



# Premature Infant Oral Motor Intervention (PIOMI)

## Translating Interventional Neonatal Research into Interdisciplinary Practice

Brenda S. Lessen, PhD, RN  
Illinois Wesleyan University, School of Nursing

AWHONN  
Conference  
Galena  
May, 2012

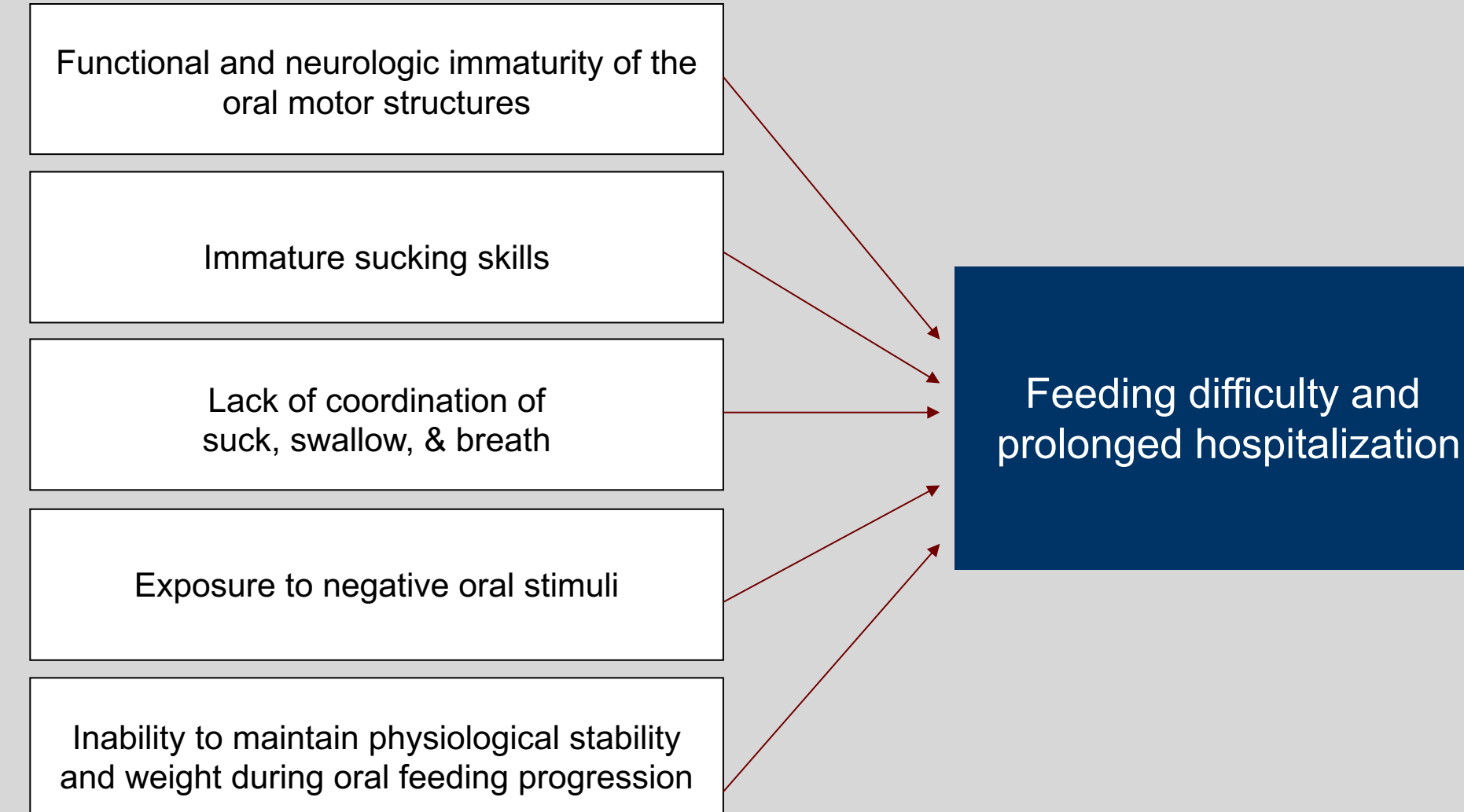
### TRANSLATING EVIDENCE...

