

## HEMODYNAMICS OF MILRINONE LOADING IN CRITICALLY ILL CHILDREN

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### Introduction

The phosphodiesterase inhibitor milrinone is the treatment of choice in low cardiac output states post congenital heart surgery and in pediatric septic shock. Due to its long half life a loading dose is recommended before infusion. Many physicians, concerned that the well documented hypotension in the clinical setting is too great a risk, commence infusion without loading so delaying drug effect.

**Hypothesis:** Non-invasive hemodynamic assessment may allow safe milrinone loading by allowing monitoring of appropriate compensatory mechanisms and interventions.

**Methods:** Prospective observational convenience study of 7 consecutive children (3-6yrs) admitted to a tertiary PICU requiring milrinone. Hemodynamics were assessed by non invasive Doppler ultrasound cardiac output device (USCOM) prior to and 5, 15, 30 and 60 minutes (mins) after milrinone (50 mcg/kg) load over 10mins. Diagnosis: 4 low cardiac output index (CI) septic shock (2 meningococcal, 1 pneumococcal, 1 Klebsiella), 1 post-viral cardiomyopathy, 1 metabolic acidosis/propionic acadaemia with acute cardiomyopathy, 1 anthracycline cardiomyopathy.

**Results:** Milrinone load leads to a drop in SVR<sub>i</sub>, but no early change in CI. Hypotension, though seen, is a manifestation of vasodilation and easily addressed. In children loaded with milrinone, in this study, CI was increased at 60 mins.

**Conclusions:** Milrinone loading is safe, and leads to improvement of low CI states with base-line high SVR<sub>i</sub>. The major concern regarding hypotension may be less important if more significant hemodynamics parameters are known.

	Pre Milrinone	5 mins	15 mins	30mins	60mins
HR	135 (18)	144 (22)	133 (15)	124(12)	120(11)
CI l/min/m <sup>2</sup>	2.1 (0.6)	2.1 (0.4)	2.4 (0.8)	2.9 (0.4)	3.4 (0.5)*
SV <sub>i</sub> ml/min/m <sup>2</sup>	28.6 (5.3)	24.2 (6.7)	22.4 (5.0)	23.6 (4.2)	22 (7.0)
CVP mmHg	15 (2.8)	14.4 (3.5)	15.5 (4.2)	12.5 (3.7)	15.0 (3.0)
MABP mmHg	58 (6.8)	49.5 (3.6)	44 (4.5)	45 (4.2)	52.1 (5.3)
SVR <sub>i</sub> dyn/s/cm/m <sup>2</sup>	1212 (354)	765 (226)	566*(255)	525 (288)	744(296)
ScvO <sub>2</sub> %	48.5 (3.6)	58 (4.8)	66.7 (5.1)	65.5 (8.9)	68.0 (8.5)

\* P < 0.01 compared to pre-milrinone