



**Calamandrei M, Mirabile L, Muschetta S, Gensini GF, De Simone L, Romano SM.**

Department of Anaesthesia and Intensive Care, Meyer Children's Hospital, Florence, Italy.

m.calamandrei@meyer.it

**OBJECTIVE:** To assess cardiac output in pediatric patients with the pressure recording analytical method (PRAM) and the Doppler echocardiography method. PRAM derives cardiac output from beat-by-beat analysis of the arterial pressure profile (systolic and diastolic phase) in the time domain.

**DESIGN:** A prospective observational study.

**SETTING:** Pediatric intensive care unit at a tertiary care children's hospital.

**PATIENTS:** Forty-eight patients between the ages of 1 month and 18 yrs.

INTERVENTIONS: Femoral or radial artery catheterization and mechanical ventilation.

MEASUREMENTS AND MAIN RESULTS: Cardiac output was simultaneously estimated by Doppler echocardiography and PRAM. Cardiac output values obtained by Doppler echocardiography ( $2.7 \pm 1.6$  L/min, range 0.92-8.20) were significantly correlated with those estimated by PRAM ( $2.6 \pm 1.7$  L/min, range 0.89-7.48;  $r^2 = .99$ ,  $p < .01$ ). The mean difference between the two estimates was  $0.12 \pm 0.27$  L  $\times$  min<sup>(-1)</sup> (95% confidence interval, -0.54 to 0.77 L  $\times$  min<sup>(-1)</sup>).

CONCLUSIONS: In the range of ages evaluated, PRAM provides reliable estimates of cardiac output when compared with noninvasive techniques.

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