Methods Following a quantified hypoxic-ischaemic insult, 16 male piglets were randomized to either hypothermia alone (33.5oC from 4–22h, n=7) or DXM plus hypothermia (n=9). Mean arterial blood pressure (MABP) was measured continuously; when MABP was < 40mmHg, a saline bolus was given followed by inotropes. At 48 h the experiment was terminated.
Results There was no difference in baseline variables. Compared to hypothermia only, the DXM hypothermia group required more saline, adrenaline and cardiac arrests (all p<0.05). These adverse events occurred at both high and low dose DXM.

Abstract 55 Table 1 Volume replacement, adrenaline and cardiac arrests

	Hypothermia alone (n=7)	Hypothermia plus DXM (n=9)
Saline replacement (ml/kg)	0.45±0.18	0.88±0.29*
Adrenaline for resuscitation (μ)	28.57±23.82	211.11±69.29*
Cardiac arrest	2 out of 7	7 out of 9 ^
Fatal cardiac arrest	1 out of 7	4 out of 9

* p<0.05 unpaired t test ^ p<0.05, Chi squared test

Conclusion Adverse cardiovascular events with low and high dose DXM combined with cooling occurred mainly after 16 h and could be due to perturbed central autonomic function, vasoconstriction via peripheral alpha adrenoceptor stimulation or effects on the imidazoline receptor.

56 SAFETY OF HIGH-DOSE ERYTHOPOIETIN FOR NEUROPROTECTION IN PRETERM INFANTS

doi:10.1136/archdischild-2012-302724.0056

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Background Erythropoietin has been shown to be protective against hypoxic-ischaemic and inflammatory injuries in cell culture, animal models of brain injury, and in clinical trials in human adults. A multicentre randomized placebo-controlled trial was started to investigate whether early administration of high dose recombinant human erythropoietin (rhEpo) in very preterm infants improves neuro-developmental outcome at 24 months.
Aim Interim analysis of neonatal complications until discharge from hospital.
Results 395 preterm infants were recruited in 5 centres. 206 infants had received (n_1) 3,000 U/kg body weight rhEpo, and 189 infants NaCl 0.9% intravenously at 3, 12–18 and 36–42 hours after birth.

Abstract 56 Table 1

	EPO (n=206)	Placebo (n=189)	p
GA (wks); mean (SD)	29.3 (1.6)	29.3 (1.6)	0.99
BW (g); mean (SD)	1232 (373)	1231 (314)	0.99
Death n (%)	12 (5.9)	11 (5.9)	0.99
Severe adverse events SAEs n	46	45	0.82
Bronchoplumonary dysplasia n (%)	21 (10.8)	24 (13.5)	0.53
Retinopathy of prematurity n (%)	12 (6.4)	14 (8.3)	0.64
Intraventricular haemorrhage n (%)	38 (18.4)	28 (14.8)	0.41
Haemangioma n infants (%)	35 (17.0)	34 (18.0)	0.89
Haematocrit day 7–10, mean (SD)	47.3 (7.9)	44.8 (7.1)	0.002

Conclusions No significant adverse effects of early high-dose rhEpo treatment in very preterm infants were identified. The neuroprotective effect will be evaluated in 24 months.

57 ASSOCIATION BETWEEN SECRETORY PHOSPHOLIPASE A2 SUBTYPE V (PLA2G5) GENOTYPE AND ACUTE RESPIRATORY DISTRESS SYNDROME IN INFANTS

