

and thrombosis due to blood-material contact. Specifically the ATH was attached to the PDMS using dopamine as a 'bio-glue'.

**Materials and methods** PDMS discs were incubated in a solution of dopamine hydrochloride and then in ATH solution. A separate set of PDMS discs were just incubated in ATH. Uptake of ATH and adsorption of antithrombin (AT) from plasma (a measure of anticoagulant activity) to the various surfaces was measured using  $^{125}\text{I}$ -labelled ATH and AT. Stability of ATH on surfaces was evaluated by measuring residual radioactivity after incubation in blood.

**Results** ATH uptake on PDMS was higher with dopamine as glue (Fig. 1), ~74% of the original ATH was lost from PDMS +ATH after 3 h in blood, whereas only ~30% was lost from PDMS+DOP+ATH.

The ATH surface with dopamine is adhesive, thus showed higher AT adsorption ( $42.3 \text{ ng/cm}^2$ ) compared to PDMS ( $6.3 \text{ ng/cm}^2$ ), and therefore should have higher anticoagulant activity.

**Conclusions** An antithrombin-heparin complex (ATH) was attached to PDMS using dopamine as a bio-glue. The use of dopamine gave surfaces with higher concentration and greater stability of ATH. The bound ATH showed potential for anticoagulant activity through extensive adsorption of antithrombin from plasma.

**PO-0760 RELIABILITY OF SINGLE-USE PEEP VALVES DURING MANUAL VENTILATION OF NEONATES**

JC Hartung, G Schmalisch, CC Roehr. Neonatology, Charité University Berlin, Berlin, Germany

10.1136/archdischild-2014-307384.1399

**Background and aim** Current guidelines recommend self-inflating bags (SIB), flow-inflating bags and T-piece resuscitators for manual ventilation of neonates. They further recommend the use of PEEP. Using a SIB, PEEP can be provided by attaching a PEEP valve to the device. These valves are mostly reusable items. However, several studies could show that multi-use PEEP valves could only deliver insufficient levels of PEEP and that their reliability was further decreased by repeated sterilisation cycles.

The aim of our study was to test whether single-use PEEP valves reliably delivered the set PEEP.

**Methods** Ten new single-use PEEP valves from 5 different manufacturers (2 valves each from Laerdal (5–20  $\text{cmH}_2\text{O}$ ), DROH (0–10  $\text{cmH}_2\text{O}$ ), Vital Signs (5–20  $\text{cmH}_2\text{O}$ ), medsize (5–20  $\text{cmH}_2\text{O}$ ), Ambu (0–20  $\text{cmH}_2\text{O}$ )) were attached to an electromechanically driven SIB to ventilate a manikin simulating a 1 kg preterm infant (PIP 20  $\text{cm H}_2\text{O}$ , RR 60/min). The delivered PEEP was measured and analysed.

**Results** The valves delivered a mean (SD) PEEP of 3.5 (1.9)  $\text{cmH}_2\text{O}$  when set to 5  $\text{cmH}_2\text{O}$  and 5.6 (2.9)  $\text{cmH}_2\text{O}$  when set to 10  $\text{cmH}_2\text{O}$ . One valve could not deliver any PEEP, the second valve from the same manufacturer could only deliver 0.0 (0.0) and 1.4 (0.0)  $\text{cmH}_2\text{O}$  when set to 5 and 10  $\text{cmH}_2\text{O}$ , respectively.

**Conclusion** Single-use PEEP valves could be used as an alternative to multi-use items to avoid damage caused by repeated sterilisation procedures. However, they could not reliably deliver the set PEEP. Operators should be aware of the valves' poor reliability and test them before each use.

**PO-0761 CLINICAL AND EVOLUTIVE PECULIARITIES OF THE BRONCHOPULMONARY DYSPLASIA AND WILSON-MIKITY SYNDROME IN PREMATURE CHILDREN**

S. Sciuca, R. Eremciuc, L. Pinzaru, D. Rotaru, E. Oineagra. Department of Pediatrics, State University of Medicine and Pharmacy, Chisinau, Moldova

10.1136/archdischild-2014-307384.1400

**Background** Bronchopulmonary dysplasia (BPD) and Wilson-Mikity syndrome (WMS) are specific respiratory diseases in premature infants, and utilisation of advanced management techniques will increase the prognosis and life expectancy in children with BPD and WMS.

