respiratory failure. Bronchiolitis was the most frequent condition (28%), followed by upper airway obstruction (15.2%), acute cardiogenic pulmonary edema (15.2%) and pneumonia (14.4%). CPAP was the respiratory mode more used.NIV success rate was 67.5%: 2.3% in the first hour, 32% between 1st–12th hour and 23.3% between 12th–24th hour. Failure rate was greater among patients with type I respiratory failure (34.9%) and acute respiratory distress syndrome (66.7%). A lower heart and respiratory rate at 6 hours were associated with NIV failure (p<0.05).

Conclusions NIV is a useful and increasingly used ventilatory mode in PICU. Type I respiratory failure, decrease in heart rate and respiratory rate at 6 hours were risk factors for NIV failure. More studies involving predictive factors in children are still needed.

992 NEBULISED ILOPROST AND NONINVASIVE RESPIRATORY SUPPORT AS A FIRST TREATMENT FOR HYPOXAEMIC RESPIRATORY FAILURE IN EX-PRETERM INFANTS: PRELIMINARY EXPERIENCE

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Objective To describe a series of ex-preterm infants admitted to pediatric intensive care unit because of acute hypoxaemic respiratory failure complicated by pulmonary hypertension who were treated electively combining noninvasive ventilation (NIV) and nebulized iloprost (nebILO).

Methods Open uncontrolled observational study, Pediatric Intensive Care Unit, University Hospital.

Measurements and Main Results Ten formerly preterm infants with acute hypoxaemic respiratory failure and pulmonary hypertension, of whom 8 had moderate to severe bronchopulmonary dysplasia. Median age and body weight were 6.0 (2.75–9.50) months and 4.85 (3.32–7.07) kg, respectively. We observed a significant early oxygenation improvement in terms of PaO_2/FiO_2 increase (p=0.001) and respiratory rate reduction (p=0.01). Hemodynamic also improved, as shown by heart rate (p=0.002) and pulmonary arterial pressure systolic/systolic systemic pressure (PAPs/SSP) ratio reduction (p=0.0137). NebILO was successfully weaned in positive response cases: 4 infants were discharged on oral sildenafil. Three patients failed noninvasive modality and needed invasive mechanical ventilation; hypoxic-hypercarbic patients were most likely to fail noninvasive approach. Only one patient requiring invasive ventilation died and surviving babies had a satisfactory 1-month post-discharge follow-up.

Conclusions The noninvasive approach combining NIV and nebILO for ex-preterm babies with respiratory failure and pulmonary hypertension resulted to be feasible and quickly achieved significant oxygenation and hemodynamic improvements.

993 IMPLEMENTATION OF VENTILATION POLICY IN A PICU

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Background and Aims Pediatric intensive care units (PICU) worldwide use different ventilators with a wide variety of ventilation modes. As an unambiguous international ventilation guideline, we developed one. After implementation we evaluated to what extent physicians adhered to the new guideline.

Method We developed a ventilation guideline accounting for two groups: 1) heterogeneous lung disease, in which pressure control is the preferred mode; 2) homogeneous lung disease, in which pressure-regulated volume control is preferred. The guideline was implemented in October 2008. We performed an uncontrolled, retrospective before-after design with a pre-test from January to July 2008 (T0) and two post-tests: May-November 2009 (T1); May-November 2010 (T2). All patients on conventional invasive mechanical ventilation during these periods were included. Outcome measure was the percentage of physicians' adherence to the ventilation protocol. We measured this by describing the ventilation mode on the first hour on the day of admission and the cause of respiratory failure, to distinguish in which group this patient belonged.

Results In group 1, the T0 adherence percentage was 79% (67/85). Adherence percentages after implementation of the guideline were 71% (51/72) and 84% (46/55) for respectively T1 and T2. For group 1, adherence in period T2 was slightly better (p=0.092) than that in period T1. In group 2, adherence percentages rose statistically significantly from 66% at T0 (62/93) to 78% (79/101) and 84% (85/101) (p=0.015).

Conclusion Implementation of a new ventilation guideline increased guideline adherence over time. Selection of the appropriate ventilation mode seems now clearer for physicians.