doi:10.1136/archdischild-2012-302724.0057

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Background Secretory Phospholipase A2 (PLA2) has been linked with acute respiratory distress syndrome (ARDS) and its clinical severity and mortality. The enzyme subtype -V (PLA2G5) is expressed in the lung tissue. We aimed at sequencing its gene (HGNC:9038) in infants with ARDS. This study is a part of a multicentre project whose protocol has been published elsewhere.[1]
Methods 24 ARDS and 24 age-matched babies with no lung disease were enrolled. 50 healthy adult volunteers, who never had neither ARDS nor chronic pulmonary diseases, served as another control group. Genomic DNA was extracted from leukocytes, amplified by PCR and sequenced, analyzing the coding regions by SeqScape. Basic clinical data were recorded.
Results A polymorphism (p.G3G=c.9C>T) was detected in the gene PLA2G5 (exon 1). This variation was present in heterozygosis in 42% of controls and in 17% of patients, while homozygosis was detected in 21% of patients and in no controls (p=0.022). Heterozygosis and homozygosis were present in 54% and 10% of adult controls, respectively. Homozygosis for such polymorphism led to an increased risk of ARDS (OR: 6.7; 95% C.I.: [1.3–34.2]). Patients carrying this polymorphism had lower PaO_2/FiO_2 ratio (104±29 vs 147±53; p=0.039) and higher lung injury score at the diagnosis (3.7±0.2vs3.2±0.4; p=0.031).
Discussion These are the first findings about genetic association between PLA2 and ARDS. Variation in the PLA2G5 gene might be associated to an increased risk for ARDS as it may represent a marker of variations in other genes nearby PLA2G5, that may be involved in inflammation pathway.
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58 EFFECT OF VARESPLADIB-PROTECTED SURFACTANT IN CULTURED RAT ALVEOLAR MACROPHAGES STIMULATED WITH LPS

doi:10.1136/archdischild-2012-302724.0058

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Background Secretory phospholipase A2 (sPLA2) is a crucial enzyme for inflammatory response and surfactant catabolism. Acute lung injury (ALI) is a life-threating syndrome characterized by surfactant dysfunction and raised levels of sPLA2. Varespladib is a potent selective sPLA2 inhibitor that is effective in animal models of ALI. Nothing is known about the joint administration surfactant+varespladib and we aimed at studying the effect on the sPLA2 pathway.
Methods $1x10^6$ normal alveolar macrophages (from *Rattus Norvegicus*) were cultured in Ham'sF12 medium + 2% fetal bovine serum. Cultures were incubated with 15 ng/mL LPS for 24h, then treated with 200 μg poractant-α, 90 μM varespladib, both or nothing. These concentrations were those achieving 50% sPLA2 activity reduction in previous experiments. After 24h, culture supernatants were assayed for sPLA2 activity, free fatty acids (FFA) and total proteins concentrations.
Results sPLA2 activity corrected for the protein level is 0.26±0.02, 0.24±0.02, 0.24±0.02 and 0.28±0.02 IU/μg in cultures treated with

surfactant, varespladib, both or nothing (overall p=0.016; Dunnett *post-hoc* between cultures treated with varespladib and varespladib+surfactant against untreated cultures p=0.01). FFA are higher in untreated cultures (394±82 μM), than in surfactant- (219±70 μM) and in varespladib-treated ones (148±51 μM). Combined treatment reduced FFA to 206±47 μM (overall p=0.017; Sidak *post-hoc* p=0.036 and p=0.023 for the varespladib and combined treatment against control cultures).

Conclusions The joined administration of varespladib and poractant-α significantly reduce sPLA2 activity and FFA production. Surfactant+varespladib affect sPLA2 pathway significantly more than the surfactant alone.

59 THE PEDIATRIC ALIEN STUDY: INCIDENCE AND OUTCOME OF THE ACUTE RESPIRATORY DISTRESS SYNDROME IN CHILDREN

doi:10.1136/archdischild-2012-302724.0059

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Introduction The incidence and outcome of the acute respiratory distress syndrome (ARDS) in children is not well known, especially under current ventilatory practices. The goal of this study was to determine the incidence, etiology and outcome of ARDS in the pediatric population in the setting of lung protective ventilation.

Method A 1-year, prospective, multicenter, observational study in 12 geographical areas of Spain covered by 21 pediatric intensive care units (PICUs).

Results Data on ventilatory management, gas-exchange, hemodynamics, and organ dysfunction were collected. A total of 146 mechanically ventilated patients fulfilled the ARDS definition, representing an incidence of 3.9/100,000 population ≤15 years of age/year. Pneumonia, sepsis and respiratory syncytial virus-related infection were the most common causes of ARDS. At the time of meeting ARDS criteria, mean PaO_2/FiO_2 was 99±41 mmHg, mean tidal volume was 7.6±1.8 ml/kg predicted body weight, mean plateau pressure was 27±6 cmH_2O, and mean PEEP was 8.9±2.9 cmH_2O. Overall ARDS PICU and hospital mortality was 26% (95%CI: 19.6–33.7) and 27.4% (95%CI: 20.8–35.1), respectively. At 24 h, after assessment of oxygenation under standard ventilatory settings, 118 (80.8%) patients continued to meet ARDS criteria (PaO_2/FiO_2 104±36 mmHg; PICU mortality 30.5%) whereas 28 patients (19.2%) had a PaO_2/FiO_2 >200 mmHg (PICU mortality 7.1%) (p=0.014).

