

## Leadership Connection 2018 (15-18 September)

### Efficacy and Safety of Bubble CPAP in Preterm Neonates: A Literature Review

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**Background:** Respiratory Distress Syndrome (RDS) is a common and often fatal complication for preterm infants < 37 weeks gestation due to a surfactant deficiency and immature lung development. RDS places premature neonates at higher risk for respiratory distress, respiratory failure, and the need for ventilator support. A key intervention is to use a continuous positive airway pressure device (CPAP) that prevents the alveoli and airways from collapsing and decreases the work of breathing for the neonate.

**Objective:** The purpose of this literature review is to explore the non-invasive and cost-efficient technology of the bubble CPAP (bCPAP) in neonates to encourage respiratory success in the hours following birth. This intervention is explored in regard to safety and extubation success in comparison to other continuous positive airway pressure devices to promote best practice and safety for patients.

**Findings:** bCPAP is an effective and safe alternative to help treat respiratory insufficiency in premature neonates. Utilization of bCPAP for premature neonates as a non-invasive respiratory support system has many benefits. These include decreased extubation failure, increased survival rates, improved Silverman Andersen respiratory severity scores, and a decreased need for mechanical ventilation. Success of the intervention is further validated by SpO<sub>2</sub> levels, O<sub>2</sub> requirement, signs and symptoms of respiratory distress, and rate of breathing. The positive results of bCPAP can be correlated with the early application of the intervention immediately after birth and continuous monitoring to further adjust the device settings to meet the specific needs of the patient. Risk factors of this intervention include skin breakdown and nasal septal injury, which must be monitored. Some of the literature is from underserved populations due to the easy accessibility and low cost as compared to other methods.

**Conclusion:** The intervention of bCPAP is an effective alternative to other forms of continuous positive airway pressure devices and mechanical ventilation as it provides improved patient outcomes, decreased costs, and is minimally invasive.

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**Title:**

Efficacy and Safety of Bubble CPAP in Preterm Neonates: A Literature Review

**Keywords:**

Bubble CPAP, neonates and ventilation

**References:**

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#### **Abstract Summary:**

Respiratory Distress Syndrome (RDS) is a common and often fatal complication for preterm infants due to a surfactant deficiency and immature lung development. Bubble CPAP decreases extubation failure rates and ventilator dependence, enhances survival, and improves Silverman Andersen respiratory severity scores compared to alternative treatment methods.

#### **Content Outline:**

##### 1. Background

- topic- subject population (neonates)
- Bubble CPAP explanation and how it works

##### 2. Objective

- Literature review search strategy

##### 3. Findings

- Utilization of bCPAP for premature neonates as a non-invasive respiratory support system has many benefits. These include decreased extubation failure, increased survival rates, improved Silverman Andersen respiratory severity scores, and a decreased need for mechanical ventilation. Risk factors of this intervention include skin breakdown and nasal septal injury, which must be monitored

##### 4. Conclusion

- The intervention of bCPAP is an effective alternative to other forms of continuous positive airway pressure devices and mechanical ventilation as it provides improved patient outcomes, decreased costs, and is minimally invasive.

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**Author Summary:** Megan Daniels is a senior year nursing student at Ursuline College. She is a Breen School of Nursing honors student, an executive member of Ursuline's student nursing club, and a resident assistant in the dorms. She has completed an internship at University Hospitals and hopes to work in Pediatrics when she graduates.