994 NON-INVASIVE VENTILATION (NIV) IN CHILDREN - ESTABLISHMENT OF A PEDIATRIC NIV SCORING SYSTEM

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Objectives Non-invasive ventilation (NIV) is being increasingly used in children with respiratory failure in order to avoid intubation and associated problems. We analyzed the efficiency of NIV in children and the outcome of our patients.

Methods In a retrospective study children who received NIV over the last 7 years were analyzed. Included were all children that had at least more than one hour of NIV and a cardiological disease or an infection of the airway. Patients were divided in subgroups according to their underlying disease. The following parameters were analysed: age, gender, weight, mode of NIV, hemodynamic and ventilatory status, blood gas analysis, days of hospitalisation and mortality rate.

Results 70 patients between the age of 1 day to 28 years that received NIV were analyzed. The study population consisted of: 35 cardiological patients (50%) and 35 patient with an infection of the airway (50%). Children that had to be intubated because of a respiratory failure were classified as nonresponders. The overall rate of responders was at least 79%. Response correlated significantly with the Positive End-Expiratory Pressure (PEEP) values, pCO_2 and FiO_2 at 6 hours after initiation of NIV.

Conclusion NIV offers an effective and successful alternative to conventional mechanical ventilation of children with respiratory failure. Due to advances in the currently available equipment and NIV algorithms we could significantly improve the rate of responders. Based on our findings we established a pediatric NIV score helping to predict NIV success.

995 IMPACT OF VENTILATOR-ASSOCIATED PNEUMONIA ON TREATMENT AND LENGTH OF STAY IN CRITICALLY PEDIATRIC PATIENTS WITH LOWER RESPIRATORY SYSTEM INFECTION

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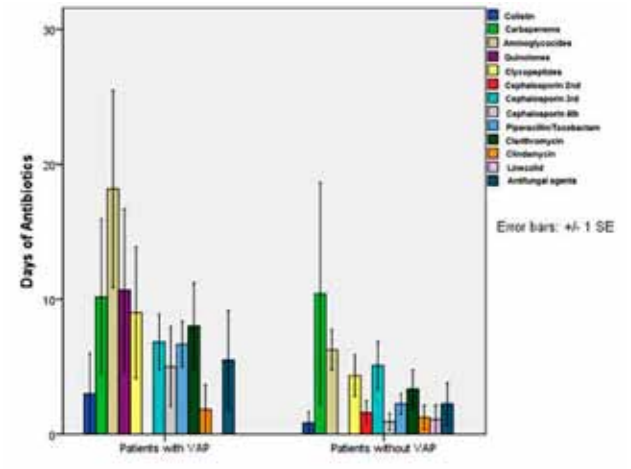
Background and Aims Ventilator-associated pneumonia (VAP) may complicate the hospital course in critically ill children with

pneumonia or bronchiolitis admitted to PICU. We compared the outcomes and treatment in PICU patients with pneumonia or bronchiolitis who developed VAP and those without VAP.

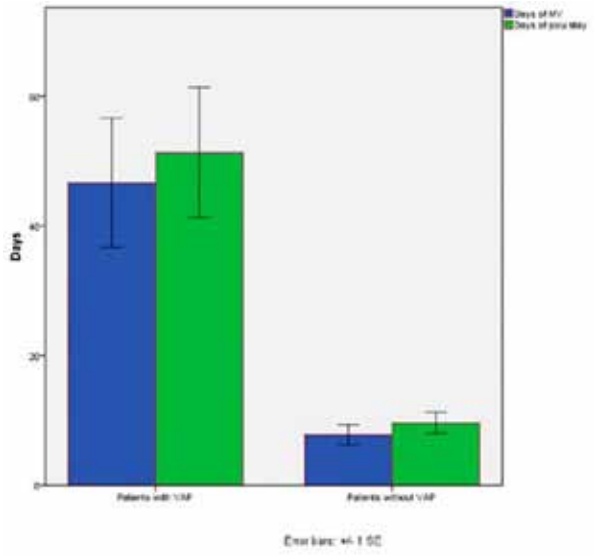
Methods The medical records of PICU patients with pneumonia or bronchiolitis from January 2011 to December 2011 in a tertiary care hospital were reviewed. Demographic and clinical data including antibiotic therapy were recorded.VAP was diagnosed according to CDC criteria.

