

Background on the Intervention

PIOMI

Premature Infant Oral Motor Intervention



How the PIOMI works...

- Provides assisted movement to activate muscle contraction
- Provides movement against resistance to build strength
- Focus is to increase functional response to pressure and to movement, and control of movement for the lips, cheeks, jaw, and tongue
- Cheeks, lips, gums, tongue and palate are targeted using specific oral motor techniques for **3 minutes**
- Ends with non-nutritive sucking for **2 minutes** **Total = 5 mins**

Structure	Purpose	Frequency	Duration
Check C-Stretch	Improve range of motion and strength of cheeks, and improve lip seal.	2x each check	30 sec
Lip Role	Improve lip range of motion and seal.	1X each lip	30 sec
Lip Curl or Lip Stretch	Improve lip strength, range of motion, and seal.	1X each lip	30 sec
Gum Massage	Improve range of motion of tongue, stimulate swallow, and improve suck.	2X	30 sec
Lateral Borders of Tongue/Check	Improve tongue range of motion and strength.	1X each	15 sec
Midline of Tongue/Palate	Improve tongue range of motion and strength, stimulate swallow, and improve suck.	2X	30 sec
Elicit a Suck	Improve suck, and soft palate activation.	N/A	15 sec
Support of Non-Nutritive Sucking	Improve suck, and soft palate activation.	N/A	2 min

Intervention Fidelity Study

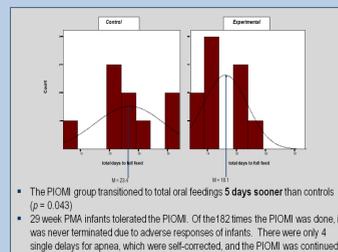
	Correct Order	Correct Technique	Correct Timing	TOTAL RELIABILITY
Interobserver	100%	97.20%	95.52%	97.57%
Interuser				97.59%
RV A and RV B	100%	95.83%	93.33%	96.39%
RV A and RV C	100%	97.87%	97.87%	98.58%
RV B and RV C	100%	97.92%	95.45%	97.79%
Test-Retest				97.58%
RV A	100%	100%	95.65%	98.55%
RV B	100%	100%	95.35%	98.45%
RV C	100%	100%	87.23%	95.74%

The PIOMI demonstrated high interobserver (97.57%), interuser (97.59%), and test-retest (97.58%) reliabilities.
Lessen, Morello & Williams, 2015 in press

Triple Blind Clinical Trial (Lessen, 2011)

PIOMI = 5 days sooner to total oral feeds

PIOMI = Decrease LOS by 2.6 days



Feeding Difficulties in Preterm Infants

Functional and neurologic immaturity of the oral motor structures

Immature sucking skills

Lack of coordination of suck, swallow & breathe

Exposure to negative oral stimuli

Inability to maintain physiologic stability & weight during oral feeding progression

Feeding difficulty & prolonged length of hospital stay

Preterm Oral Musculature

Preterm infants have poor oral-motor control relate to:

- Weaker muscle tone around mouth
- Less sensation
- Decreased lip strength and lip seal
- Less tongue strength
- Decreased sucking strength & endurance



Current Study Purpose/Hypothesis

The PIOMI given prior to a feeding once per day for 14 consecutive days will result in:

- Increased **feeding readiness scores**
- Faster **transition** from gavage to total oral feedings
- Shortened **length of hospital stay**

Inclusion/Exclusion Criteria

Infants are **enrolled** into the study if they

- Were born between 26 and 30 weeks PMA
- Are medically stable at 30 weeks (time of intervention)

Infants are **excluded** if they have:

- Major congenital anomalies
- Necrotizing Enterocolitis
- Grade III-IV IVH/PVH
- Seizures
- > 5L high flow nasal cannula at time of intervention
- > 5L Vapotherm at time of intervention
- Neonatal Abstinence Syndrome

CURRENTLY REVISING IRB TO INCLUDE INFANTS WHO ARE ON NASAL CPAP (IF <6).

Rationale: Out of the first 19 eligible infants, 15 were excluded due to still being on CPAP at 30 weeks. The same safety parameters will remain to monitor for physiological tolerance to the oral motor intervention.

Design/Sample

The study uses a **quasi-experimental** group design using a **convenience sample** of eligible infants who receive the PIOMI compared to a **retrospective sample** of comparable infants who did not receive the PIOMI.

Training

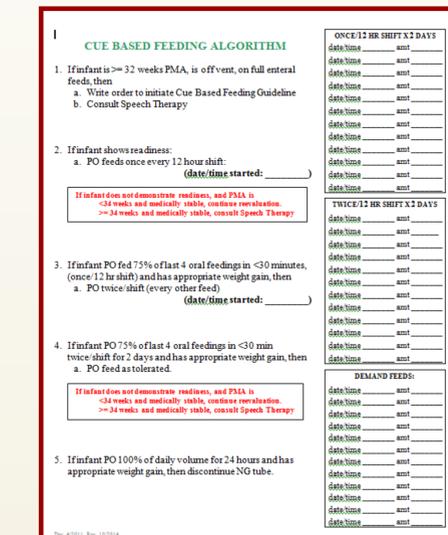
Dr. Lessen came to St. Luke's to train a "super-user" group of 24 staff of both NICU RNs and SLPs

- The PIOMI Training DVD (distributed and viewed prior to Dr. Lessen's arrival)
- A hands-on workshop to review mechanics of each step of the PIOMI
- Peer-evaluated practice of the steps of the PIOMI (inclusion of all 8 steps, correct order, and correct timing)
- Option of using the **PIOMI Reliability Checklist** to test self and peers



Outcome Measures

Cue-Based Feeding Protocol



Feeding Readiness Scale

Table 1. Feeding Readiness Scale (<33 weeks)
Score 1: Drowsy, alert, or fussy prior to care; rooting; hands to mouth; awakens at feeding time; good tone
Score 2: Drowsy or alert with handling; some rooting or takes pacifier; adequate tone
Score 3: Briefly alert with care; no hunger cues; no change in tone
Score 4: Sleeping through care; no hunger cues; no change in tone
Score 5: Needs increased oxygen with care; apenic or bradycardic with care; tachypnea is greater than baseline
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Primary References

- Lessen, B.S. (2011) Effect of the Premature Infant Oral Motor Intervention on Feeding Progression and Length of Stay in Preterm Infants. *Advances in Neonatal Care*, 11 (2), 129-139.
- Lessen, B., Morello C., & Williams, L. (2015 in press) Establishing Intervention Fidelity of an Oral Motor Intervention for Preterm Infants. *Neonatal Network*, March/April.
- Kirk, A.T., Alder, S.C., & King, J.C. (2007, July). Cue-based oral feeding clinical pathway results in earlier attainment of full oral feeding in premature infants. *Journal of Perinatology*, 27, pp.572-578.
- Ludwig, SM, Waitzman, KA (2007). Changing feeding documentation to reflect infant-driven feeding practice. *Newborn & Infant Nursing Reviews*, 7(3), 155-160.