

**Results** 25 colleagues were trained including 17 junior doctors, 3 consultants and 3 advanced neonatal nurse practitioners (23 feedbacks received).

All of the them feedback that the session fully met their professional needs.

Everybody (23) felt that the integration of theory and practical in this way was excellent.

3 participants did not have any opinion about using the animal model. One person did not like the idea of animal model (religious reasons).

**Conclusion** A rabbit model for chest drain training was found to be extremely useful to majority of our trainees. This type of training should be arranged once every 6 months with the changing team of junior doctors.

#### 1774 CAUSE OF RESPIRATORY DISTRESS IN NEONATAL INTENSIVE CARE UNIT: A RETROSPECTIVE EVALUATION

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**Purpose** To determine the demographic characteristics of the newborns with respiratory difficulties, frequency of neonatal disease, analyze of the prognostic factors and effectiveness of treatment who were hospitalized in NICU of our hospital between 2008 and 2009.

**Methods** In this study, file records of the newborns who were hospitalized in NICU of Selcuk University, Meram Medical School were analyzed retrospectively.

**Results** Of the 771 newborns, 225 who admitted due to respiratory distress in 2008 and of the 692 newborns, 282 who admitted due to respiratory distress in 2009. Mean birth weight was 1954±972gr in 2008, and 2140±1009gr in 2009. Mean pregnancy weeks were 32.4±5.0 in 2008 and 33.4±4.9 in 2009. Diagnosis of patients were sepsis (77.8%), respiratory distress syndrome (RDS) (40.4%), pneumothorax (20.9%), patent ductus arteriosus (PDA) (12.4%), meconium aspiration syndrome (MAS) (6.2%), intraventricular hemorrhage (IVH) (5.3%), pneumonia (3.6%), retinopathy of prematurely (ROP) (3.1%), bronchopulmonary dysplasia (BPD) (2.7%) and transient tachypne of newborn (TTN) (2.2%) in 2008. In 2009, percentage of the diagnosis was 69.5% sepsis, 33.3% RDS, 17.0% PDA, 16.0% pneumothorax, 10.3% pneumonia, 8.2% IVH, 6% TTN, 5.3% BPD, 3.2% MAS and 3.2% ROP. 33.7% of the patients were died in 2009 and 43.6% of them in 2008.

**Conclusion** The newborns with respiratory distress who admitted to the hospital must be evaluated according to the pregnancy week, way of birth and accompanying problems during first examination and convenient transportation of the ones who need to be cared in advanced center where an intensive care support can be applied to decrease mortality and morbidity of newborns distress.

#### 1775 THE EVALUATION OF LUNG FUNCTION MEASURED BY IMPULSE OSCILLOMETRY METHOD IN VERY LOW BIRTH WEIGHT BORN CHILDREN AT PRESCHOOL AGE

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Chronic lung disease is one of the most important complications of prematurity and results in short and long-term morbidity. Survival of more prematurely born babies leads to an increase in the incidence of bronchopulmonary dysplasia (BPD).

**The Aim** of this study is to evaluate the lung function of babies who were born under birth weight of 1500 grams using impulse oscillometry in preschool age.

Eighty-six children who were 3–6 years old and followed in our neonatology clinic (born under birth weight of 1500 grams) were enrolled in the study as the patient group and 40 term-born healthy children as the control group. The demographic data of the patients, duration of mechanical ventilation and oxygen therapy and presence of BPD were recorded. After routine physical examination, lung functions of the patients were measured by impulse oscillometry. The data were evaluated by SPSS 16 program.

Forty-nine (57%) of 86 patients were non-BPD, 20 were mild BPD, 14 were moderate BPD and 3 were severe BPD.

Weight and height of premature and control groups were similar. There was a statistically significant difference between the two groups in terms of resistance (R5, R10, R20), reactance (X5, X10, X20) and resonant frequency (fres). The airway resistance was significantly higher and reactance was significantly lower in the premature group. However, there was no difference between BPD and non-BPD groups.

In conclusion; although premature babies can catch-up their peers at 3–4 years old in terms of their body percentiles, their lungs still reflect the traces of prematurity.

#### 1776 RESPONSE THRESHOLDS TO PULSE OXIMETRY ALARMS IN THE NICU - AN OBSERVATIONAL STUDY

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**Background and Aims** Manual control of oxygen delivery to premature infants is conducted mainly by NICU nurses. This involves  $F_{I}O_2$  adjustments in order to keep the  $S_pO_2$  within a specific target range (88–92%). Pulse oximeters have alarms set to alert the nurses when  $S_pO_2$  values are outside the range (85–95%). Our aims were to study  $F_{I}O_2$  alteration in terms of magnitude and time outside target immediately before the  $F_{I}O_2$  change.

