South Australian Neonatal Medication Guidelines

Clonidine

150 microgram/mL injection, 20 microgram/mL oral suspension* 100 microgram tablet

Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Use only after consultation with Neonatologist, Acute Pain Team, Anaesthetist or Nephrologist.

Dose and Indications

Adjunct agent for management of Acquired Opioid Dependency

Adjunct agent for postoperative analgesia and sedation

Corrected gestational age greater than or equal to 37 weeks*:

Oral

0.5 to 1 microgram/kg, every 6 hours. Maximum 2 microgram/kg/dose every 6 hours

Intravenous intermittent dose

1 microgram/kg every 8 hours. Maximum of 2 microgram/kg every 6 hours

Intravenous continuous infusion (where bolus dosing not tolerated, or where bolus dosing has been optimised)

0.5 to 1 microgram/kg/hour

**Limited evidence in the use of preterm babies. Use in babies under 37 corrected weeks under consultant discretion only.*

Refer to Monitoring section for pre-dose blood pressure monitoring

Hypertension

Oral

0.5 to 2.5 microgram/kg/dose every 6 to 8 hours

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Discontinuation and Weaning

Do not discontinue clonidine abruptly. Clonidine requires weaning if used for more than 5 days to avoid side effects, such as rebound hypertension.

The clonidine dose should be weaned by about 50% each day for 2 to 3 days (reflecting an average half-life of 17 hours in neonates) before ceasing the drug.

Monitor for tachycardia, hypertension, sweating and agitation (however these may also be opioid withdrawal symptom).

Where appropriate, intravenous clonidine can be switched to the oral route for the weaning process. The oral bioavailability of clonidine is approximately 75 to 95%, therefore a 1:1 conversion of intravenous to oral dosing can be considered.

Preparation and Administration

Oral

Can be given without regards to feeds.

Oral Suspension

The 20 microgram/mL oral suspension is manufactured at the Women's & Children's Hospital Pharmacy Production

Oral suspension - 20 microgram/mL clonidine

Dose	2 microgram	4 microgram	6 microgram	8 microgram
Volume	0.1 mL	0.2 mL	0.3 mL	0.4 mL

Oral Tablets

The oral tablet can be used to make a solution for enteral use.

Disperse ONE 100 microgram tablet in 10 mL sterile water to make a final concentration of 10 microgram/mL clonidine solution. Shake or stir until an even dispersion is formed and then measure the dose immediately. Discard any remaining solution after use.

Oral solution using tablet - 10 microgram/mL clonidine

Dose	2 microgram	4 microgram	6 microgram	8 microgram
Volume	0.2 mL	0.4 mL	0.6 mL	0.8 mL

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Intravenous Intermittent Dose

There are **TWO STEPS** to this process

STEP ONE: Draw up 1 mL of clonidine (150 microgram/mL) and add to 4 mL of sodium chloride 0.9% to make a final volume of 5 mL with a final concentration of 30 microgram/mL

STEP TWO: Draw up 0.33 mL of this solution (30 microgram/mL) and add to sodium chloride 0.9% to make a final volume of 10 mL with a concentration of 1 microgram/mL

Dose	1 microgram	2 microgram	3 microgram	4 microgram
Volume	1 mL	2 mL	3 mL	4 mL

Administer over at least 10 minutes. Transient hypertension may precede hypotension if IV injection is given too rapidly.

Intravenous Continuous Infusion

Use a dedicated line to avoid unintentional bolus.

Formulae

To calculate infusion rate (mL/hr):

$$\text{Rate (mL/hr)} = \frac{\text{dose (microgram/kg/hour) x weight (kg)}}{\text{Strength (microgram/mL)}}$$

To calculate the dose (microgram/kg/hour):

$$\text{Dose (microgram/kg/hour)} = \frac{\text{Rate (mL/hr) x Strength (microgram/mL)}}{\text{Weight (kg)}}$$

Clonidine 6 microgram/mL

Dilute 2 mL of clonidine injection (150 microg/mL) with 48 mL of 0.9% sodium chloride (to a total of 50 mL). This makes a **6 microgram/mL** solution.

The dilution solution is stable at room temperature for 24 hours. Discard remaining solution.

Rate (mL/hr)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1	Rate (mL/hr)
Weight (kg)	Approximate microgram/kg/hour									Weight (kg)
2.5	0.48	0.72	0.96	1.20						2.5
3	0.40	0.60	0.80	1.00	1.20					3
3.5	0.34	0.51	0.69	0.86	1.03	1.20				3.5
4	0.30	0.45	0.60	0.75	0.90	1.05	1.20			4
4.5	0.27	0.40	0.53	0.67	0.80	0.93	1.07	1.20		4.5

Compatible Fluids

Sodium chloride 0.9%, glucose 5%

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Adverse Effects

Common

Hypotension, bradycardia, increased mucus secretions, dry mouth, oedema, flushing, drowsiness

Rare

AV block, arrhythmias

Monitoring

- Monitor heart rate and blood pressure every 4 hours the first 2 days of therapy and every 12 hours thereafter; monitor blood pressure closely for 48 hours after discontinuing to assess for rebound hypertension.
  - Blood pressure should be monitored pre-dose. If hypotensive, delay dose and repeat blood pressure in 30 minutes.
- Oxygen saturation
- Continuous ECG
- Level of sedation
- Pain score if appropriate

Practice Points

- Contraindicated in heart block or severe ventricular dysfunction
- At present, evidence is insufficient to show the efficacy and safety of clonidine for sedation and analgesia in preterm infants
- Abrupt discontinuation may result in symptoms of withdrawal (e.g, agitation, tremor, rapid rise of blood pressure); a gradual reduction of dosage is recommended when therapy is discontinued (see Discontinuation and Weaning)
- Clonidine is y-site compatible with fentanyl and morphine (at concentrations listed in SA NeoMed Guidelines). There are mixed y-site compatibility reports with midazolam, please contact pharmacist. There is no data available regarding y-site compatibility with parenteral nutrition solutions.
- In renal or liver impairment, start with lower dose and adjust according to response
- In patients on both a beta-blocker (e.g. propranolol) and clonidine and where withdrawal of clonidine is necessary, withdraw the beta-blocker first and several days before clonidine withdrawal, the slowly withdraw clonidine

References

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