**Aim** To assess clinical features and impact of BPD and WMS on the appearance of chronic pulmonary diseases in premature children.

**Methods** The study presents the results of a clinical and evolutive analysis of 10 children with BPD and 4 with WMS that were born premature with a birth weight of 700–1400 g, gestational age  $31.92 \pm 2.28$  weeks.

**Results** The comparative analysis showed clinical and explorative differences in children with BPD and those with WMS. Though the prematurity degree was similar, the onset of clinical signs in children with WMS was later comparing with those with BPD ( $9.5 \pm 2.37$  vs  $1.4 \pm 0.14$  days of life,  $p < 0.01$ ). Respiratory symptoms in the first year of life were less persistent in children with WMS versus those with BPD, who still presented with suggestive imagistic signs (diffuse pulmonary nodular infiltrates accompanied by cystic changes and areas of hyperinflation). Pulmonary pathology progressed in children with BPD, causing death in 2 children at 3–5 months of life due to severe complication. In children with WMS, in evolution was favourable with fewer exacerbations, in 1 case with complete involution confirmed radiologically by the age of 1 year.

**Conclusion** BPD in premature children has high risks of progression into chronic pulmonary disease and death. In WMS the clinical signs appear later, are less severe and their evolution is more favourable.

**PO-0762 VOLUME TARGETED VENTILATION – EVIDENCE TO PRACTICE?**

<sup>1</sup>E. Simons, <sup>2</sup>R. Dack, <sup>3</sup>V. Venugopalan. <sup>1</sup>Paediatrics, Sandwell and West Birmingham NHS Trust, West Bromwich, UK; <sup>2</sup>Paediatrics, Sandwell and West Birmingham NHS Trust, Birmingham, UK; <sup>3</sup>Neonatal, Sandwell and West Birmingham NHS Trust, Birmingham, UK

10.1136/archdischild-2014-307384.1401

**Background and aim** Volume targeted ventilation when compared to pressure controlled ventilation has been shown to reduce death and chronic lung disease in ventilated preterm neonates.<sup>1</sup> Our audit assessed whether ventilated neonates born at Birmingham City Hospital, UK were appropriately converted to volume targeted ventilation as per the departmental guideline.

**Methods** We collected retrospective data from all ventilated neonates born at Birmingham City Hospital, September 2012–August 2013. We identified 125 neonates, but collected data from 76. 'Mechanical Ventilation in Neonates – Sandwell and West Birmingham Hospital NHS Trust Guideline', May 2012 was our standard and we aimed to achieve 100% compliance.

**Results** Of the 76 neonates, 35 (46%) were excluded due to being transferred in or out of the unit. Of the remaining 41 (54%) neonates, 34% were switched to volume targeted

ventilation, 59% were not switched and 7% were started initially on volume targeted ventilation. 8.3% of neonates not switched to volume targeted ventilation had a documented reason for this. 28.6% of neonates changed to volume targeted ventilation were changed in accordance with our departmental guideline.

**Conclusion** This audit demonstrated poor compliance in switching suitable neonates to volume targeted ventilation. Those that are switched are rarely switched according to the guideline. There is inadequate documentation of the reason for not switching to volume targeted ventilation. These results emphasise the need for ongoing training and education on volume targeted ventilation for all neonatal staff to ensure that our neonates receive the optimum ventilatory care.

# **PO-0763 THE PREVALENCE AND OUTCOME OF BABIES WITH BRONCHOPULMONARY DYSPLASIA IN A UK TERTIARY NEONATAL UNIT**

D Abraham, A Singh, SV Rasiah. *Neonatology, Birmingham Women's Hospital, Birmingham, UK*

10.1136/archdischild-2014-307384.1402

**Background** Bronchopulmonary dysplasia (BPD) is one of the most important adverse sequelae of premature birth and the most common form of chronic lung disease of infancy. It is relevant in the current health care climate due to the health care costs it may generate owing to the long-term respiratory and neurodevelopmental complications.

**Aims** To understand the prevalence, characteristics and outcomes of BPD cases in a UK tertiary neonatal unit.

**Methods** The Badger neonatal database was analysed for BPD and cases included if they required oxygen at corrected gestational age of 36 weeks. Their outcome and impact on neonatal services were studied over the past 4 years, after categorisation into inborn and outborn babies.

