Abstract PO-0770 Table 1

		Vte (mL/kg)	CO_2 (mmHg)	RC change per breath/inflation (AU/kg)	AB change per breath/inflation (AU/kg)
SI (median (IQR))		5.1 (1.0–10.4)	10 (2–19)	6 (-73–114)	47 (1–146)
	Inflations only	4.2 (2.3–8.7)	2 (2–6)	6 (-15–41)	46 (19–100)
PPV (median (IQR))	Inflations coinciding with breathing	6.9 (5.2–9.8)	18 (12–24)	4 (-41–45)	24 (-9–102)
Breathing (median (IQR))		5.7 (2.4–8.9)	20 (9–32)	-7 (-57–38)	97 (23–221)
p-value		ns	<0.0001	0.003	<0.0001

Results 42 patients (21 PSV+VG, 21 SIMV+VG) were enrolled. Median GA were 29 weeks and BW were 980,0 and 870,0 gr in each group. Demographic characteristics were similar. 'Appropriate TV' was higher in PSV+VG group. PIP, MAP and FiO_2 were similar in two groups. Hypocarbia, hypercarbia, hyperoxemia and hypoxemia incidences were not different. PSV +VG group were less tachycardic than SIMV+VG group. Acute and chronic prematurity problems including chronic lung disease (CLD) defined as oxygen requirement at 36th GA were not different.
Conclusion PSV+VG was associated with higher 'appropriate TV' without any adverse effects and similar CLD occurence. These findings can support the beneficial use of PSV+VG which is more physiologic due to better inspiratory – expiratory synchrony.

PO-0769 THE PRETERM PIG AS A MODEL FOR ACUTE LUNG DISEASE

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Background and aims Despite advances in ventilation support, acute lung disease (ALD) remains the leading cause of morbidity, mortality, and disability after preterm birth. There is a need for a spontaneous translational model of ALD after preterm birth.
Methods Preterm pigs delivered at gestation days (GD) 98, 100, 102, and 104 days were provided ventilation support using supplemental oxygen (NC), bubble Continuous Positive Airway Pressure (bCPAP; 7–8 cm H_2O), or mechanical ventilation (MV; Pressure Control Ventilation with Volume Guarantee; 5 ml/kg; PEEP 5 cm H_2O). Monitoring included pulse oximetry, arterial blood gases, and radiography. Lungs were harvested after 24 h or after premature death for histology and measurements of surfactant protein B, phosphatidylcholine, and cytokines.
Results All pigs breathed spontaneously. Lungs at GD 98 and 100 were consolidated with immature alveolar architecture, minimal surfactant protein B expression, and MV was essential for 24 h survival. GD 102 pigs had alveoli lined by pneumocytes and surfactant was released in response to MV. Blood gases and radiography for NC and bCPAP pigs 1–2 h after delivery revealed limited recruitment and mortality at 24 h was 66% (35/53) and 69% (9/13), respectively. GD 104 pigs had higher densities of thin walled alveoli that secreted surfactant and MV was not essential.
Conclusions Preterm pigs have developmental changes in ventilation inadequacies that mimic those of preterm infants and represent a spontaneous model of ALD that is clinically relevant, compatible with standards of chronic neonatal intensive care, and is an alternative for nonhuman primates and lambs.

PO-0770 RESPIRATORY INDUCTANCE PLETHYSMOGRAPHY AND EXPIRED CO2 LEVELS OF PRETERM INFANTS AT BIRTH

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Background Preterm newborns often need respiratory support for lung liquid clearance and aeration. Previous studies provided tidal volumes during positive pressure ventilation (PPV) and breathing, but very little is known how efficient these are in lung recruitment and gas exchange. Aim was to measure tidal volume, functional residual capacity (FRC) changes and gas exchange during respiratory support in preterm infants at birth.
Methods In preterm newborns needing respiratory support the following measurements were performed: 1) expired tidal volumes (Vte (mL/kg)) using respiratory function monitoring, 2) changes in FRC (AU/kg) per breath using Respiratory Inductance Plethysmography (bands placed around the rib cage (RC) and abdomen (AB)), 3) expired CO_2 using a volumetric CO_2 monitor. For respiratory support a T-piece resuscitator and mask were used with PIP 25 cm H_2O and PEEP 5 cm H_2O. Data was analysed during sustained inflation (SI), the first 30s of PPV and breathing on CPAP.
Results 15 infants were included (median (IQR) gestational age 28 (27–31) weeks, birth weight 1080 (994–1300) grams). There was no difference in Vte between SI, PPV and breathing (table). Gas exchange was more efficient during breathing and inflations coinciding with breathing compared to SI and inflations only (table). Little change occurred during the SI, PPV and breathing measured at the RC. In contrast, there was FRC gain at the AB during the SI, PPV and most with breathing.
Conclusions While tidal volumes during PPV and breathing were similar, breathing was more effective in gas exchange and caused more gain in FRC than PPV.

