

DELIVERY ROOM MANAGEMENT

Pulse Oximetry Measures a Lower Heart Rate at Birth Compared with Electrocardiography

Background

An appropriate heart rate (HR) after birth is the most valuable indicator of newborn resuscitation efficacy. According to neonatal resuscitation guidelines pulse oximetry should be used in conjunction with clinical assessment in order to estimate HR after birth. Finer et al. showed that an ECG can provide a reliable HR faster and of equivalent reliability as pulse oximetry. Van Vonderen et al. compared HR values that were acquired from ECG and pulse oximetry sensor every 30 seconds for the first 10 minutes of life.

Summary of results

48 infants were included. A reliable HR value was acquired after 82(26) from ECG and 99(33) seconds from pulse oximetry [mean (SD), $p=.001$]. HR acquired from pulse oximetry was significantly lower in the first 8 minutes in comparison with ECG. The largest difference was 60s and 120s after birth. Pulse oximetry showed >30% more infants with bradycardia (<100bpm) 60, 90 and 120 seconds after birth than ECG ($p=.05, .04, .01$ accordingly).

Strength

This is the first study to compare the reliability of the acquired HR values from pulse oximetry with those from ECG for the first 10 minutes after birth. The significant lower HR values acquired from pulse oximetry.

Limitations

The small amount of infants included.

Practical conclusion

The results of the study confirmed that ECG is the faster way to acquire HR after birth. The significantly high number of false acquired bradycardias from pulse oximetry in the first 2 minutes of life could lead to unnecessary interventions. Due to this fact, auscultation of the HR remains the most reliable way to estimate the HR, if there is no possibility of an ECG in the delivery room.

van Vonderen JJ, et al. Pulse Oximetry Measures a Lower Heart Rate at Birth Compared with Electrocardiography. *J Pediatr.* 2014 Oct 14. pii: S0022-3476(14)00842-7. doi: 10.1016/j.jpeds.2014.09.015. [Epub ahead of print]

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