

Abstract Title:

The Team Approach to Reducing Chronic Lung Disease: A Champion's Story

Presenter:

Maria Abrantes, MD

Address: 35 Valley view, Irvine, CA 92612

Phone: 805-218-3427

Email: Mabrant@memorialcare.org

Author:

Maria Abrantes, MD

Address: 35 Valley view, Irvine, CA 92612

Phone: 805-218-3427

Email: Mabrant@memorialcare.org

Co Author/Co-Investigator Names/Professional Title: Maria Abrantes, MD ¹; Arwin Valencia MD ¹; Antoine Soliman, MD ¹; Dominique Adoumie, RN ¹; Donna Flores, RN ¹; Ronaldo Cabasura, RCP ², Jason Jenkins, RCP ², Ching Tay, MS, CNS, RNC-NIC ¹

¹Department of Neonatology: Miller Children's and Women's Hospital, Long Beach Memorial Medical Center, Long Beach, CA. ² Department of Respiratory Therapy, Long Beach Memorial Medical Center, Long Beach, CA.

Background: Non-invasive mode of ventilation, early surfactant administration and antenatal steroids have improved the survival rate of extremely low birth weight infants. These infants are surviving now, but some of them have chronic lung disease (CLD). This increases their predisposition to pulmonary infections, poor postnatal growth, neurodevelopmental deficits and longer hospital stays. When comparing to similar-level NICUs within the Vermont Oxford Network (VON), our rate of CLD in 2013 for infants ≤ 1500 g was at 33.8% which is higher than the VON upper quartile rate of 30.6%. Continuous positive airway pressure (CPAP) like bubble CPAP, a non-invasive ventilation modality has been shown to prevent and manage lung disease. Its early use can reduce days on mechanical ventilator, decrease postnatal steroid use and improve postnatal weight gain without increased complications.

Goals: To improve CLD rate and decrease ventilator days by 25% in infants ≤ 1500 g through early use of bubble CPAP.

Method: A team consisting of 2 neonatologists, 2 staff nurses, and a respiratory therapist were sent to Columbia University in October 2014 to learn about their experience. An implementation timeline was established and the education of BCPAP champions (staff nurses and respiratory therapist) was completed by December 2014. Policies and procedures were written and approved. Staff competency

checklist was developed. Data were collected upon implementation for the following metrics: Surfactant administration >2 hours, duration of assisted ventilation, total CPAP days, and skin breakdown. For Q1, bimonthly meetings to share data and to continue staff education were held. This was later decreased to monthly meetings for Q2 and Q3 and quarterly, thereafter.

Results: 117 VLBW infants were placed on bubble CPAP from January 13, 2015 to December 31, 2015. There was a significant increase in total CPAP days for VLBW infants to almost 5x the mean from 2014 to 2015. This was a significant increase of more than 100 days. Duration of assisted mechanical ventilation for VLBW infants >11 days, decreased by 20% from 2014 to 2015. However, nasal septal breakdown increased to as high as 40% in the last quarter. Surfactant given >2 hours for intubated infants decreased from 80% to 50%. Preliminary analysis from Vermont Oxford network showed our rate of CLD in 2015, decreased to 26% from 33.8% in 2013. This improvement did not translate to a significant decrease in discharge on O2 to home from 18% (2014) to 17% (2015).

Conclusion: Our NICU has adapted and implemented a better respiratory support for our VLBW infants. This was reflected by an increase in CPAP days and decrease in assisted ventilation days. However, more needs to be done to decrease our CLD rate. Current efforts are focused on starting bubble CPAP in the delivery room, preventing nasal breakdowns, creating extubation guidelines, and most importantly, continued education to help maintain bubble CPAP.