

## **POETri – Positive Oral Experiences Training: A quality improvement project to foster oral skill development in preterm infants**

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### **A. Background**

The Royal Alexandra Hospital (RAH) is a tertiary perinatal center with an annual delivery rate of >7,000 births. The NICU promotes family-centred care, minimizing parent-infant separation and promoting breastfeeding. However, preterm infants often receive parenteral nutrition for extended periods of time and experience delayed initiation of oral feeds including breastfeeding. One of the reasons for this is a reluctance by staff to orally feed infants on non-invasive breathing support (such as nasal continuous positive airway pressure (CPAP) treatment). Early initiation of oral feeding is associated with increased breastfeeding success, and oral feeding while on CPAP has been safely applied in Canada and internationally<sup>1</sup>. Currently, the RAH NICU does not have an oral feeding guideline.

A retrospective chart review of babies <33 6/7 wks gestation discharged from the RAH NICU in 2014 indicated that <10% were exclusively breastfed upon discharge. Only 50% of infants exclusively received breast milk, 25% were exclusively formula fed and 25% were fed a combination of breast milk and formula.

The purpose of this quality improvement (QI) project was to implement an oral feeding guideline to increase breastfeeding rates at discharge in preterm infants at the Royal Alexandra Hospital (RAH) Neonatal Intensive Care Unit (NICU). This project was a focused first step in the process of promoting breastfeeding at discharge in preterm infants through the introduction of a guideline to promote Positive Oral Experiences Training (POETri) for infants who are on respiratory support.

### **B. Objectives**

Following the collection of baseline data, the first objectives identified for this QI project were to 1) decrease the age at which first nuzzle at the breast occurs; and 2) decrease the age at which the first breast feed occurs in preterm infants.

### **C. Approach**

The POETri team used a QI approach for this project using the steps of Plan, Do, Study, and Act. We created, piloted, and revised a data collection and auditing form to identify baseline data, current gaps, and targets as well as track project progress and outcomes. Baseline data were collected on 91 preterm infants born at less than 29 weeks to help guide the implementation of POETri. Time to first nuzzle and first breastfeed were all identified as occurring much later than expected and these were identified as initial targets to achieve the longer-term goal of increased breast feed rates a discharge.

An existing feeding algorithm was identified through an extensive literature and grey literature review. This algorithm was reviewed in depth with the team that developed it. The Feeding Babies in SINC (Safe, Individualized Nipple-Feeding Competence) algorithm was developed in Calgary as a QI Project over the last 5 years<sup>1</sup>. It is being adopted in several NICUs in Canada and the United States. Our Team collaborated with the team in Calgary in reviewing and selecting the algorithm for piloting in Edmonton. Training workshops were held with POETri team members and 20 NICU clinical team members who were identified as “POETri Champions”. Orientation lunch and learn sessions were delivered to bedside nurses to train staff in the POETri Project and SINC algorithm.

A pilot of the POETri program was conducted on 20 infants born at <29 weeks gestation for the period January 15<sup>th</sup> to March 15<sup>th</sup>. Team members used the SINC algorithm to teach nurses and parents to recognize feeding engagement and disengagement cues.

#### D. Comprehensive Summary

There was a high degree of concern and discomfort with the idea of feeding infants on CPAP and non-invasive respiratory support. It took much longer than anticipated to introduce the POETri project and concept of feeding on CPAP to the bedside staff and increase their level of comfort to the point that the POETri project could proceed. Collaboration with the team from Calgary was crucial in increasing the comfort of staff members with the concept of POETri and SINC.

The POETri project encouraged team-orientated decision making on progression through the SINC algorithm. Infant driven strategies and clearly outlined algorithms provide clarity and predictability related to care to all team members and parents and encourages communication.

There can be a tendency to switch infants to the method of feeding that the unit has that has the most experience with if infants are seen to be not progressing as quickly as we would like. Babies who are transitioned to semi-demand (the current standard of care on the unit) feeds when they are not ready, have recurrent episodes of regurgitation and greater variability in volume intake vs. babies who are advanced more systematically through SINC algorithm (see Figure 1).

