



CLONIDINE

Indication	<ul style="list-style-type: none"> • Neonatal abstinence syndrome (NAS) adjunct¹ • Sedation and analgesia² • Acute and chronic hypertension² 		
ORAL	Presentation	<ul style="list-style-type: none"> • Oral solution: 10 microgram in 1 mL <ul style="list-style-type: none"> ◦ Available: Mater Pharmacy Production Services • Tablet: 100 microgram 	
	Dosage ^{1,3} (NAS)	<ul style="list-style-type: none"> • 0.5–1 microgram/kg every 6 hours <ul style="list-style-type: none"> ◦ May increment dose by 25% every 24 hours • Maximum dose of 12 microgram/kg/day 	
	Dosage ^{3,4} (sedation)	<ul style="list-style-type: none"> • 0.5–1 microgram/kg every 8 hours • Maximum dose of 2 microgram/kg every 6 hours 	
	Dosage ⁴ (hypertension)	<ul style="list-style-type: none"> • 0.5–2.5 micrograms/kg every 6 to 8 hours 	
	Preparation (oral solution)	<ul style="list-style-type: none"> • Shake before use 	
	Preparation* (tablet; if oral solution not available)	<p><u>Dose less than 1.5 microgram*</u></p> <ul style="list-style-type: none"> • Add 100 microgram tablet to 20 mL water for injection • Stir/shake until dispersed (approximately 2 minutes) • Draw up 10 microgram (2 mL) from the dispersed solution and make up to 5 mL total volume with water for injection <ul style="list-style-type: none"> ◦ <i>Concentration now equal to 2 microgram/mL</i> <p><u>Dose 1.5 microgram or more*</u></p> <ul style="list-style-type: none"> • Add 100 microgram tablet to 20 mL water for injection • Stir/shake until dispersed (approximately 2 minutes) <ul style="list-style-type: none"> ◦ <i>Concentration now equal to 5 microgram/mL</i> 	
Administration	<ul style="list-style-type: none"> • Draw up prescribed dose into oral/enteral syringe • Oral/OGT/NGT without regard for feeds¹ 		

Acute hypertension			
INTRAVENOUS	Presentation	<ul style="list-style-type: none"> • Ampoule: 150 microgram in 1 mL 	
	Dosage ⁴	<ul style="list-style-type: none"> • 10 microgram/kg over 4 hours <ul style="list-style-type: none"> ◦ Additional 5 microgram/kg infused over 2 hours may be given 	
	Preparation	<ul style="list-style-type: none"> • Draw up 150 microgram (1 mL) and make up to 15 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> ◦ <i>Concentration now equal to 10 microgram/mL</i> 	
	Administration	<ul style="list-style-type: none"> • Prime the infusion line and reduce total syringe volume to the prescribed dose • IV infusion via syringe driver pump over 4 hours <ul style="list-style-type: none"> ◦ On completion, disconnect syringe and infusion line ◦ Flush access port at same rate as infusion 	

Sedation and analgesia via IV INFUSION	
INTRAVENOUS	<p>Presentation</p> <ul style="list-style-type: none"> • Ampoule: 150 microgram in 1 mL
	<p>Dosage⁴ (sedation)</p> <ul style="list-style-type: none"> • 0.2 microgram/kg/hour <ul style="list-style-type: none"> ○ Titrate to a maximum of 1 microgram/kg/hour
	<p>Dosage⁵ (analgesia)</p> <p>37 weeks or more *current gestation age</p> <ul style="list-style-type: none"> • 0.5–2 microgram/kg/hour <ul style="list-style-type: none"> ○ If self-ventilating, start at 0.5 microgram/kg/hour and adjust with caution
	<p>Preparation (step 1)</p> <p>If less than 3 kg</p> <ul style="list-style-type: none"> • Draw up 150 microgram (1 mL) and make up to 15 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> ○ <i>Concentration now equal to 10 microgram/mL</i> <p>If 3 kg or more</p> <ul style="list-style-type: none"> • Draw up 300 microgram (2 mL) and make up to 30 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> ○ <i>Concentration now equal to 10 microgram/mL</i>
	<p>Preparation (step 2) <i>*per kg calculation</i></p> <p>After step 1: (for all weights)</p> <ul style="list-style-type: none"> • From the 10 microgram/mL solution prepared at step 1 • *Draw up <u>50 microgram/kg</u> and make up to 50 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> ○ <i>Concentration now equal to 1 microgram/kg/mL</i> ○ <i>Infused at 1 mL/hour delivers 1 microgram/kg/hour</i>
	<p>Administration</p> <ul style="list-style-type: none"> • IV infusion via syringe driver pump at prescribed rate <ul style="list-style-type: none"> ○ On completion, disconnect syringe and infusion line ○ Flush access port at same rate as infusion



