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HEARTLIGHT - ACQUISITION TIMES FOR A NOVEL FOREHEAD HEART RATE SENSOR IN DELIVERY ROOM RESUSCITATION OF PRETERM INFANTS

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Background: Approximately 10% of newborn infants require some resuscitation at birth and heart rate (HR) is considered the best indicator of effective resuscitation. Current HR assessment, using a stethoscope, is non-continuous, can interrupt resuscitation and is estimated incorrectly in 20-30% of cases. Pulse oximetry (PO) is not specifically designed for newborn HR monitoring and can be unreliable in low perfusion states. A simple forehead HR sensor would be advantageous allowing quick placement, continuous monitoring and improved reliability in low perfusion states.

Aims: Further development of a user friendly, quick and reliable forehead HR sensor for use during resuscitation of preterm infants in the delivery room.

Methods: Our novel forehead HR sensor (HeartLight), utilises patented reflectance photoplethysmography (PPG), to rapidly detect HR and can be sited in ~5 seconds. We investigated acquisition time of HeartLight versus PO at birth in preterm infants in the delivery room (gestation 32+6weeks ±20days). Time to acquire a reliable signal was measured from the time each sensor was applied.

Results: Median time to obtain 1 and 2 seconds of PPG signal were calculated (table).

Device (n=10)	Time for 1 second (median+IQR)	Time for 2 seconds (median+IQR)
HeartLight	5.8 (3.1-9.7)s	8.1 (6.4-18.8)s
Masimo PO	10.6 (8.1-17.0)s	18.2 (9.6-29.9)s

[Acquisition times]

Conclusion: HeartLight rapidly detects a pulsatile signal in newborn preterm infants, more quickly than PO. HeartLight may offer a rapid, real time monitoring solution for HR during delivery room resuscitation and is undergoing further clinical trials.

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