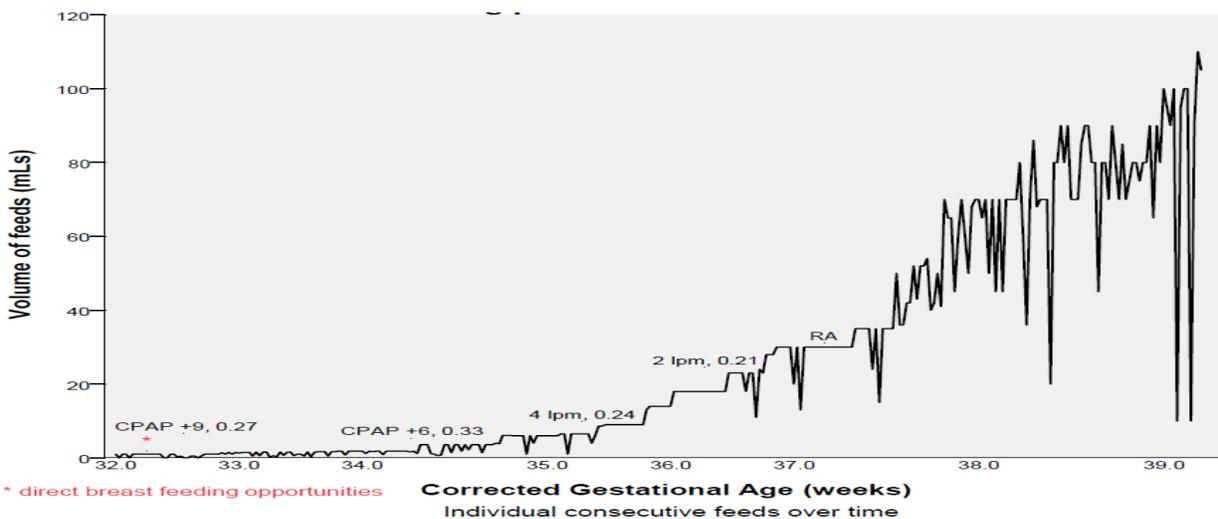


Figure 1. Typical pattern of feeds for an infant fed on SINC algorithm with a switch to semi-demand feeds at 38 weeks gestation.

Key results of the POETri pilot are as follows:

- All infants (100%) in the POETri group had their first feed occur at the breast versus 40% in the pre-POETri group;
- First nuzzle at the breast occurred at an earlier age (hours) with mean age of first nuzzle occurring at 786.3 hours in the POETri group as compared to a mean age of 1454.2 hours in the pre-POETri group. This means that mothers could put their babies to the breast to nuzzle 4 wks earlier in the POETri group;
- First oral feed at the breast occurred at an earlier age (hours) with mean age of first oral feed at the breast occurring at 1118.4 hours in the POETri group as compared to a mean age of 1477.0 hours in the pre-POETri group. This means that mothers could have their babies feeding at the breast 15 days earlier in the POETri group.

The POETri project allowed parents to be more involved in the care of their babies and to engage in nuzzling at the breast a month earlier. For the mother of a baby born at 24 weeks this is the difference between having the first opportunity to have her baby nuzzle at 6 weeks of age rather than 10 weeks.

There is a much higher rate of transfer from the RAH NICU to level 2 NICUs than is commonly recognized. Projects that are aimed at having a specific outcome by discharge may need to be rolled out across a region rather than at one site. In subsequent iterations of this QI project the rate of breastfeeding at discharge will be ascertained once the algorithm is introduced to all NICUs in the Edmonton Zone.

## **E. References**

1. Dalgleish SR, Kostecky LL & Blachly N. Eating in “SINC”: Safe Individualized Nipple-Feeding Competence, a Quality Improvement Project to Explore Infant-Driven Oral Feeding for Very Premature Infants Requiring Noninvasive Respiratory Support. *Neonatal Network*. 2016: 35(4),217-227,

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