

The overall mortality rate was 92%, the duration of hospitalization was between one and 137 days.

Conclusion In our study, it has been seen that NCPAP may not be an effective ventilation strategy in premature infants who are at the limits of viability. The high proportion of chorioamnionitis in this group may affect the ventilation and the following problems. These babies are needed to be care at very special settings.

1798 CLINICAL OUTCOMES OF VERY-LOW-BIRTH-WEIGHT INFANTS WHO RECEIVE NON-INVASIVE VENTILATORY SUPPORT

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Aim To evaluate the clinical outcomes of very-low-birth-weight infants received non-invasive ventilation at delivery room (DR) and NICU.

Methods This prospective cohort study included infants born before 29 weeks', and infants born at 29–30 weeks' who didn't receive antenatal steroid (ANS) from January-2009 to December 2011. During resuscitation, stabilization and transport infants were ventilated with a T-piece. All received 100 mg/kg surfactant. If respiratory drive was present, infants were extubated to nasal CPAP(NCPAP). The need for MV within the first 3-days, neonatal morbidities, mortality, and duration of hospitalization were assessed.

Results Eighty infants were evaluated. Mean gestational age(GA) and the mean birth weight(BW) of infants were 27.0±2.1 weeks, and 936.5±299.1 g, respectively. ANS was given to 27.5% of the pregnancies. The presence of PPROM and chorioamnionitis were 57.5% and 34%, respectively. Twenty-three (28.7%) infants could not be extubated at the DR, and mean GA and BW were lower than the infants who could extubated. Ten(17.5%) of 57 infants who were on NCPAP initially needed MV during their first 3-days. There wasn't any case with air leak. The incidence of pulmonary hemorrhage, PDA, NEC, İVH, BPD, ROP and mortality were 6.2%, 26.2%, 20%, 13.8%, 10%, 10% and 38.7%, respectively. The duration of respiratory support was 1–720 hours(median: 29 hours). Mean duration of hospitalization was 34.9±28.4 days.

Conclusion Our study demonstrated that NCPAP is an effective non-invasive ventilatory strategy. It didn't increase the risk of air leak. The incidences of BPD and ROP in our series were lower than reported in 'NICHD Neonatal Research Network' data.

1799 RESPIRATORY SIGNALS FROM THE EXTERNAL BODY SURFACE IN SPONTANEOUSLY BREATHING PRETERM INFANTS

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Background Synchronized noninvasive ventilation (sNIPPV) might be superior to fixed time-cycled modes. Several body-surface respiratory signals have been suggested for noninvasive synchronization. However, the quality and utility of such signals have not been evaluated comprehensively.

Methods Respiratory signals in spontaneously breathing preterm infants (n=9) were recorded simultaneously (i) respiratory impedance plethysmography (RIPabd & RIPchest), (ii) Graseby Capsule (GC), (iii) a strapless piezo sensor (Piezo), and (iv) a fluid-filled esophageal pressure catheter (Pes). A total of 5813 breaths were evaluated. Subsequently, periods of good-quality signals on all

recorded channels were analyzed with regard to signal availability, time lag relative to Pes, and variability of signals.

Results In all breaths studied 38 % of breaths showed valid signals in all channels without movement artefacts. Of all signals, RIPabd indicated the onset of inspiration earliest in time relative to the onset of inspiration detected by Pes (-52±160ms). RIPabd-signal was followed by GC-signal (+10±177ms). Both signals had a reasonable variability. The Piezo-signal was very sensitive and prone to large variations (+70±1372ms compared to Pes). RIPchest indicated inspiration later than RIPabd (+104±212ms).

Conclusion These data indicate that both RIPabd and Graseby Capsule are suitable surface sensors for non-invasive synchronization of NIPPV whereas a Piezo sensor exhibited large variability. Signals from all studied sensors were only suitable for a limited amount of time.

1800 SURVEY OF THE CURRENT USE OF N-IPPV IN SPANISH NEONATAL UNITS

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Background nIPPV is widely spread in Spanish neonatal units. Little evidence about the best mode of delivery or the appropriate ventilatory parameters of nIPPV is available.

