The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynyk and Fineout-Overholt (2011).

I Evidence obtained from a systematic review of all relevant randomised control trials.

II Evidence obtained from at least one well designed randomised control trial.

III Evidence obtained from well-designed controlled trials without randomisation.

IV Evidence obtained from well designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case- series

V Evidence obtained from systematic reviews of descriptive and qualitative studies

VI Evidence obtained from single descriptive and qualitative studies

VII Expert opinion from clinicians, authorities and/or reports of expert committees or based on physiology

Melynyk, B. & Fineout-Overholt, E. (2011). Evidence-based practice in nursing & healthcare: A guide to best practice (2nd ed.). Philadelphia: Wolters Kluwer, Lippincott Williams & Wilkins.

National Health and Medical Research Council (2009). NHMRC levels of evidence and grades for recommendations for developers of guidelines (2009). Australian Government: NHMRC. http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/evidence_statement_form.pdf

OCEBM Levels of Evidence Working Group Oxford (2011).The Oxford 2011 Levels of Evidence. Oxford Centre for Evidence-Based Medicine. http://www.cebm.net/index.aspx?o=1025

Databases searched:	☐ CINAHL (Ebsco)	☐ Medline (Ebsco)	☐ Pubmed (NLM)	☐ Nursing (Ovid)	☐ Emcare (Ovid)	☐ Other List: _____
Keywords used:	Milrinone, Paediatric, Inotrope, nursing considerations					
Search limits:	Minimal Paediatric information					
Other search comments:						

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Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
Victorian Government. (2018, December). *Milrinone*. Safer Care Victoria. Retrieved 2022, from https://www.safercare.vic.gov.au/clinical-guidance/critical/milrinone	VII	Milrinone Half-life is approximately 2-4 hours. Avoid administration via lines where other drugs or fluids may be bloused or flushed. It is common practice to omit the loading dose as it is associated with hypotension. Monitoring – continuous blood pressure, cardiac monitoring, fluid balance and electrolytes. Side effects: Supraventricular and ventricular arrhythmias and hypotension.
O'Donovan, K. (2013). Milrinone therapy in adults with heart failure. *Nurse Prescribing*, *11*(10), 493–498. https://doi.org/10.12968/npre.2013.11.10.493	VII	Milrinone's primary effects are contractility and vasodilation, therefore, increasing cardiac output, lowering pulmonary pressures and reducing the myocardial pump workload. Milrinone is an inotrope with vasodilatory properties. Adverse effects associated with its therapy include hypotension and the onset of atrial and ventricular arrhythmias. It is advocated that the patients heart rate, rhythm, blood pressure and clinical response to the therapy are monitored and that they are observed regarding improvement or deterioration in clinical status as a result of the therapy. Milrinone therapy is administered intravenously hence infusion site reaction is common. Monitoring of the infusion site for redness, inflammation and erythema is therefore recommended.

Ruoss, L. J., McPherson, C., & DiNardo, J. (2015). Inotrope and vasopressor support in neonates. *NeoReviews*, *16*(6), 351–361. https://doi.org/10.1542/neo.16-6-e351	VII	Milrinone has primarily been investigated in infants for the prevention and treatment of low cardiac output after cardiac surgery. Milrinone decreases systemic and pulmonary vascular resistance while increasing cardiac index.
McNamara, P. J., Laique, F., Muang-In, S., & Whyte, H. E. (2006). Milrinone improves oxygenation in neonates with severe persistent pulmonary hypertension of the newborn. *Journal of Critical Care*, *21*(2), 217–223. https://doi.org/10.1016/j.jcrc.2006.01.001	VI	The addition of intravenous milrinone to neonates with severe PPHN with poor iNO responsiveness may lead to early and sustained improvements in oxygenation without compromising haemodynamic status.
Loomba, R. S., Dorsey, V., Villarreal, E. G., & Flores, S. (2019). The effect of milrinone on hemodynamic and gas exchange parameters in children. *Cardiology in the Young*, *30*(1), 55–61. https://doi.org/10.1017/s1047951119002865	V	Patients whom received milrinone infusion had greater cardiac output, greater left ventricle shortening fraction, lower right ventricular systolic pressure, and lower serum lactate levels. Systolic blood pressure, mean arterial blood pressure and arterial oxygen concentration did not significantly change with administration of milrinone. Milrinone was found to have several beneficial hemodynamic effects in children during critical illness when used at usual clinical doses.