**Methods** Infants receiving CPAP or ventilation on the Babylog 8000 ventilator (Dec 2010- Apr 2012) were studied. Signals were acquired from oximeters and ventilator using the PowerLab data acquisition system. The 9-minute epoch prior to each  $F_{I}O_2$  change:  $F_{I}O_2$  increase ( $\Delta POS$ ) and  $F_{I}O_2$  decrease ( $\Delta NEG$ ) were studied.

**Results** Recordings were obtained from 7 (5 male) infants with mean ( $\pm$  SD) gestation of 26.9 ( $\pm 1.9$ ) weeks and birthweight 767 ( $\pm 200$ ) g. 253  $F_{I}O_2$  adjustments were recorded (130  $\Delta POS$  and 123  $\Delta NEG$ ) from 105 hours of total recording time. Mean (range) magnitude of  $\Delta POS$  and  $\Delta NEG$  was 4.6% (0.5–19.5) and 4.5% (0.5–57.0), respectively. Proportion time spent with low alarm in the 9 minutes before  $\Delta POS$  was 50.8%, with 28.4% ( $\pm 20.2$ ) of time in 80–85%, 15.8% ( $\pm 16.7$ ) in 70–80% band and 6.6% ( $\pm 11.3$ ) less than 70% saturation. 22.5% of time was spent with high alarm (before  $\Delta NEG$ ) with 4.3% ( $\pm 8.7$ ) time  $S_pO_2$  exceeding 98% and 7.7% ( $\pm 11.4$ ) in 96–98% band.

**Conclusion** Nurses were more likely to tolerate low oxygen saturations than high saturations in preterm infants. Mild desaturation episodes (between 80–85%) were often managed conservatively.

#### 1777 A MUSICAL MNEMONIC IMPROVES THE CONTROL OF CHEST COMPRESSIONS AND MANUAL VENTILATION DURING SIMULATED NEONATAL CARDIOPULMONARY RESUSCITATION (CPR)

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**Introduction** Guidelines on neonatal cardiorespiratory resuscitation (CPR) suggest the provision of coordinated compressions to inflations at a rate of 3:1. However, manikin studies, and human trials have shown that coordinated chest compression/manual ventilation is difficult to achieve. In a manikin study, we aimed to investigate how music might help to control CPR in neonates.

**Methods** 36 medical professionals were trained in neonatal resuscitation with and without listening to music (Radetzky-Marsch). CPR was performed using a neonatal lung model and a T-piece resuscitator for manual ventilation. Chest compressions were counted using a mechanical tally counter and the rate of inflations were recorded using a respiratory monitor.

**Results** A total of 2514 inflations and 7678 chest compressions were analysed, with a median (interquartile range, IQR) number of chest compressions of 213 (196–229) and 70 (66–76) inflations per participant. Without music the median (IQR) rate of chest compressions was 115 (100–129)/min and the rate of inflations was 38 (32–42)/min. While listening to the Radetzky-Marsch the rate of chest compressions decreased significantly to 96 (96–100)/min ( $p=0.002$ ) and the rate of inflations decreased to 32 (30–34)/min ( $p=0.001$ ). Furthermore, with music the IQR of chest compression rate decreased by 86% and the IQR inflation rate by 60%.

**Conclusion** A musical mnemonic has a significant impact on the delivery of neonatal CPR. Listening to music optimizes the rate of chest compressions and inflations and reduces the variability between individuals.

#### 1778 PREDICTING FAILURE OF THE INTUBATION-SURFACTANT-EXTUBATION PROCEDURE IN VERY PRETERM INFANTS

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**Background and Aims** Respiratory Distress Syndrome can be treated with the INTubation-SURfactant-Extubation procedure (INSURE). INSURE-failure, with the need for re-intubation and mechanical ventilation, is common. We studied predictors of INSURE-failure to identify high-risk neonates that may benefit from staying intubated and mechanically ventilated after surfactant.

**Methods** We studied 363 very preterm infants (< 32 weeks) born 1998–2010 and treated with surfactant. Data were systematically retrieved from their medical records. We defined INSURE as extubation within 2 hours of intubation, and INSURE-failure as re-intubation within 72 hours.