**Results** In the last 4 years we had 5342 admissions to our neonatal unit, 159 of who had BPD. The results are as below:

**Conclusion** BPD is a major morbidity among preterm babies. The cases are increasing in number due to increasing survival of extremely preterm babies. The increasing demand for home oxygen and associated comorbidities in these babies have implications for paediatric community service teams.

**Abstract PO-0763 Table 1**

	Inborn	Outborn
N	81	78
Mean Gestational Age in weeks (range)	26	25
Mean Birth Weight in grams (range)	810	830
Male/ Female	45/36	44/34
Mean Ventilation Days (range)	22.8	27.3
Mean CPAP days (range)	37.8	38.6
Postnatal Steroid	26	15
Evidence of Pulmonary Hypertension	5	4
Total Deaths	6	2
Home oxygen	36	30
Average length of stay (days)	107	116

# **PO-0764 MATERNAL SMOKING AND THE RISK OF BRONCHOPULMONARY DYSPLASIA (BPD) IN THE VERY LOW BIRTH WEIGHT (VLBW) PRETERM INFANTS**

<sup>1</sup>T Szczapa, <sup>1</sup>S Sapór, <sup>1</sup>A Basiukajc, <sup>2</sup>TA Merritt, <sup>3</sup>J Moczko, <sup>1</sup>J Gadzinowski. <sup>1</sup>Department of Neonatology, Poznan University of Medical Sciences, Poznan, Poland; <sup>2</sup>Department of Neonatology, Loma Linda University School of Medicine, Loma Linda, USA; <sup>3</sup>Department of Computer Science and Statistics, Poznan University of Medical Sciences, Poznan, Poland

10.1136/archdischild-2014-307384.1403

**Background and aim** Among other risk factors the intrauterine smoke exposure has been suggested to influence BPD development. The aim of the study was to analyse the prevalence of BPD as well as other related variables in a group of preterm infants born by smoking and non-smoking women.

**Methods** A retrospective analysis based on medical records was performed. Data of VLBW preterm newborns <32 weeks gestational age, born during one year and hospitalised in the neonatal intensive care unit of a tertiary perinatal centre were collected and statistically analysed using Mann-Whitney and Pearson's Chi-square tests.

**Results** Analysis included 185 newborns. Mothers admitted smoking in 22 cases (12%). Gestational age and birth weight were similar in both groups (28 vs 27.5 weeks and 1203 g vs 1108 g,  $p > 0.05$ ). BPD prevalence did not differ significantly between both groups (36% vs 39%,  $p > 0.05$ ). Among newborns in the smoking group there was a higher mortality (27% vs 18%,  $p > 0.05$ ) but this was not statistically significant. There were no significant differences between groups in the need for surfactant therapy (36% vs 43%,  $p > 0.05$ ) or the length of mechanical ventilation (mean 15.6 vs 12.9 days,  $p > 0.05$ ).

**Conclusion** Smoking was not confirmed as a definite risk factor of BPD in this study. This may be due to the multifactorial pathogenesis of the disease but possibly also associated with the methodology that was based on mothers' declaration regarding smoking without a laboratory screening.

# **PO-0765 INTRODUCTION OF INSURE THERAPY – EXPERIENCES AND LIMITATIONS**

G Tálosi, K Mader, Z Tajti. *University of Szeged, Department of Pediatrics, Szeged, Hungary*

10.1136/archdischild-2014-307384.1404

**Background and aims** Respiratory Distress Syndrome is the most frequent cause of respiratory insufficiency in premature infants. The essentials of INSURE therapy are INTubation after noticing the condition of RDS, SURfactant therapy and Extubation to non-invasive respiration. At our ward INSURE therapy was introduced in 2012.

**Patients and methods** We analysed our patients who received INSURE therapy during the 21-month-long period from July 1. 2012 until March 31. 2014. INSURE therapy was considered effective, if the patient did not require invasive ventilation within 1 week. During the examined period 398 patients were admitted to our 18-bed tertiary Neonatal Intensive Care Unit. INSURE therapy was applied in the case of 82 prematures (gestational age:  $29 \pm 3$  weeks, birthweight  $1358 \pm 404$  g; mean  $\pm$ SD).

**Results** A surfactant (Curosurf ®) dose of  $168 \pm 39$  mg/kg was administered. There was no need for repeated intubation in 57 cases, in 13 cases a second dose was surfactant was also