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## Resuscitation Science Symposium

**Session Title: Session VII: Best Original  
Resuscitation Science**

## Abstract 80: Observations of End-Tidal CO<sub>2</sub> and Invasive Cardiac Output Measurements During Mechanical CPR in a Porcine Model of Cardiac Arrest

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**Introduction:** A number of physiological indicators were explored to determine if ICG amplitude could be used as a determinant of effective CPR to guide lay responders in administering optimized cardiac massage thereby improving survival rates from out of hospital cardiac arrest.

**Methods:** A total of seven porcine models around 52.8±9kg were used. End-tidal CO<sub>2</sub> (ETCO<sub>2</sub>), Cardiac Output (CO), Carotid Flow and the Impedance Cardiogram (non-invasive measure of cardiac output) were utilized as a basis for detecting the presence of effective CPR. Ethical approval was granted by the Northern Ireland Home Office. Models were anaesthetised using Propofol and Isoflurane and connected to a Datex Ohmeda<sup>®</sup> monitor. Carotid flow and coronary perfusion pressure were measured via the carotid and thermodilution via the jugular. Recordings from each experiment were acquired using HEM<sup>®</sup> Notocord software for analysis.

**Results:** ETCO<sub>2</sub> levels averaged 23.3 mmHg during CPR compared to the models who did not receive

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CPR producing values close to of  $3\pm 1$ mmHg. Cardiac Output values of  $>22\%$  of the normal CO were achieved which, reported as adequate for ROSC. Carotid Flow increased with depth of CPR. ICG amplitude increased with CO as did  $ETCO_2$ . The results show that the physiological parameters used were good indicators of CPR efficacy.

**Conclusions:** These findings are potentially significant in the field of resuscitation. An algorithm will incorporate the results from this study, providing feedback to the operator on the quality of CPR by measuring the ICG amplitude which can be correlated to the basic physiological parameters recorded during this study.

Author Disclosures: **R. Di Maio:** Employment; Modest; HeartSine Technologies Ltd.. **P. Crawford:** None. **H. Hartley:** None. **D. Brody:** HeartSine Technologies Ltd.. **L. Farley:** None. **J. Anderson:** HeartSine Technologies Ltd.. **J. Adgey:** None.

**Key Words:** Cardiopulmonary resuscitation • Cardiac arrest • Blood flow

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