Conclusions This is the largest study to estimate prospectively the pediatric population-based ARDS incidence and the first incidence study performed during the routine application of lung protective ventilation in children. Our findings support a lower ARDS incidence and mortality than those reported for adults.

60 COMPARISON BETWEEN AEROSOLIZED PERFLUOROCARBON AND PARTIAL LIQUID VENTILATION IN PRETERM LAMBS WITH SEVERE RESPIRATORY DISTRESS SYNDROME

doi:10.1136/archdischild-2012-302724.0060

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Background and aim Perfluorocarbon (PFC) aerosolization is feasible; however, it is unknown whether aerosolization is better than Partial Liquid Ventilation (PLV).

Methods 18 preterm lambs were randomly assigned to receive aerosolized PFC (10 ml/kg/h for 2h) delivered via an inhalation catheter, (PFC-aero group), instilled intratracheal PFC (20 ml/kg; PLV group), or just mechanical ventilation (CONTROL group). Gas exchange, pulmonary mechanics, and histological scores were assessed. Mean ± SD, ANOVA, p<0.05.

Results Both PFC administration techniques significantly improved gas exchange and pulmonary mechanics compared to CONTROL group (two-way ANOVA). 15 minutes after PLV, OI and VEI were significantly better in the PLV group compared to other groups. However, in terms of OI, aerosolized PFC remained significantly better than CONTROL group for the entire observational period (360 min), whereas at 240 min and on, the differences between PLV and CONTROL groups were not significant. PLV and aerosolized PFC significantly decreased the degree of atelectasis but did not significantly improve the general histological score.

Abstract 60 Table 1

OXYGENATION INDEX	BASELINE	1h	3h	6h
Control	79 (52)	46 (18)	52 (30)	64 (27)
PLV	102 (49)	6 (1)*#	12 (6)*	32 (35)
PFC-aero	71 (45)	23 (11)*	10 (2)*	18 (18)*

* vs. CONTROL; # vs. PFC-aero. One-way ANOVA

Conclusion Both PFC administration techniques show pulmonary efficacy in RDS. Future research should focus on the PFC aerosol delivery efficiency.

61 ASSOCIATION OF VITAMIN D RECEPTOR GENE POLYMORPHISMS AND BRONCHOPULMONARY DYSPLASIA

doi:10.1136/archdischild-2012-302724.0061

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Background and aims Vitamin D is considered as an important regulator of fetal lung development and innate immune system. Its functions involved in susceptibility and resistance to infections and pulmonary diseases may be important for the occurrence of bronchopulmonary dysplasia (BPD). The aim of the study was to investigate the relationship between Vitamin D receptor gene polymorphism and BPD in preterm infants.

Methods Fok I, Bsm I, Apa I, and Taq I polymorphisms in the Vitamin D Receptor (VDR) gene were genotyped using restriction fragment length polymorphism in109 preterm infants (47 with BPD, 62 without BPD) born at gestational age ≤ 32 weeks and admitted to NICU at Ege University Hospital.

Results The univariate analysis showed Ff (OR=3.937, p=0.022, 95% CI= 1.22–12.69) and ff (OR=5.238, p=0.004, 95% CI= 1.69–16.23) genotypes of Fok I polymorphism were associated with increased risk of BPD; whereas tt genotype of Taq 1 polymorphism; was associated with a protective effect against BPD (OR=0.30, p=0.04, 95% CI= 0.098–0.094). In a multivariate logistic regression analysis of the model including variant Fok1 genotype with significant PDA, clinical and culture proven sepsis, mechanical ventilation and surfactant treatment; variant Fok 1 genotype increased the risk of BPD (OR=4.115, CI=1.080–15.686, p=0.038) independent from these factors. Taq 1, Bsm 1 and Apa 1 polymorphisms did not have any effect in the same model.

Conclusion Fok1 polymorphism was associated with increased frequency of BPD after adjusting for multiple confounders. VDR gene polymorphisms may be suitable for prediction of infants at high risk for BPD.