The Aim of this study was to assess the current use of nIPPV in Spanish neonatal units.

Methods A survey was designed and sent by email to neonatal units. The survey collected information about the devices and the ventilatory parameters used to deliver nIPPV over 2010. The use of synchronisation was also interrogated.

Results 87 out of 115 questionnaires were answered and returned (75.6%). 71 units used nIPPV (81.6%). Infant Flow® was the most used device (48/71; 67.6%), followed by conventional ventilators (38/71, 53.5%). The initial ventilatory parameters depended on the device that was used. When Infant Flow® was used, PIPs were set between 8 and 10 cmH₂O, whereas when a conventional ventilator was used, PIPs varied between 8 and 18 cmH₂O. In contrast, PEEP, inflation rate and inflation time were set in a more stable range regardless of which device was used. Regarding synchronisation, only 13/71 units (18.3%) always used synchronisation, whereas 27/71 units (38%) only used it in some cases. The pneumatic capsule was most frequently used when synchronisation was provided with a percentage of 52% (21/40 units).

Conclusion The most used device to apply nIPPV in Spanish neonatal units was a variable flow device. Overall, low PIP and low inflation rates were set at the beginning of this therapy. Synchronisation was scarcely used.

1801 SURVEY OF THE CURRENT USE OF NON INVASIVE VENTILATION IN SPANISH NEONATAL UNITS

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Background Nasal ways of ventilation are being used to minimize lung damage due to endotracheal ventilation. Both nCPAP and nIPPV are progressively being more used in neonatal units, in spite of the lack of evidence about the best mode of delivery of nasal ventilation or the appropriate ventilatory parameters.

The Aim of this study was to assess the current state of the application of nCPAP and nIPPV in Spanish neonatal units.

Methods A survey was designed and sent by email to neonatal units which were applying nCPAP. The survey collected information about the devices, the indications of use and the ventilatory parameters used when delivering nasal ventilation over 2010. It was also questioned whether a guideline was followed.

Results 87 out of 115 questionnaires were answered and returned (75.6%). All the surveyed units used nCPAP and the most frequent indications were: apnoea treatment (87/87; 100%) and respiratory distress before surfactant therapy (85/8; 97.7%). 71 units used nIPPV (81.6%) in order to succeed in extubation (66/71; 92.9%) and for treatment of apnoeas (63/71; 88.7%). Most of the units used variable flow devices to deliver nCPAP (64/87; 73.5%) and nIPPV (48/71; 67.6%). 72 units (82.7%) followed national guidelines at the time of starting non invasive ventilation. The most used interface was short binasal prongs (58/87; 66.6%).

Conclusion Both nCPAP and nIPPV are significantly used in Spanish neonatal units following the recommendations of the available national guidelines.

1802 RANDOMISED TRIAL OF SINGLE NASAL PRONG OR FACE MASK FOR RESPIRATORY SUPPORT FOR PRETERM INFANTS IN DELIVERY ROOM (ISRCTN59061709)

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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 recruited 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 manikin 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 (V_{Ti}) 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 (V_{Te}) from 8.15 mL (0.81) at 6 L/min to 8.85 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 SYNCHRONIZATION OF RESPIRATORY SUPPORT DURING SIMULATED CARDIO-PULMONARY RESUSCITATION OF NEONATES?

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Introduction The need to provide chest compressions and assisted inflations occurs infrequently during neonatal resuscitation. A mannequin study of cardiopulmonary resuscitation (CPR) in adults showed that listening to music improved the coordination of 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 during simulated neonatal CPR. The order in which the tunes were played was randomized. Mask leak and tidal volume was measured using a respiratory function monitor and used to investigate the degree of synchronization of two-helper CPR. Measurements were recorded at baseline (no music) and with individual tunes, each played for one minute during which CPR was provided by neonatal staff.

Results During baseline median (SD) chest compressions and inflations were 80 (6) and 28 (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.