Results 28 patients were recruited, 12(42%) with VAP and 14(58%) without VAP, mean age 3.7±1.1 and 3.6±4.7, respectively. PRISM III score at admission, comorbidity (chronic lung disease, cardiopathy, mental retardation, malnutrition or obesity, immunosuppression),antacid medication and systemic steroid use were similar in both groups. The most common VAP pathogens were gram(-) bacteria (Acinetobacter baumannii and Pseudomonas aeruginosa). Antibiotics use in the 2 groups are shown in figure 1.



Abstract 995 Figure 1

Patients with VAP received longer treatment with aminoglucisides compared with patients without VAP (18.42±13.02 vs. 6.25±5.19 days, P<0.01). Moreover, only children with VAP were treated with quinolones. Patients with VAP had also significantly increased length of PICU stay(LOS) and mechanical ventilation. (figure 2).



Abstract 995 Figure 2

Conclusions VAP occurs in a significant proportion of PICU patients with lower respiratory infection resulting in increased LOS and antibiotic use.

996 EVALUATING THE EFFECTS OF AIRWAY PRESSURE RELEASE VENTILATION, A NOVEL MODE OF VENTILATION, IN CHILDREN WITH ACUTE RESPIRATORY FAILURE

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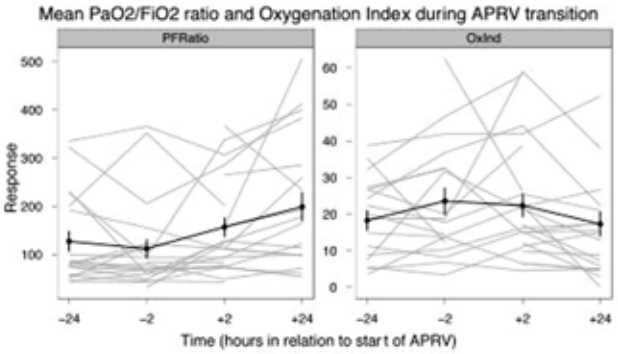
Background The mortality rate of ARDS in children exceeds 50%. Airway Pressure Release Ventilation (APRV), a lung protective mode of mechanical ventilation, allows renal and hemodynamic stability in adults with acute respiratory distress syndrome (ARDS). This retrospective case review surveys the safety and utility of APRV in children with ARDS between April 2010 and November 2011.

Methods This study was conducted at the Pediatric ICU at Stanford. Children on APRV for less than 24 hours or who were placed on ECMO were excluded. Primary measures, PaO2/FiO2 (P/F) ratio and the Oxygenation Index (OI), were assessed prior to and after APRV initiation. Secondary measures were blood pressure, creatinine, and sedation requirements. A paired t-test was performed comparing parameters over time and a mixed linear model with a random effect was used to test for significant differences over time.

Results P/F ratio and OI significantly improved upon conversion to APRV. All of the secondary measures assessed remained stable (data not shown).



Abstract 996 Figure 1 Mean P/F Ratio and OI during APRV Transition

Abstract 996 Table 1 Respiratory Parameters

	-24 hours (baseline)	-2 hours (prior to APRV)	+2 hours (after APRV)	+24 hours (after APRV)	Mean Difference (95% CI)
PaO2/FiO2	127.19584	111.99251	156.91240	198.98324	28.4980173 (3.444559 to 58.5142879)
Oxygenation Index	19.31633	22.85918	22.34526	18.16486	3.56910055 (–3.7849048 to 9.62734808)

Conclusion The rise in P/F ratio and decrease in OI upon switching to APRV indicate an improvement in oxygenation. Stability of cardiac, renal, and sedation parameters further demonstrate the mode's utility. This retrospective study demonstrates safety and efficacy of APRV in a small population of children with respiratory failure.