

MORPHINE

Neonatal Abstinence Syndrome (NAS)

Read in conjunction with [Disclaimer](#)

! HIGH RISK Medication !
1 mg = 1000 micrograms

<u>Formulary: Restricted</u>	
Presentation	Oral solution (morphine hydrochloride): 1000 microgram/mL
Classification	Opioid analgesic
Indication	- Analgesia and sedation – see Morphine Analgesia/Sedation protocol - Neonatal Abstinence Syndrome (NAS) - Secondary to maternal opioid dependency - Secondary to infant opioid infusion
Special Considerations	- Opioid-naïve infants are at risk of cardiorespiratory depression, particularly if they are breathing spontaneously. - Use with caution in patients with hypersensitivity reactions to other opioids. - Tolerance may develop after prolonged use - wean slowly.
Monitoring	- Cardiac and respiratory status, urine output, abdominal distension or delay in passage of stool. - Monitor NAS scores in opioid-dependent infants.
Interactions	Combination use with other CNS depressants can increase the opioid effect - increasing the risk of respiratory depression and sedation
Side Effects	Respiratory depression, decreased gastrointestinal motility, hypotension, bradycardia, urinary retention
Storage & Stability	Schedule 8 Medication
	Oral solution: Store at room temperature, below 25°C
Comments	- Withdraw/wean slowly following prolonged use. - Respiratory depression / apnoea can be reversed with naloxone. Naloxone is contraindicated in opioid dependent infants.

NEONATAL ABSTINENCE SYNDROME (NAS)

Presentation **Oral solution:** 1000 microgram/mL morphine hydrochloride



**** For oral doses less than 100 microgram – prescriber to annotate medication order with “dilution required” in ‘additional information’ section on medication chart. See Preparation section below for dilution instructions. ****

NAS – Secondary to maternal opioid dependency

	NAS Score	Dose/Action
Step 1 (Starting dose)	Score averages greater than 8 for 3 consecutive scores.	125 microg/kg/dose every 6 hours. <i>Maximum of 500 microg/kg in 24 hours.</i>
Step 2	If score persists greater than 8 despite Step 1 dose.	175 microg/kg/dose every 6 hours OR 110 microg/kg/dose every 4 hours. <i>Maximum of 700 microg/kg in 24 hours.</i>
Step 3	If score persists greater than 8 despite Step 2 dose.	225 microg/kg/dose every 6 hours OR 150 microg/kg/dose every 4 hours. <i>Maximum of 900 microg/kg in 24 hours.</i> REQUIRES CONTINUOUS O₂ SATS MONITORING*
*Opioids in high doses are powerful respiratory depressants		

Dosage

NAS – Secondary to infant opioid infusion

Dose can be calculated using the oral to IV ratio of 2:1 (based on approximate oral morphine bioavailability of 48.5% in neonates) and by following to below steps:

1. Calculate the **total daily dose** of morphine received via IV infusion.
2. **Convert to oral** daily dose by multiplying the total IV daily dose by 2.
3. Prescribe this dose as **4 divided doses** daily.

Example of converting IV to oral dosing:

2000 g infant receiving 12.5 microg/hour (5 microg/kg/hour)

1. *12.5 microg/hour x 24 hours = 300 microg IV daily dose.*
2. *300 microg IV daily dose x 2 = 600 microg oral daily dose.*
3. *Prescribe 150 microg every 6 hours.*

Renal and/or hepatic impairment: No specific dosage adjustments provided. May affect metabolism and excretion.

Weaning	• There is limited data to support any specific weaning regimen. • Weaning should be led by NAS scores and the infant's clinical condition. • Suggested weaning regimens include: ○ Decrease the dose by 50 microg per dose every 2 to 3 days, titrated to NAS scores and clinical condition or, ○ Decrease the dose by 10% to 20% of the original dose every 24 to 72 hours, titrated to NAS scores and clinical condition.	
Preparation	Dilution required for doses less than 100 microg:  WARNING: error prone dilution – take extra care Dilution: • Draw up 1 mL (1000 microg) of morphine oral solution and dilute to a final volume of 10 mL with sterile water. • <i>Concentration now equal to 100 microg/mL.</i> • Measure required dose and discard any unused solution.	
Administration	• Draw prescribed dose into oral/enteral syringe. • Can be given Oral/OGT/NGT. • May be given anytime in relation to feeds.	

Related Policies, Procedures, and Guidelines

HDWA Mandatory Policies:

[MP 0131/20: WA High Risk Medication Policy](#)

Clinical Practice Guidelines:

[CAHS Neonatology – Neonatal Abstinence Syndrome \(NAS\)](#)

Pharmaceutical and Medicines Management Guidelines:

[CAHS Neonatology – Medication Administration Guideline](#)

[High Risk Medicines](#)

[Schedule 4 Restricted \(S4R\) and Schedule 8 \(S8\) Medications](#)

References

Takemoto CK, Hodding JH, Kraus DM. Pediatric & neonatal dosage handbook with international trade names index : a universal resource for clinicians treating pediatric and neonatal patients. 27th ed. Hudson (Ohio): Lexicomp; 2020. p1646

Truven Health Analytics. Morphine. In: NeoFax [Internet]. Greenwood Village (CO): Truven Health Analytics; 2024 [cited 2024 Nov 05]. Available from: <https://www.micromedexsolutions.com/neofax>

Society of Hospital Pharmacists of Australia. Morphine. In: Australian Injectable Drugs Handbook [Internet]. [St Leonards, New South Wales]: Health Communication Network; 2024 [cited 2024 Nov 05]. Available from: <http://aidh.hcn.com.au>

British National Formulary. BNF for Children. 2018-19 ed. London, UK: BMJ Group and Pharmaceutical Press; 2018. p. 322.

Australasian Neonatal Medicines Formulary (ANMF). Morphine Oral. In: Australasian Neonatal Medicines Formulary [Internet]. [Sydney, New South Wales; 2023 [cited 2024 Nov 05]. Available from: www.anmfonline.org

Australasian Neonatal Medicines Formulary (ANMF). Morphine 5mg/mL (Parenteral). In: Australasian Neonatal Medicines Formulary [Internet]. [Sydney, New South Wales; 2021 [cited 2024 Nov 05]. Available from: www.anmfonline.org

King Guide to Parenteral Admixtures. Morphine Sulfate. In: King Guide to Parenteral Admixtures [Internet]. [Napa, California]: King Guide Publications; 2024 [cited 2024 Nov 05]. Available from [King Guide to Parenteral Admixtures \(health.wa.gov.au\)](http://kingguide.to/parenteral-admixtures)

Liu T, Lewis T, Gauda E, Gobburu J, Ivaturi V. Mechanistic population pharmacokinetics of morphine in neonates with abstinence syndrome after oral administration of diluted tincture of opium. J Clin Pharmacol. 2016;56(8):1009-18.

Phelps SJ, Hagemann TM, Lee KR, Thompson AJ. Pediatric Injectable Drugs: The Teddy Bear Book. Eleventh ed. Bethesda (Maryland): American Society of Health-System Pharmacists; 2018. P 626

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