Publication Brief

Determination of Cardiac Output by Ultrasound Dilution Technique in Infants and Children: A Validation Study Against Direct Fick Principle

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BACKGROUND
Cardiac output (CO) monitoring is essential in treating critically ill children.

OBJECTIVE
To validate the COstatus® system (Transonic Systems Inc., Ithaca, NY) against the “gold standard Fick

STUDY
- 26 children (18 males, 8 females) (median age: 6 years 2 months; median weight: 19.2 kg) Patients with heart defects were excluded from the study.
- CO determined by Fick measurement of O2 consumption and invasive oximetry
- Three independent measurements of CO were conducted by ultrasound dilution technique.
- For a complete group and for a subgroup with body weights <20 kg (n = 14), Fick and ultrasound dilution values compared using Bland-Altman approach and linear regression analysis

RESULTS

STUDY’S CONCLUSIONS
- COstatus®, using ultrasound dilution technique of determining CO, agree with Fick-derived CO data. Both technique were found to be equivalent and interchangeable.
- Ultrasound dilution is a valid and applicable method for repetitive CO measurements in infants and children.

TAKE HOME POINTS
- Excellent validation study for ultrasound dilution technique in infants and children.
- Study refutes Floh et al’s unfavorable comparison between the two techniques.

REFERENCE