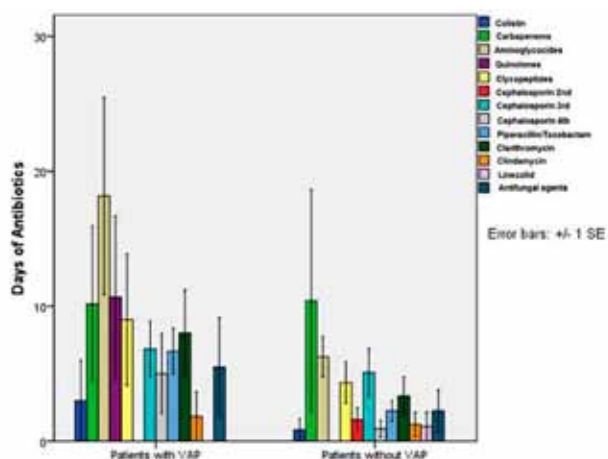


pneumonia or bronchiolitis admitted to PICU. We compared the outcomes and treatment in PICU patients with pneumonia or bronchiolitis who developed VAP and those without VAP.

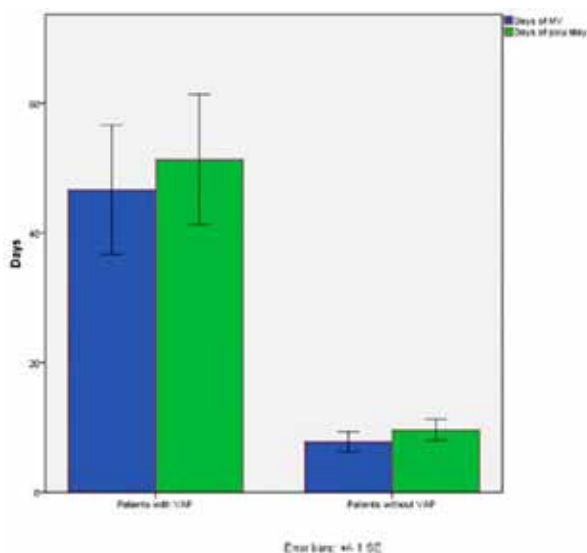
Methods The medical records of PICU patients with pneumonia or bronchiolitis from January 2011 to December 2011 in a tertiary care hospital were reviewed. Demographic and clinical data including antibiotic therapy were recorded. VAP was diagnosed according to CDC criteria.

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 aminoglycosides 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**

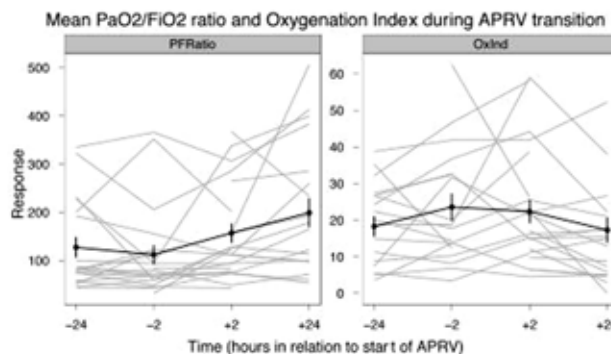
doi:10.1136/archdischild-2012-302724.0996

S Kambhampati, S Kache, J Williamson, T Roberts, S Messing, J Arimura. *Stanford University, Stanford, CA, USA*

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)
PaO ₂ /FiO ₂	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.

997 VENTILATOR-ASSOCIATED PNEUMONIA (VAP) ON PEDIATRIC INTENSIVE CARE UNIT

doi:10.1136/archdischild-2012-302724.0997

JR Fedžat, F Jonuzi, V Mišanović, D Anić, M Halimić, A Jonuzi. *PICU, Pediatric Clinic, University Clinical Centre of Sarajevo, Sarajevo, Bosnia-Herzegovina*

Introduction Ventilator-associated pneumonia (VAP) is a form of nosocomial infections - pneumonia which occurs in patients who are on mechanical ventilation for longer than 48 hours. It is very often complication on intensive unit care.

Aim To evaluate prevalence VAP on Paediatric intensive care unit (PICU) and the most common causes. Subjects and methods: From mart 2009. till mart 2011., 42 patients age two months to eight years. Design of study: prospective Patients were divided according to age, gender, time of manifestations VAP, types of microorganisms isolated in cultures.

Results From 42 investigated patients 22/42 (52.3%) were females. Patients were divided in the groups according to their age as follows: 0–6 months 9/42 (21.4%), 7–12 months 17/42 (40.4%), 1–3 years 11/42 (24.4%), 4–8 years 5/42 (11.9%) patients. According to time of manifestations VAP: between 48–96 hours of ventilations 14/42 (33.3%) patients, after 96 hours of ventilations 14/42 (33.3%) patients. According to types of microorganism isolated in cultures: *Klebsiella pneumoniae* 12/42 (28.5%), *Acinetobacter calcoaceticus* 7/42 (16.6%), *Staphylococcus aureus* 7/42 (16.6%), *Pseudomonas aeruginosa* 4/42 (9.5%), *Enterobacter* 4/42 (9.5%), *Stenotrophomonas maltophilia* 2/42 (4.7%), unknown 8/42 (19.2%). De-escalation therapy was administered in 30/42 (71.4%) patients. Dual antibiotic therapy was found in 22/42 (52.3%) patients. Mortality was 13/42 (30.9%) patients, in group therapy with deescalation 7/13 (53.8%), whereas in the monotherapy group was 8/13 (61.5%) patients.