Sedation and analgesia via IV INJECTION	
INTRAVENOUS	<p>Presentation</p> <ul style="list-style-type: none"> • Ampoule: 150 microgram in 1 mL
	<p>Dosage⁴</p> <ul style="list-style-type: none"> • 0.5–1 microgram/kg every 8 hours • Maximum dose of 2 microgram/kg every 6 hours
	<p>Preparation (step 1)</p> <ul style="list-style-type: none"> • Draw up 150 microgram (1 mL) and make up to 5 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> ○ <i>Concentration now equal to 30 microgram/mL</i>
	<p>Preparation (step 2)</p> <p>After step 1</p> <ul style="list-style-type: none"> • From the 30 microgram/mL solution prepared at step 1 • Draw up 50 microgram (1.7 mL) and make up to 50 mL total volume with 0.9% sodium chloride <ul style="list-style-type: none"> ○ <i>Concentration now equal to 1 microgram/mL</i>
	<p>Administration</p> <ul style="list-style-type: none"> • Draw up prescribed dose plus sufficient to prime the infusion line • Reduce syringe volume to prescribed dose • IV injection via syringe driver pump over 15 minutes⁶ <ul style="list-style-type: none"> ○ On completion, disconnect syringe and infusion line ○ Flush access port at same rate as infusion



Special considerations	<ul style="list-style-type: none"> • Maximum concentration⁶ of IV dose is 30 microgram/mL • Titrate doses based on clinical effect⁷ <ul style="list-style-type: none"> ○ Abrupt discontinuation may result in symptoms of withdrawal (e.g. agitation, tremor) or raised blood pressure¹ ○ If treatment longer than 5 days, gradually reduce when discontinuing therapy¹, (e.g. wean every 48–72 hours by 50% of current dose) • Metabolism <ul style="list-style-type: none"> ○ Elimination half-life 44–72 hours and is prolonged in patients with renal impairment¹ ○ Metabolised in the liver; clearance rapidly increases with postnatal age over the first month of life when reaches 70% of adult clearance achieved¹ ○ Dose reduction may be required in hepatic or renal impairment² • *Tablet preparation for oral route • Choose the preparation method (final concentration of 2 or 5 microgram/mL) based on the final dose volume (mL) that is best suited to the baby
Monitoring	<ul style="list-style-type: none"> • Continuous ECG • Blood pressure¹ (consider intra-arterial monitoring) <ul style="list-style-type: none"> ○ 4 hourly for the first 2 days of therapy and then 12 hourly¹ ○ May reduce frequency if stable on prolonged course at SMO discretion ○ For 48 hours post cessation to monitor for rebound hypertension¹ ○ Level of sedation • NAS evaluation using recognised tools^{1,8}
Compatibility	<ul style="list-style-type: none"> • IV fluids <ul style="list-style-type: none"> ○ 0.9% sodium chloride⁶ • Drugs: Limited information available, consult pharmacist⁶
Incompatibility	<ul style="list-style-type: none"> • Fluids <ul style="list-style-type: none"> ○ No information⁶ • Drugs <ul style="list-style-type: none"> ○ Limited information⁶
Interactions	<ul style="list-style-type: none"> • May potentiate effect of other sedatives, hypnotics, anti-hypertensives, beta-blockers⁹ • Concurrent use with NSAIDs may reduce the therapeutic effect of clonidine due to their sodium and water-retaining effects⁹
Stability	<ul style="list-style-type: none"> • Ampoule <ul style="list-style-type: none"> ○ Store below 25 °C¹⁰ Protect from light¹⁰ • Oral solution <ul style="list-style-type: none"> ○ Refrigerate. Discard 4 weeks after opening or 8 weeks after production date (whichever is sooner) as per local infection control policy (limited evidence) • Oral solution from tablet <ul style="list-style-type: none"> ○ Discard remainder
Side effects	<ul style="list-style-type: none"> • Blood pathology: thrombocytopenia³, transient and mild abnormal LFT³, fever³, transient blood glucose level increase⁹ • Circulatory: hypotension³, prolonged QT interval⁹, bradycardia³, atrioventricular block (rare)⁷, arrhythmias⁷, angioedema³ • Digestive: constipation⁷, vomiting⁹ • Integumentary: rash (uncommon)⁷ • Nervous: sedation⁷
Actions	<ul style="list-style-type: none"> • Centrally acting alpha-2-adrenergic agonist¹ • Stimulation of alpha-adrenoreceptors in the brain stem results in decreased sympathetic outflow from the CNS and in reductions in peripheral resistance, heart rate, and blood pressure¹
Abbreviations	<p>*Current gestational age is the same as <i>postmenstrual age</i> (PMA)</p> <p>CNS: central nervous system, IM: intramuscular, IV: intravenous, LFT: liver function test, OGT: orogastric, NGT: nasogastric, NSAID: nonsteroidal anti-inflammatory drugs, PN: parenteral nutrition, SMO: senior medical officer</p>
Keywords	Sedation, analgesia neonatal abstinence syndrome, NAS, hypertension, clonidine

The Queensland Clinical Guideline *Neonatal Medicines* 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.

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Document history

ID number	Effective	Review	Summary of updates
NMedQ22.085-V1-R27	26/07/2022	26/07/2027	Endorsed by Queensland Neonatal Services Advisory Group (QNSAG)
NMedQ22.085-V2-R27	31/03/2023	26/07/2027	Amendment: preparation instructions for tablet added

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