AIRWAY PRESSURE RELEASE VENTILATION IN NEONATES WITH CHRONIC LUNG DISEASE
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**Background:** Premature infants with severe chronic lung disease often require prolonged ventilation with exposure to high mean airway pressure. In its most severe form these infants often are exposed to prolonged high frequency ventilation which can be uncomfortable for the infants causing them to “fight the ventilator” leading to progressive respiratory distress. We report our utilization of airway pressure release ventilation (APRV) which is essentially a bilevel CPAP mode of ventilation using a longer time \( T_{hi} \) at the high pressure \( P_{hi} \) to allow for alveolar recruitment followed by a release period \( T_{lo} \) at low pressure \( P_{lo} \)

**Purpose:** To determine the feasibility and safety of APRV in neonates and infants with severe restrictive lung disease and respiratory failure. **Method:** Approval for this review study was obtained from Children’s hospital of Los Angeles Institutional Review Board. Patients that received APRV over the last 2 years were identified and medical records were reviewed. **Results:** There were 10 patients placed on Airway Pressure Release Ventilation with AVEA ventilator between 2004 – 2005 at Children’s Hospital of Los Angeles Center for Newborn and Infant Critical Care. Nine of the 10 patients had clinical improvement on APRV. The most common underlying lung disease was severe chronic lung disease in former preterm infants. Mean gestational age was 27±5.1 weeks. On APRV the patients were on significantly higher mean airway pressure than on SIMV/PS, HFOV or HFJV (27±3 Vs 15.1±4.1 cm H2O). Oxygen requirement decreased from 50% prior to APRV to 30% by day 5 of APRV. Mean P/F (paO2 or PcO2/FiO2) significantly increased by 12 hours of APRV (176±96.9 Vs 124±58.7 p< 0.01). Despite the high mean airway pressure, patients remained hemodynamically stable with normal blood pressure and urine output. The patients were subjectively reported as being more comfortable on APRV and received fewer bolus doses of sedation and analgesia. **Conclusion:** These data demonstrate that APRV is well tolerated by our patient population with no adverse effects on the hemodynamic status of the neonates and that the majority of the patients had improved oxygenation on APRV. However, further studies will be needed before we can determine the overall efficacy of this mode of ventilation.