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**Title:** A retrospective review of the clinical characteristics and outcomes of a cohort of children, less than one Year of age, initiated on long-term BiPAP

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**Body:** Background: Children less than one year of age, are being initiated on long-term biphasic positive airway pressure (BiPAP). However, longitudinal outcomes data is lacking. Our aim was to report on the clinical characteristics and outcomes of a cohort of children less than one year of age that were initiated on long-term BiPAP. Methods: Children, less than 1 year of age initiated on long-term BiPAP between January 1991 and December 31, 2011 were retrospectively reviewed. Results: Twenty-nine children were identified; 26 patients had sufficient data for analysis. The mean age +/- SD at the time of initiation of BiPAP was 6.0 months +/- 4.1 months. The mean +/- SD duration of ventilation 25.0 months +/- 36.0 months. The underlying diagnosis was neuromuscular weakness in 14/26 (54%) patients, pulmonary in 6/26 (23%) patients, skeletal in 4/26 (15%) and CNS disease in 2/26 (7.7%). The location of initiation was the ICU for 16/26 (61.5%), the sleep lab for 5/26 (19%), and the ward for 5/26 (19%). All patients were initiated on nocturnal BiPAP. The mean +/- SD change in the change in CO<sub>2</sub> from initiation to present was a drop in 20.8 +/- 74.8 mmHg. BiPAP complications included poor compliance in 7/26 (27%), midface hypoplasia (3/26) and dermatographism (3/26). Twenty-seven (7/26) percent of the cohort died of respiratory causes; 6 of the deaths were not related to BiPAP use. Conclusion: These data demonstrate that BiPAP in children less than 1 year of age is effective at improving ventilation. However, patient compliance was a major barrier. Although, the overall mortality rate was high, the mortality rate secondary to BiPAP per se was low.