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## Milrinone for neonates

### BRIEF ADMINISTRATION GUIDE

For detailed information refer to [The Australasian Neonatal Medicines Formulary \(ANMF\) milrinone guideline](#)



**Note:** Shaded text indicates where Health NZ Waikato practice differs from ANMF

### 1. Medicine

#### 1.1. Indications

- Refractory pulmonary hypertension
- Low cardiac output
- Post PDA ligation syndrome

*Note: consult with SMO if considering milrinone use*

#### 1.2. Route and Presentation

Intravenous

- Supplied as milrinone lactate 10mg in 10mL ampoule
  - pH 3.2 - 4

#### 1.3. Dose

**Preterm** infant: 0.2 microgram/kg/minute. Be cautious when increasing the dose due to the risk of hypotension.

**Term** infant: 0.33 – 0.75 microgram/kg/minute

- A loading dose is not recommended in preterm neonates and should be used with caution in term neonates due to the risk of hypotension
- Reduce dose in renal dysfunction (initiate according to degree of dysfunction and individualise titration based on haemodynamic parameters and clinical response – discuss with SMO) to prevent medicine accumulation (half-life significantly increased)

### 2. Preparation and Administration

#### 2.1. Compatible fluids

Sodium chloride 0.9%, sodium chloride 0.45%, glucose 5%, glucose 10% (untested)

#### 2.2. Administration Method

##### Continuous IV Infusion

- Select the **standard concentration** of milrinone required based on the weight of the infant and in the context of any fluid restrictions, and prepare as per the table below:

Final Milrinone Concentration	50 microgram/mL	200 microgram/mL
Volume of milrinone (1 mg/mL)	2.5 mL	6 mL
Volume of compatible fluid	47.5 mL	24 mL
Total volume	50 mL	30 mL

- Administer by continuous intravenous infusion via a syringe driver, preferably via a central line
- Note: Taper the infusion slowly when discontinuing treatment

$$\text{Rate (mL/hr)} = \frac{60 \times \text{Dose (microgram/kg/min)} \times \text{Weight (kg)}}{\text{Concentration (microgram/mL)}}$$

#### 2.3. Monitoring

- Continuous cardiac monitoring
- Blood pressure, heart rate
- Fluid balance and electrolytes
- Renal function

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### 2.4. Storage and Stability

- Diluted solution can be stored at room temperature for 24 hours

### 2.5. Competency for Administration

This procedure is carried out by, or under, the direct supervision of a registered nurse/registered midwife who holds current Health NZ Waikato Generic IV / Medicine Administration skills verification plus Guardrails competency (if administering IV) as well as Neonatal specific competency NCV/NAC (if administering via CVAD).

### 2.6. Guardrails

Milrinone is not currently Guardrail profiled on the CC syringe driver for NICU, but will be included at the next upload. Infusions will need to be run as “mL/hr” until milrinone is added (see calculation in section 2.2).

## 3. References

- Australian Neonatal Medicines Formulary. Milrinone Drug Guideline. 2021. Available from: [www.anmfonline.org/wp-content/uploads/2021/06/milrinone-18022021-3.0.pdf](http://www.anmfonline.org/wp-content/uploads/2021/06/milrinone-18022021-3.0.pdf)
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- King Edward Memorial Hospital & Perth Children’s Hospital Neonatal Milrinone guideline. [www.kemh.health.wa.gov.au/~media/HSPs/NMHS/Hospitals/WNHS/Documents/Clinical-guidelines/Neonatal-MPs/Milrinone.pdf](http://www.kemh.health.wa.gov.au/~media/HSPs/NMHS/Hospitals/WNHS/Documents/Clinical-guidelines/Neonatal-MPs/Milrinone.pdf)
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- Canterbury DHB Neonatal Services Milrinone Drug Information Sheet. June 2022. Available from: <https://edu.cdhb.health.nz/Hospitals-Services/Health-Professionals/Neonatal-Clinical-Resources/Neonatal-Drug-Information-Sheets/Documents/Milrinone.pdf>
- Notes on Injectable Drugs. NZ Hospital Pharmacists’ Association. Accessed via [www.noids.nz/wp-content/uploads/2020/11/Milrinone-S.pdf](http://www.noids.nz/wp-content/uploads/2020/11/Milrinone-S.pdf)
- Australian Injectable Drugs Handbook 9<sup>th</sup> edition, 2023. Society of Hospital Pharmacists of Australia.

## Document Ownership

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## Milrinone for neonates

### Appendix A - Infusion tables to assist concentration selection

**Table 1:** Infusion rates when using milrinone concentration 50 microgram/mL

(most useful for babies <2kg)

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Weight (kg)	Approximate microgram/kg/min									
0.5	0.17	0.33	0.5	0.67	0.83	1	1.17	1.33	1.5	1.67
1	0.08	0.17	0.25	0.33	0.42	0.5	0.58	0.67	0.75	0.83
1.5	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.44	0.5	0.56
2	0.04	0.08	0.13	0.17	0.21	0.25	0.29	0.33	0.38	0.42
2.5	0.03	0.07	0.1	0.13	0.17	0.2	0.23	0.27	0.3	0.33
3	0.03	0.06	0.08	0.11	0.14	0.17	0.19	0.22	0.25	0.28

**Table 2:** Infusion rates when using milrinone concentration 200 microgram/mL

(most useful for babies >2kg)

Rate (mL/hr)	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Weight (kg)	Approximate microgram/kg/min									
1	0.33	0.67	1	1.33	1.67	2	2.33	2.67	3	3.33
1.5	0.22	0.44	0.67	0.89	1.11	1.33	1.56	1.78	2	2.22
2	0.17	0.33	0.5	0.67	0.83	1	1.17	1.33	1.5	1.67
2.5	0.13	0.27	0.4	0.53	0.67	0.8	0.93	1.07	1.2	1.33
3	0.11	0.22	0.33	0.44	0.56	0.67	0.78	0.89	1	1.11
3.5	0.10	0.19	0.29	0.38	0.48	0.57	0.67	0.76	0.86	0.95
4	0.08	0.17	0.25	0.33	0.42	0.5	0.58	0.67	0.75	0.83
4.5	0.07	0.15	0.22	0.3	0.37	0.44	0.52	0.59	0.67	0.74
5	0.07	0.13	0.2	0.27	0.33	0.4	0.47	0.53	0.6	0.67