PO-0771 THE EFFECT OF EXOGENOUS SURFACTANT THERAPY ON LUNG MECHANICS IN VERY PRETERM INFANTS

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Introduction and aim Surfactant replacement is a corner stone therapy for respiratory distress syndrome (RDS) and has been shown to be both safe and efficacious for premature infants. The aim of this study was to assess the immediate changes in lung mechanics caused by administration of two different natural surfactants. Secondary aim of this study was to determine the

Abstract PO-0771 Table 1

	Before surfactant treatment			After surfactant treatment		
	Compliance ml/cm/H_2O/kg	Resistance cm/H_2O/L/sn	C_{20}/C	Compliance ml/cm/H_2O/kg	Resistance cm/H_2O/L/sn	C_{20}/C
Beractant n=5	0,28±0,13	483±101	1,3±1,2	1,33±1.1	322±107	1,19±1
Poractant alfa n=5	0,35±0,17	498±210	2,8±1,7	0,5±0,29	432±165	2,6±0,87

relationship between initial lung mechanics and occurrence of bronchopulmonary dysplasia (BPD).
Method Preterm infants who were
Results 10 premature infants were studied. Mean gestational age was 28.4 ± 1.6 (26–31) weeks and mean birth weight was 955 ± 155 (710–1250) g. Five infants received beractant and the other five received poractantalpha. The alteration of lung mechanics after surfactant administration was summarized in Table 1.
Conclusion Surfactant therapy significantly reduced the resistance and improved the lung compliance. These effects were not directly related to the type of surfactant administered.

PO-0772 EFFECTS OF CAFFEINE THERAPY ON RESPIRATORY MORBIDITIES IN VERY LOW BIRTH WEIGHT INFANTS

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Introduction and aim Previous studies demonstrated that caffeine seems to be effective for reducing the risk of bronchopulmonary dysplasia and for decreasing the need for reintubation. We aimed to evaluate the effects of caffeine therapy on respiratory morbidities in very low birth weights infants.
Method We aimed to review patient records for a 5 year period (2008–2013) retrospectively. Infants whose birth weight <1250 gr and gestational age <32 weeks were studied. Data collected for analysis included patient demographics, respiratory morbidities and mortality.
Results A total of 290 patient records were analysed, of them 148 infants were treated with caffeine (CT+),142 infant did not receive caffeine therapy (CT-). Gestational ages (27.9 ± 2 vs 27.7 ± 2.7 weeks) and birth weights (967 ± 186 vs 980 ± 196 g) were similar between groups ($p > 0.05$). Basic characteristics and risk factors were similar between groups. CPAP failure was significantly lower in CT+ group (25,4% vs 41.1%, $p = 0.02$) Oxygen requirement on 36 weeks (13.2% vs 7.4% in CT+ and CT- groups respectively) were similar between groups ($p > 0.05$). Mortality rate (18.9% vs 54%), BPD or death (28.6% vs 57%) and duration of mechanical ventilation (2.9 ± 5 vs 4.8 ± 7.7 days) were significantly lower in CT+ group ($p < 0.01$).
Conclusion We demonstrated that caffeine therapy significantly reduced the mortality rate, death or BPD and CPAP failure VLBW infant yet no significant difference was observed on therates of BPD. This is an ongoing study and maybe the final analysis will yield different results.

PO-0773 LUNG ULTRASOUND FINDINGS IN CONGENITAL LUNG MALFORMATIONS

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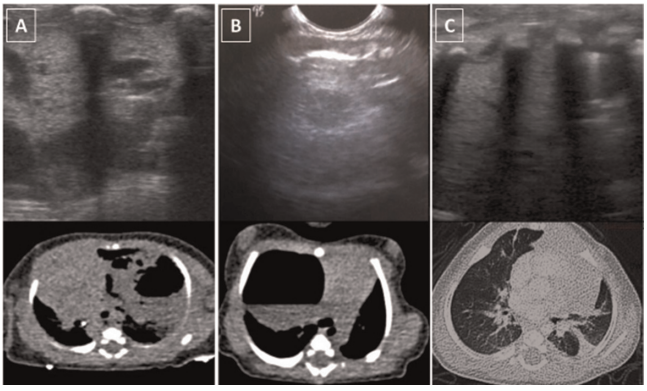
Background and aims Congenital cystic adenomatoid malformation (CCAM) is a group of rare congenital malformations of the lung and airways, with varying clinical pictures. Lung ultrasound (LUS) is a quick, easy and cheap imaging technique that is increasingly used in critical care settings. Specific LUS findings have been described for some types of neonatal lung injury, but no formal data exist on pulmonary malformations. We here describe ultrasound findings in CCAM.
Methods Three patients with a prenatal diagnosis of CCAM and presenting with neonatal respiratory distress were examined by LUS, during the first week of life, using a linear 12–18 MHz, or a microconvex 7,5 MHz probe. Chest CT-scans were used as reference.
Results LUS findings were variable and corresponded well with CT-scan images (LUS dynamic video recordings will be showarn). One patient had a single large hypoechogenic cystic lesion. Two patients had several hypoechogenic lesions, of various size and form, surrounded by consolidated lung tissue. All patients showed normal lung patterns in the areas adjacent to the CCAM. LUS did not permit the exact localization of lung lesions.



Abstract PO-0773 Figure 1

Conclusions We provide the first formal description of LUS findings in neonates with CCAM. Further studies are necessary to define the place of LUS in the management of CCAM. LUS could be a useful tool in screening asymptomatic patients and determining optimal timing for CT-scan and surgery, thereby limiting radiation exposure.

PO-0774 LUNG ULTRASOUND FINDINGS IN MECONIUM ASPIRATION SYNDROME

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