**Publication Brief**

**Determination of Cardiac Output in Neonatal Foals by Ultrasound Velocity Dilution and Its Comparison to the Lithium Dilution Method**

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**OBJECTIVE**

To compare cardiac output (CO) measured by use of lithium dilution (LiDCO) and ultrasound velocity dilution (UDCO) in anesthetized foals in conditions of high, intermediate, and low CO.

**STUDY**

- Six neonatal foals 1-3 days of age (38-45 kg) were anesthetized and instrumented to measure direct blood pressure, heart rate and arterial blood gases. CO was measured by use of LiDCO and UDCO techniques.
- Measurements were obtained from each animal at baseline and during low, intermediate, and high CO states.
- Measurements were converted to cardiac index (CI = CO/BSA) values for statistical analysis.
- Agreement between the two methods was determined using Bland & Altman analysis and concordance correlation coefficients.

**RESULTS**

- LiDCO determinations of CO ranged between 4.0 and 14.0 L/min resulting in cardiac index ranging between 75.5 and 310 mL/kg/min.
- There was no significant effect of blood pressure variation on bias or relative bias (P=0.62 and 0.93, respectively).
- The mean bias and relative bias of UDCO (+/-SD) compared with LiDCO were -20.1 +/- 39.2 mL/kg/min and -7.7 +/- 23.4%, respectively.
- The concordance correlation coefficient between LiDCO and UDCO was 0.833

**CONCLUSION**

When compared with LiDCO, the UDCO technique has acceptable clinical utility for measuring CO in healthy anesthetized newborn foals.

**TRANSONIC COSTATUS® ADVANTAGES**

- A major advantage of the ultrasound dilution method is that it non-toxic indicator.
- Indicator is not lost during passage through the heart and lungs.
- COstatus® flow/dilution sensors are reusable.

**REFERENCES**