University Hospitals of Derby and Burton NHS Foundation Trust

NICU: Morphine

Presentation:	10mg/ml solution for injection
Indication:	Sedation in ventilated babies on NICU
Dose:	**Loading dose:** Single dose 50-100 micrograms per kg, given as a slow IV bolus over 5-10 minutes **IV infusion:** Recommended dose range 5-20 micrograms/kg/hour. Maintenance dose is determined by the clinical response of the baby; doses in excess of 40micrograms/kg/hour may be required but must be confirmed with Registrar or Consultant
Route of administration:	Intravenous bolus and continuous infusion. Morphine sulphate has a low pH and may cause venous irritation and tissue damage in cases of extravasation. If a central venous access device is unavailable administer via as large a peripheral vein as possible monitoring insertion site closely.

Instructions for preparation and administration:

Preparation type:	
Standard strength	Total number of mg of morphine = 2 x baby's weight (kg) – *rounded to the nearest 0.1mg* Dilute the morphine with glucose 5%, glucose 10% or sodium chloride 0.9% to a final volume of 50ml This will provide **10-20 micrograms/kg/hour** if infused at **0.25-0.5ml/hour** Loading dose of **100micrograms/kg** (contained in **2.5ml** of syringe prepared as above) can be given as slow IV bolus over 5-10 minutes via SMART pump followed by continuous IV infusion via SMART pump
FOR FLUID RESTRICTED BABIES:	
Double strength	Number of mg of morphine = 4 x baby's weight (kg) made up to 50ml A rate of **0.5ml/hr** will provide **40micrograms/kg/hr** Loading dose of **100micrograms/kg** (contained in **1.25 ml** of syringe prepared as above) can be given as slow IV bolus over 5-10 minutes via SMART pump followed by continuous IV infusion via SMART pump
Quadruple strength	Number of mg of morphine = 8 x baby's weight (kg) made up to 50ml A rate of **0.25ml/hr** will provide **40micrograms/kg/hr** Loading dose of **100micrograms/kg** (contained in **0.625 ml** of syringe prepared as above) can be given as slow IV bolus over 5-10 minutes via SMART pump followed by continuous IV infusion via SMART pump

Prescribing

'QHB - prescribe on Meditech using 'new sets' → 'category', then scroll down to NNU (neonatal unit) and select 'neonatal morphine infusion' OR 'neonatal intubation meds' and scroll down to 'sedation post intubation'
RDH- Prescribe on paper drug chart

****Please ensure concentration (in micrograms/ml) is completed to enable use of SMART pumps****

To calculate concentration of infusion for SMART pumps (in micrograms/ml) divide total mg in infusion by total volume of infusion (mls) and multiply by 1000:
e.g. 4mg in 50mls = $\frac{4mg}{50mls}$ = 0.08mg/ml x 1000 = 80micrograms/ml

Example for a 2kg baby, standard strength preparation:

Drug		Drug amount in syringe	Diluent	Total volume (ml)	Route
Morphine		*4mg*	*Sodium Chloride 0.9%*	*50mL*	*IV*
Start date	Drug concentration per ml	Infusion range	Min	Max	Name, Sig, Bleep
12/12/19	*80micrograms/mL*	Dose/kg/time	*5micrograms/kg/hour*	*20micrograms/kg/hour*	
Pharm		ml/hr	*0.125*	*0.5*	

Known compatibility issues	See Medusa or information on compatibility
SMART pump directions:	Load Syringe, prime line using the pump for accurate dosing. • Open 'NICU' folder then open 'Morphine' programme. • Using DATA chevrons enter concentration in microgram/ml and confirm • Enter the Baby's weight in kg and confirm • Enter loading dose in microgram/kg (zero if not required) • Confirm bolus time (To be given over minimum 5mins) • Enter/confirm the dose in micrograms/kg/h • Visually confirm the rate (ml/h) against the prescribed dose (microgram/kg/h) • Perform STOP moment with medical team (Pump against prescription) • Connect to Baby • Press start button
Additional Comments:	Monitor closely for pain relief and side-effects especially respiratory depression. Monitor blood pressure, heart and respiratory rate. Naloxone, a specific opioid-antagonist, can be used to reverse respiratory depression. It has a short duration of action - repeated doses or an infusion may be necessary. · Dose: initially 100 micrograms/kg (IV/IM/SC), if no response, repeat at intervals of 1 minute to a total maximum of 2 mg, then review diagnosis; further doses may be required if respiratory function deteriorates. · If repeated doses are required, a continuous infusion of 60% of the initial resuscitative IV dose per hour may be required – adjust rate according to response. Contact pharmacy for advice and preparation of the infusion. NB. Use caution if giving naloxone to infants born to opioid-dependent mothers, as this can precipitate acute withdrawal, leading to extreme distress.

Note: The contents of this monograph should be read in conjunction with information available in the BNFC and Medusa

References:

BNFc, Accessed via medicinescomplete.com on 06/12/23
/SPC for Morphine Sulphate 10mg/mL, Accessed via www.medicines.org.uk/emc/product/5008 on 06/12/23
Evelina London Paediatric Formulary Accessed via http://cms.ubqo.com/public/d2595446-ce3c-47ff-9dcc-63/167d9f4b80 on 06/12/23
Medusa Injectable Medicines Paediatric Guide: accessed online at https://medusa.wales.nhs.uk/ (published 1/10/19) accessed 06/12/23

Document control sheet

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