

PAPmate

Augmenting Minimally Invasive Respiratory Support of Neonates

A two-solution system that is easy to use, reliable, and reduces the workload on nurses.

Problem Background

Bubble CPAP (bCPAP) is a minimally invasive respiratory support system that is commonly used in Neonatal Intensive Care Units (NICUs) to alleviate the symptoms of Respiratory Distress Syndrome and promote healthy lung development. However, commercial bCPAP systems have a reported **failure rate of 35 to 50%**.¹ When bCPAP fails, the neonate is effectively removed from respiratory support and is at risk of developing hypoxia related complications.

1. Diblasi, R., & Courtney, S. E. (2017). Non-Invasive Respiratory Support. In Assisted Ventilation of the Neonate (pp. 162–179). essay, Elsevier.

Why Does bCPAP Fail?

1. bCPAP nasal prongs often disconnect from nose
2. These disconnections often go unnoticed, as NICU staff check the systems every 3 to 4 hours and there is not a built-in monitor to track disconnections.

Our Goal

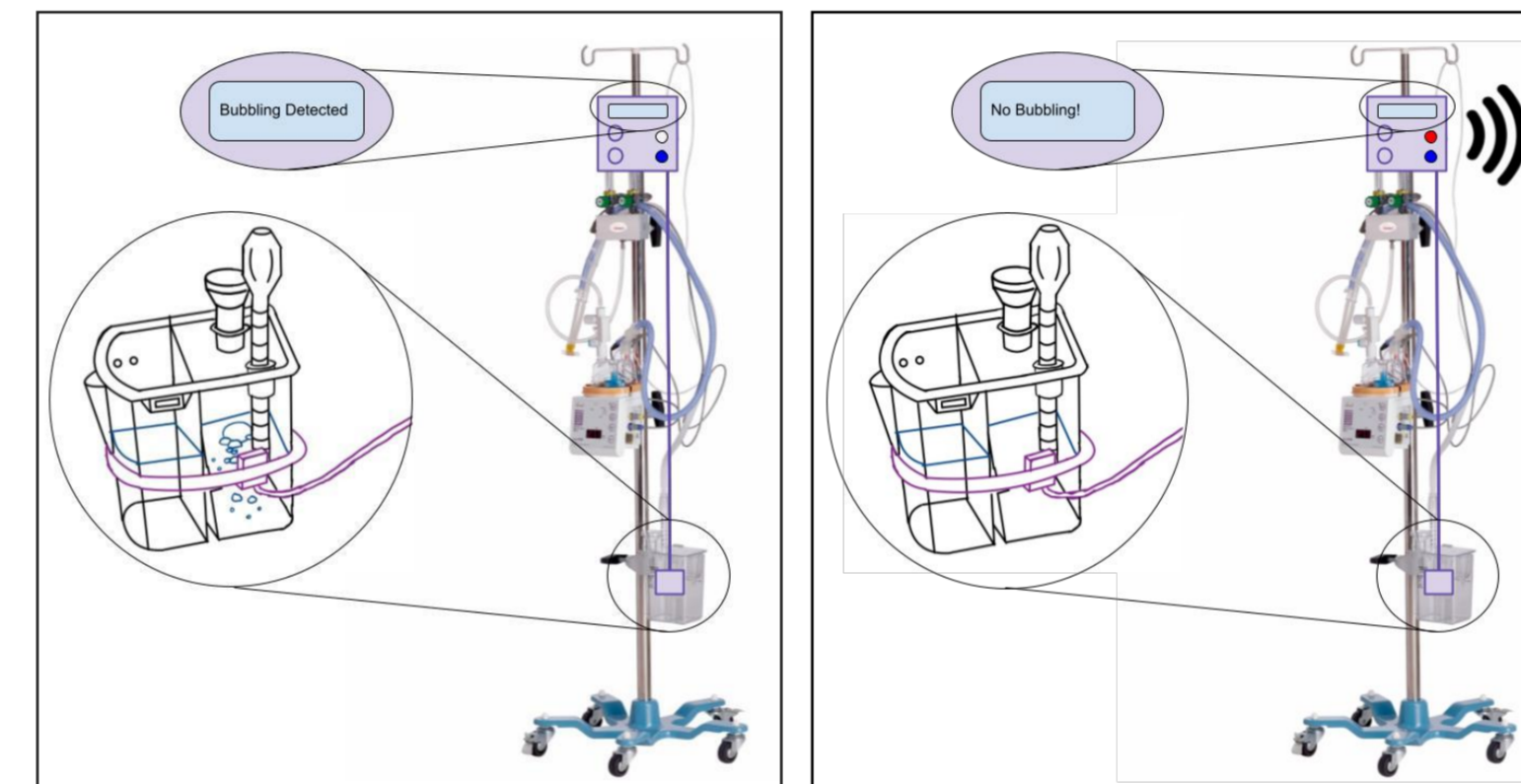
Augment minimally invasive respiratory support systems for neonates experiencing RDS in order to **reduce hypoxia related complications** and **promote healthy lung development**.