**Results** Currently 219 of these 363 patients have been assessed; 96 were treated with INSURE (Table) and 123 needed prolonged mechanical ventilation. Newborns treated with INSURE had a median gestational age of 29 weeks and a median birth weight of 1158g.

#### Abstract 1777 Table 1

##### Risk factors for INSURE-failure, no. (%) and odds ratios

Risk factors	INSURE-success (n=74)	INSURE-failure (n=22)	Odds Ratio (Unadjusted)
Gestational age <28 weeks	22 (29.7)	13 (59.1)	3.4 (1.3–9.1)
Birth weight <1000g	25 (33.8)	9 (40.9)	1.4 (0.5–3.6)
5 min. APGAR <10	27 (36.5)	13 (61.9)	2.8 (1.1–7.7)
No antenatal steroids	6 (8.1)	3 (14.3)	1.9 (0.4–8.3)
Surfactant in delivery room vs. NICU <sup>a</sup>	7 (9.5)	5 (22.7)	2.8 (0.8–10.0)

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**Conclusion** These preliminary results suggest an increased risk of INSURE-failure in infants with a gestational age < 28 weeks, 5 minutes APGAR < 10, and surfactant administration in the delivery room. Keeping these newborns intubated after surfactant may prevent a high-risk re-intubation.

#### 1779 CELL DEATH GENES ARE INDUCED IMMEDIATELY AFTER HYPOXIA-REOXYGENATION (HR) IN THE NEWBORN MOUSE LUNG

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**Background and Aims** HR-injury can induce generation of reactive oxygen species which activate anti-/pro-apoptotic signalling in the cell or cause direct cell damage. The lungs of newborn neonates are susceptible to HR-injury. To explore underlying mechanisms, a temporal profile of *a priori* selected genes was performed.

**Methods** 84 C57BL/6 mice postnatal day 7 were randomized to 120 min of hypoxia (FiO<sub>2</sub> 0.08, n=64) or 180 min in air (C21, n=20). The hypoxia group was further randomized to 30 min reoxygenation with FiO<sub>2</sub> 0.60 (H60) or air (H<sub>2</sub>1). Lung tissue was harvested after observation in air for 0, 150, 300 min or 3 days and 44 mRNA transcripts were analyzed by real-time PCR.

**Results** *Bcl2*, *Bcl2l1*, *Bnip3* and *Gadd45g* were significantly up-regulated ( $p<0.05$ ), and *Ccnd1*, *Chek1* and *Casp3* down-regulated in H60vsC21 and H<sub>2</sub>1vsC21 (0 min). *Apex1* and *Apaf1* were also down-regulated in the comparison H60vsC21. After 150 min *Apex1*, *Bcl2*, *Casp3*, *Ccnd1*, *Chek1* and *Mutyh* were down-regulated for H60vsC21 and H<sub>2</sub>1vsC21. *Bcl2* continued to be down-regulated in both comparisons (300 min). *Gadd45g* was only up-regulated in H60vsC21 after 150 and 300 min. No significant gene expression changes were observed after 3 days.

**Conclusion** HR-injury in the newborn lung induces an immediate alteration in the expression of both anti- (*Bcl2*, *Bcl2l1*) and pro-apoptotic genes (*Bnip3*, *Apaf1*, *Apex1*, *Gadd45g*), while cell-cycle genes (*Ccnd1*, *Chek1*) are suppressed. A suppression of *Bcl2* from 150 min and a continuous up-regulation of *Gadd45g* after hyperoxic reoxygenation may indicate early phase of DNA damage-induced apoptosis.

#### 1780 EFFECT OF NASAL SYNCHRONIZED INTERMITTENT MANDATORY VENTILATION VERSUS NASAL CONTINUOUS POSITIVE AIRWAY PRESSURE IN REDUCING REINTUBATION OF EXTUBATED PRETERM INFANTS

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**Background** Nasal flow-synchronized intermittent mandatory ventilation (NSIMV) is a new non-invasive ventilatory mode that delivers synchronized mechanical breaths through the nasal tube.

This study was conducted to compare the efficacy of NSIMV and NCPAP (nasal continuous positive airway pressure) in reducing reintubation of extubated preterm infants.

**Methods** This randomized clinical trial was conducted in Ghaem NICU of mass had medical university from September 2009 through June 2010.

Preterm infants who had respiratory distress syndrome and required endotracheal intubation within 48h of birth and met specific predetermined criteria for extubation by day 30 of life were recruited. Each infant was randomized to receive either NSIMV or NCPAP soon after extubation. Extubation was deemed successful if