Randomised Trial of Single Nasal Prong or Face Mask for Respiratory Support for Preterm Infants in Delivery Room (ISRCTN5061709)

Background

ILCOR recommends that newborns with inadequate breathing or HR < 100 bpm be given respiratory support via a face mask in the delivery room (DR); however, it may be more effective if given to preterm infants via a single nasal prong (AKA short nasal tube, nasopharyngeal tube).

Aims

To determine whether giving respiratory support to preterm infants via a nasal prong rather than a face mask results in fewer infants being intubated in the DR.

Methods

Normally formed infants < 31 weeks are eligible for inclusion. Randomisation is stratified by gestational age (< 28 weeks, 28–30 <) and allocation is concealed in sealed opaque envelopes. With parental consent, infants are randomised just prior to delivery to single nasal prong (ETT shortened to 5cm) or face mask (Fisher & Paykel, Auckland NZ). Infants who have apnoea, respiratory distress and/or a HR < 100 bpm receive respiratory support with a t-piece. Infants are only intubated in the DR for apnoea and/or bradycardia despite PPV, not for surfactant administration. All other aspects of treatment in the DR and NICU are the same for both groups. Relevant secondary outcomes are recorded.

Results

Since enrollment began (19.07.2010), 121 infants have been enrolled and had the primary outcome determined. We expect the primary outcome will be determinable for the total sample of 142 infants by August 2012.

Conclusions

This randomised trial will provide valuable information about the preferred interface to use when giving respiratory support to newborn preterm infants in the DR.

1803 Does Volume of the Mask Vary and Influence Measurements During Neonatal Resuscitation?

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Background

Respiratory function monitoring (RFM) could improve the efficiency of mask ventilation in preterm infants at birth. However, dead space of a mask could vary, depending on rate of pressurization and variation in hand hold, influencing measurements.

Aim

To investigate whether mask volume varies during mask ventilation and influences measured tidal volumes and calculated mask leak.

Methods

Thirty caregivers of the neonatal unit were asked to mask-ventilate a leak free mankin with pressures 25/5 cm H2O and a gas flow rate of 6 and 10 L/min. A Laerdal 0/1 mask (40 mL) was glued leak free on the face in the right position but the participant was unaware why the mask position was fixed. The participant was told that mask hold, not positioning, was tested and that it was still possible to have leak. Tidal volumes were measured using a RFM.

Results

Inspired tidal volume (V1) increased from 8.05 mL (0.76) at 6 L/min to 8.76 mL (0.75) at 10 L/min (p<0.01) and expired tidal volume (V2) from 8.15 mL (0.81) at 6 L/min to 8.55 mL (0.75) at 10 L/min (p<0.001). Median (IQR) leak was –0.90 (–3.90–1.40) % with 6 L/min and did not increase with 10 L/min (–0.62 (–3.43–1.80) %; ns) Coefficient of variance showed good to acceptable agreement for all results.

Conclusion

During mask ventilation there is very little variation in mask volume which does not influence respiratory function monitoring.

1804 Which Musical Tune Improves Synchronisation of Respiratory Support During Simulated Cardiopulmonary Resuscitation of Neonates?

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Introduction

The need to provide chest compressions and assisted inflations occurs infrequently during neonatal resuscitation. A manoeuvre to coordinate inflations and chest compressions.

Aim

To compare several musical tunes during simulated CPR and the effect on coordinating inflations and chest compression during two helper CPR.

Methods

Five different tunes (“I will survive” (120 bpm), “Radetzkimarsch” (105 bpm), “Jingle Bells” (120 bpm), “Stayin’ alive” (105 bpm), and “S.O.S.” (120 bpm)) were played for one minute during which CPR was provided by neonatal staff.

Results

During baseline median (SD) chest compressions and inflations were 80 (28) and 22 (2) per minute, respectively; 43% of chest compressions occurred during expiration, 16% during inspiration and 41% between expiration and inspiration. Only listening to “S.O.S.” improved the number of delivered chest compressions and inflations significantly compared to baseline. Mask leak and tidal volume delivery was similar while listening to any of the five musical tunes.

Conclusion

ABBA’s S.O.S significantly improved the number of chest compressions and inflations. Musical mnemonics apparently have the potential to improve mask ventilation when cardiac compressions are required. Their use should be further investigated.