Mohamed, M. A. (2022, February 7). *Bedside management for infants on BCPAP*. Bubble CPAP Institute. Retrieved April 20, 2022, from <https://www.bcpap.org/chapters/bedside-management-strategies-for-infants-on-bubble-cpap/>

bCPAP Bubble Monitor

Detects disconnections by monitoring for the cessation of bubbling in the water canister

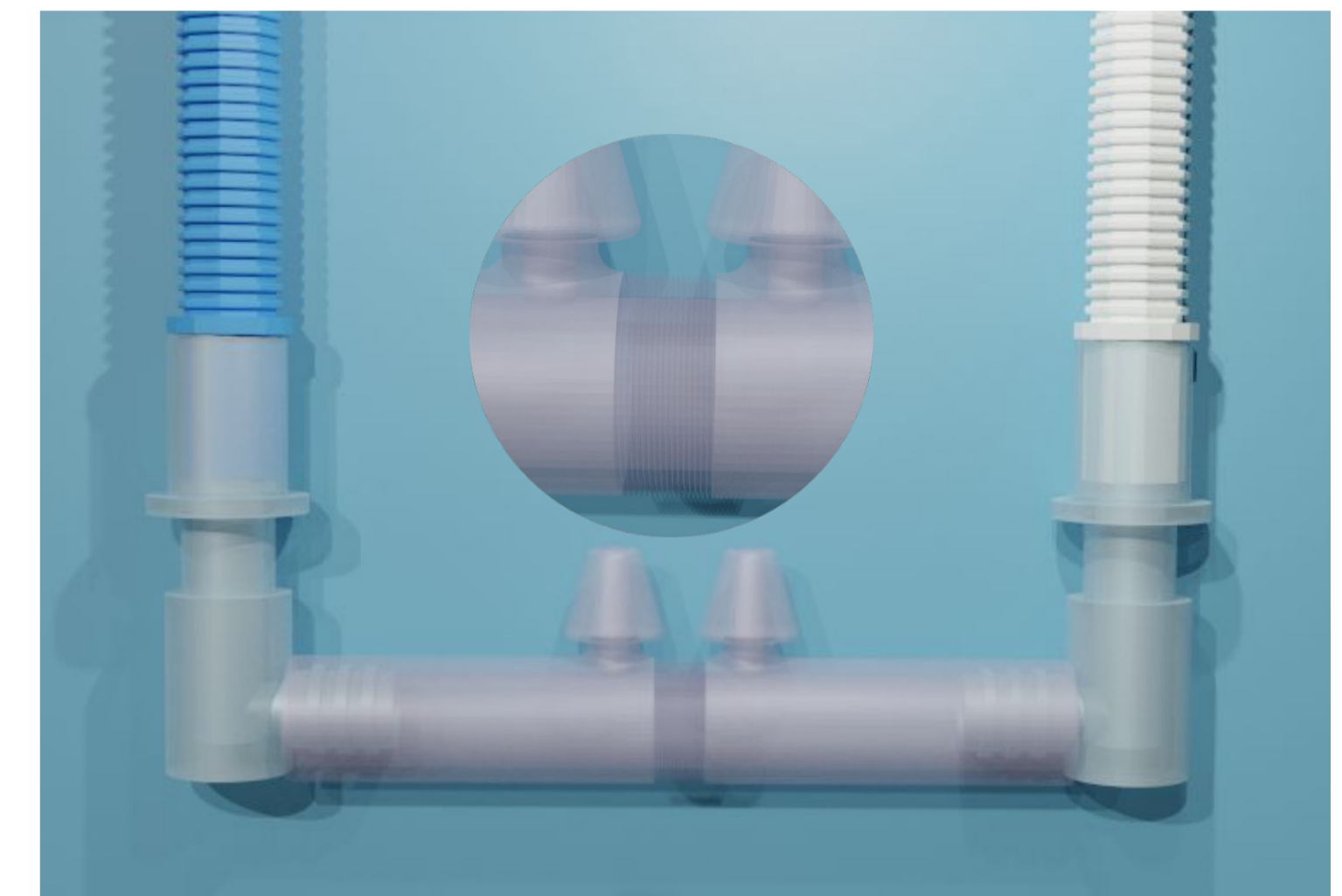


Features

- **Flashing LED light and sound alarm** to alert NICU staff
- Alarms **4 seconds** after a disconnection to prevent false alarms
- Interfaces with SiPAP and Fisher & Paykel bCPAP systems
- **LCD display** for user feedback

Adjustable Nasal Prongs

Decreases risk of nasal prong disconnection by improving fit in the nose



Features

- **Conical shape** provides better occlusion and grip in the nares
- **Pleated, extendable centerpiece** to adapt to various septal widths
- Connectors that move the bCPAP tubing away from neonate's face
- **Series of sizes** for neonates 500g to 3000g in weight

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