#### The Intervention

##### Purpose

- To assess the effect of the Premature Infant Oral Motor Intervention (PIOMI), on feeding progression and length of hospital stay in preterm infants < 30 weeks PMA

##### Feeding Difficulties in Preterm Infants



##### Oral Musculature

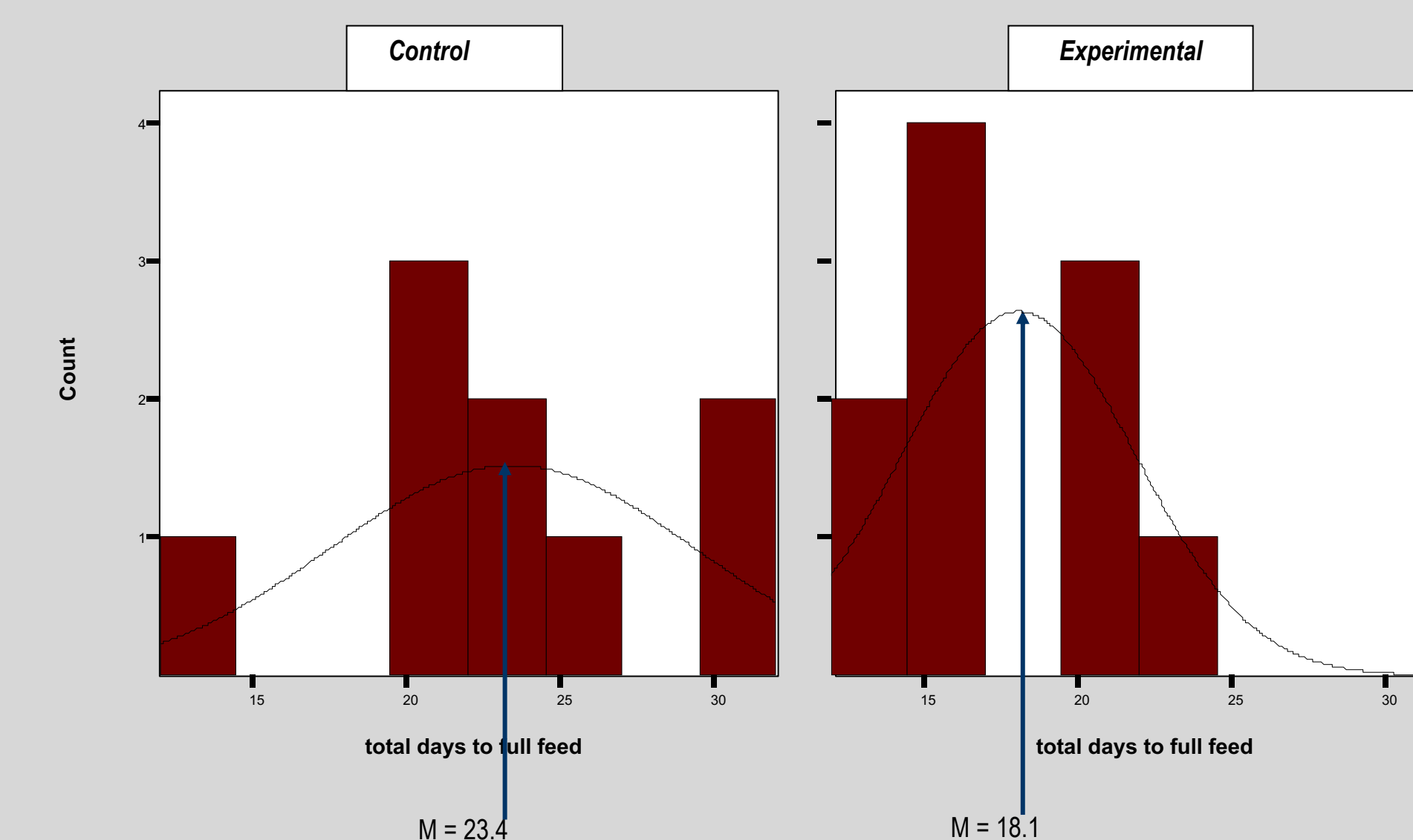
- Preterm infants have poor oral-motor control related to:
  - weaker muscle tone around mouth
  - less sensation
  - decreased lip strength and lip seal
  - less tongue strength
- Decreased sucking strength and endurance

