone sodium succinate^{7,8}, methylprednisolone^{7,8}, metronidazole^{7,8}, midazolam^{7,8}, nicardipine^{7,8}, paracetamol^{7,8}, phenobarbital^{7,8}, piperacillin/tazobactam^{7,8}, posaconazole^{7,8}, sildenafil^{7,8}, sodium bicarbonate^{7,8}, voriconazole^{7,8}, zidovudine^{7,8} • Y site: morphine sulfate <i>only</i> - o Allopurinol⁷, atracurium⁷, atropine⁷, caspofungin⁷, cefoxitin⁷, cefuroxime⁷, cisatracurium⁷, clindamycin⁷, dexamethasone⁷, epoetin alfa⁷, esmolol⁷, fentanyl⁷, folinic acid⁷, filgrastim⁷, gentamicin⁷, glyceryl trinitrate⁷, glycopyrronium⁷, lidocaine⁷, magnesium sulfate⁷, milrinone⁷, naloxone⁷, octreotide⁷, pancuronium⁷, potassium chloride⁷, protamine⁷, pyridoxine⁷, rocuronium⁷, sodium nitroprusside⁷, theophylline⁷, thiamine⁷, tobramycin⁷, vecuronium⁷, zidovudine⁷ • Y site: morphine hydrochloride <i>only</i> - o Albumin⁸, cefepime⁸, flecainide⁸, hydrocortisone sodium phosphate⁸, levetiracetam⁸, prednisolone sodium succinate⁸, teicoplanin⁸, tranexamic acid⁸, vancomycin⁸ • Subcutaneous - o Hyoscine⁷, haloperidol⁷, metoclopramide⁷, midazolam⁷: may be combined with morphine (together or individually) in same syringe⁵ - o Glycopyrronium⁵: may be combined with morphine and midazolam (either or both) in same syringe - o Refer to palliative care team for advice

Incompatibility	• Fluids - o Morphine may precipitate out of solution when mixed with alkaline drugs or solutions • Y site: morphine sulfate <i>and</i> morphine hydrochloride - o Aciclovir^{7,8}, ampicillin^{7,8}, furosemide^{7,8}, ganciclovir^{7,8}, micafungin^{7,8} • Y site: morphine sulfate <i>only</i> - o Amphotericin B liposome⁷, azithromycin⁷, cefepime⁷, dantrolene⁷, diazoxide⁷, folic acid⁷, hydralazine⁷, ibuprofen⁷, insulin human regular⁷, indometacin⁷, pantoprazole⁷, trimethoprim/sulfamethoxazole⁷, vancomycin⁷ • Y site: morphine hydrochloride <i>only</i> - o Benzylpenicillin⁸, esomeprazole⁸, omeprazole⁸ • Subcutaneous - o Phenobarbital⁵
Interactions	• Benzodiazepines and CNS depressants: increased risk of respiratory depression⁹ • Zidovudine: increase risk of morphine and/or zidovudine toxicity⁹
Stability	• Oral solution - o Store below 30 °C.¹⁰ Do not refrigerate.¹⁰ Protect from light¹⁰ - o Discard 28 days after opening <i>or</i> as per product information • Ampoule - o Store below 25 °C.¹¹ Protect from light¹¹ • IV/subcutaneous infusion - o Stable for 24 hours³ - o Change infusion within 24 hours to reduce risk of microbial contamination³
Side effects	• Circulatory: arrhythmias⁴, hypotension⁴, bradycardia¹ • Digestive: decreased gut motility⁴, vomiting⁴ • Integumentary: skin reactions⁴ • Nervous: restlessness⁴, opioid dependence⁴, sedation⁴ • Respiratory: respiratory depression (with larger doses)⁴ • Urinary: urinary retention⁴
Actions	• Opioid analgesic that stimulates brain opioid receptors¹ • Decreases GI secretions and motility¹
Abbreviations	COSA: comfort, observation and symptom assessment, CNS: central nervous system, GI: gastrointestinal, IV: intravenous, NGT: nasogastric tube, OGT: orogastric tube, PIPP-R: premature infant pain profile-revised, S8: schedule 8, Subcut: subcutaneous
Keywords	neonatal medicine, neonatal monograph, comfort care, palliative care, pain management, end-of-life care, narcotic, opioid

The Queensland Clinical Guideline [Neonatal medicines](#)¹² is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

Quick guide: morphine sulfate IV INJECTION dose

Morphine dose is 100 microgram/kg	Round weight to nearest 0.5 kg							
Use the IV injection DILUTED concentration of 500 microgram/mL (as per instructions above)	0.5 kg	1 kg	1.5 kg	2 kg	2.5 kg	3 kg	3.5 kg	4 kg
Dose (microgram) for approximate weight	50 microgram	100 microgram	150 microgram	200 microgram	250 microgram	300 microgram	350 microgram	400 microgram
Administration volume (mL)	0.1 mL	0.2 mL	0.3 mL	0.4 mL	0.5 mL	0.6 mL	0.7 mL	0.8 mL

Quick guide: morphine sulfate IV INFUSION concentrations

Use in conjunction with dilution instructions				
Draw up morphine dose	Make up to total volume (mL)	Concentration (microgram/kg/mL)	Infusion rate (mL/hour)	Delivers (microgram/kg/hour)
1 mg/kg (1000 microgram/kg)	50 mL	20 microgram/kg/mL	@ 0.5 mL/hour	10 microgram/kg/hour
2 mg/kg (2000 microgram/kg)	50 mL	40 microgram/kg/mL	@ 0.25 mL/hour	10 microgram/kg/hour
4 mg/kg (4000 microgram/kg)	50 mL	80 microgram/kg/mL	@ 0.125 mL/hour	10 microgram/kg/hour

Quick guide: morphine SUBCUT INFUSION via subcutaneous syringe driver (e.g. NIKI™ pump)

Total daily morphine dose for subcutaneous infusion	Syringe size	Make up to total volume (mL)	24 hour infusion rate (mL/hour)
Calculate the total daily dose $\frac{dose(\text{microgram}) \times weight(\text{kg}) \times 24(\text{hours})}{= \text{microgram/day}}$	10 mL	10 mL	0.42 mL/hour
	20 mL	17.5 mL	0.73 mL/hour
	30 mL	22.5 mL	0.94 mL/hour
If the dose needs to be changed, a new preparation is required each time PRN doses cannot be administered with this device type			

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