Conclusion VAP is quite common complication on PICU. Previously taken cultures are very helpful in timely selection antibiotics and successful recovery.

998 NONINVASIVE POSITIVE PRESSURE VENTILATION IN INFANTS AND CHILDREN WITH ACUTE RESPIRATORY FAILURE

doi:10.1136/archdischild-2012-302724.0998

^{1,2}B Khemliche, ^{1,2}DD Batouche, ^{1,2}S Boudjahfa, ^{1,2}D Boumendil, ^{1,2}Y Touhami, ^{1,2}S Abassini, ^{1,2}MA Negadi, ^{1,2}Z Mentouri-Chentouf. ¹Service de Réanimation Pédiatrique, Centre Hospitalo-Universitaire d'Oran; ²Faculté de Médecine d'Oran, Université d'Oran, Oran, Algeria

Objective This study was performed to determine faisability and efficacy of Noninvasive positive pressure ventilation (NPPV) for infant and children with acute respiratory failure (ARF).

Materials and Methods During March 2006 to December 2011, we include in this prospective observational study infants and children ≤ 16 years of age hospitalized at the multidisciplinary PICU of the university teaching hospital of Oran with hypoxemic or hypercarbic acute respiratory distress. The patients were eligible to receive in first intention mask ventilation by means of a conventional volumetric ventilators as an alternative means of respiratory support in association with conventional medical treatment. Patients were evaluated regarding physiologic variables prospectively before NIV and at 2 hrs of NPPV.

Results A total of 109 patients were included. The average of age been of 57.07±57.95 months, we use NPPV for 22 (20%) children with hypercarbic acute respiratory failure (ARF), for 87 (80%) with hypoxemic ARF. 44 (40%) patients had ARF after extubation. The

BiPAP mode was used among all patients. After the second hour of NPPV we observe reduction of respiratory rate (43.72±13.46 b/min vs 34.25±13.47, p<0.01), heart rate (138.66 b/min vs 129.27±24.21, p<0.01) and improvement of the SPO₂ (86.17±13.33 vs 94.85±6.9, p<0.01). We listed only 36 (33%) failures which had recourse to the intubation.

Conclusion The NPPV is an interesting technique in PICU and the results are promising. The post-extubation ARF is probably a better indication for NPPV in paediatrics.

999 VALIDATION OF PEDIATRIC CARDIORESPIRATORY SIMULATOR: SIMULRESP

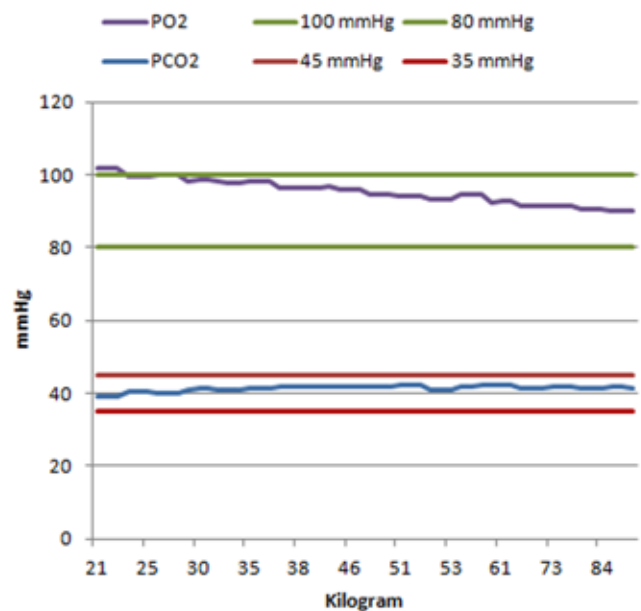
doi:10.1136/archdischild-2012-302724.0999

^{1,2}O Fléchelles, ¹P Hernert, ³F Cheriet, ^{1,3}N Zaglam, ¹G Emeriaud, ¹P Jouvot. ¹Pédiatrie, CHU Sainte-Justine, Montréal, QC, Canada; ²Service de Réanimation Néonatale et Pédiatrique, CHU de Martinique, Fort de France, France; ³Ecole Polytechnique de Montréal, Montréal, QC, Canada

Introduction To improve the training of medical students in respiratory physiology, we created an interactive cardio-respiratory simulator (SimulResp, figure 1). The objective of our study was to validate the simulator in normal and specific patient conditions.

Methods We run SimulResp (version 2012.03.10.01) with several virtual patients characteristics: sex (M/F), age (8 to 18 years old) and weights (10th, median, 90th percentiles), atmospheric pressure increase (simulation of scuba diving condition). SimulResp was run 3 times for each patient characteristic. We compared pH, PO₂ and PCO₂ obtained from the simulations to physiological values published in literature.

Results Blood gases values obtained from SimulResp (figure 1) were within normal range (pH 7.35–7.45, PCO₂ 35–45 mmHg, PO₂ 80–100 mmHg). At 4.7 atmospheres, the difference with the published data (ref 1) was less than 10% for all values (figure 2).



Abstract 999 Figure 1 Physiological condition at H4