Introduction:

Memorial Hospital of South Bend is a level III NICU with around 400 annual admissions of which about 90 infants are very low birth weight. Compared to other NICUs in the VON, our BPD rates are high. In the year 2013 BPD rate was 44.6% in our VLBW population which places our unit in the top 3rd percentile for BPD rates amongst VON units.

Objective:

To decrease the BPD rate in our unit by 15% from the baseline (2013 rate). We expect all the potentially better practices (PBPs) to be in place before the end of year 2014 and 2015 will serve as our outcome year.

Methods:

We have identified following PBPs (potentially better practices) that we intend to implement

1. Early CPAP/non-invasive positive pressure ventilation
2. Gentle Ventilation/permissive hypercapnea
3. Optimized caffeine usage
4. Decrease VAP (ventilator associated pneumonia) rate. The VAP rate in our NICU has been high, contributing to increased incidence and severity of CLD. For over a year now we have been working to decrease VAP rate in our Unit. We have had some success and intend to continue working on that quality improvement project.
A flow sheet (Figure 1) has been created to help implement gentle ventilation strategies and to encourage early extubation and non-invasive ventilation.

Outcome Measures:
We will monitor
1) Percentage of VLBW infants placed on CPAP and non-invasive positive pressure ventilation in the DR as well as in the NICU
2) Incidence of pneumothorax
3) Average days on ventilator
4) VAP rate
5) BPD rate

Discussion:

Bronchopulmonary dysplasia (oxygen requirement at 36 weeks of gestation) is a major morbidity in VLBW infants and its rates vary significantly amongst NICUs. Ventilator associated pneumonia rates also vary widely amongst NICUs. Our unit has had relatively high VAP and BPD rates for last many years. We currently have a quality improvement project (NOVAH : No VAP Around Here) underway to decrease VAP rates in our unit and initial results suggest we are having success. Since VAP contributes to severity and rate of CLD, we are hoping this quality improvement initiative will help to further decrease our BPD rates.
Suggested Guidelines for Weaning/Extubation

- pH > 7.25
- pCO₂ < 55
- Ventilator Rate < 20
- MAP < 11
- FiO₂ < 40

Apneic after Following NRP

Spontaneous Breathing

Respiratory Distress

No distress

Continue to assess

Figure 1: Respiratory Management of Infants < 32 weeks