#### The PIOMI

- 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 a specific oral motor techniques for 3 minutes
- Ends with non-nutritive sucking for 2 minutes

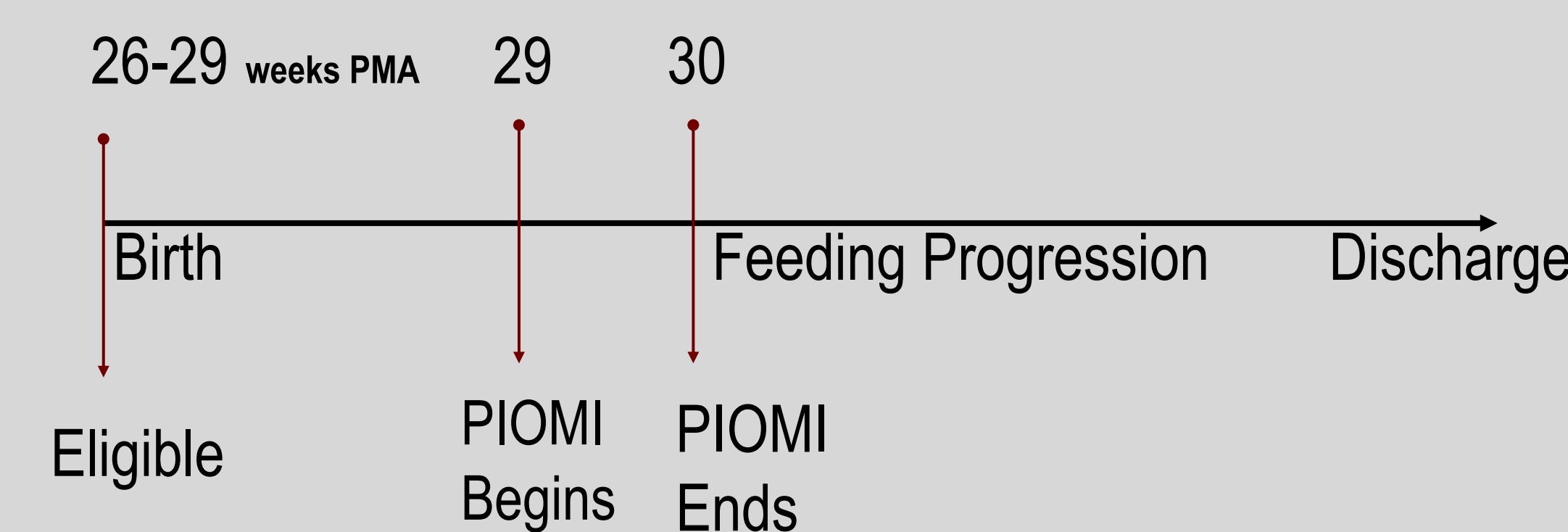
Structure	Purpose	Frequency	Duration
Cheek Stretch	Improve range of motion and strength of cheeks, and improve lip seal.	2x each cheek	30 sec
Lip Stretch	Improve lip range of motion and seal.	1X each lip	30 sec
Upper and Lower Lip Curl	Improve lip strength, range of motion, and seal.	1X each lip	30 sec
Gum Massage	Improve range of motion of tongue, stimulate swallow, and improve suck.	2X	30 sec
Lateral Borders of Tongue	Improve tongue range of motion and strength.	1X each	15 sec
Midblade of Tongue	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
Non-Nutritive Sucking	Improve suck, and soft palate activation.	N/A	2 min

#### PIOMI = 5 days sooner to Total Oral Feeds

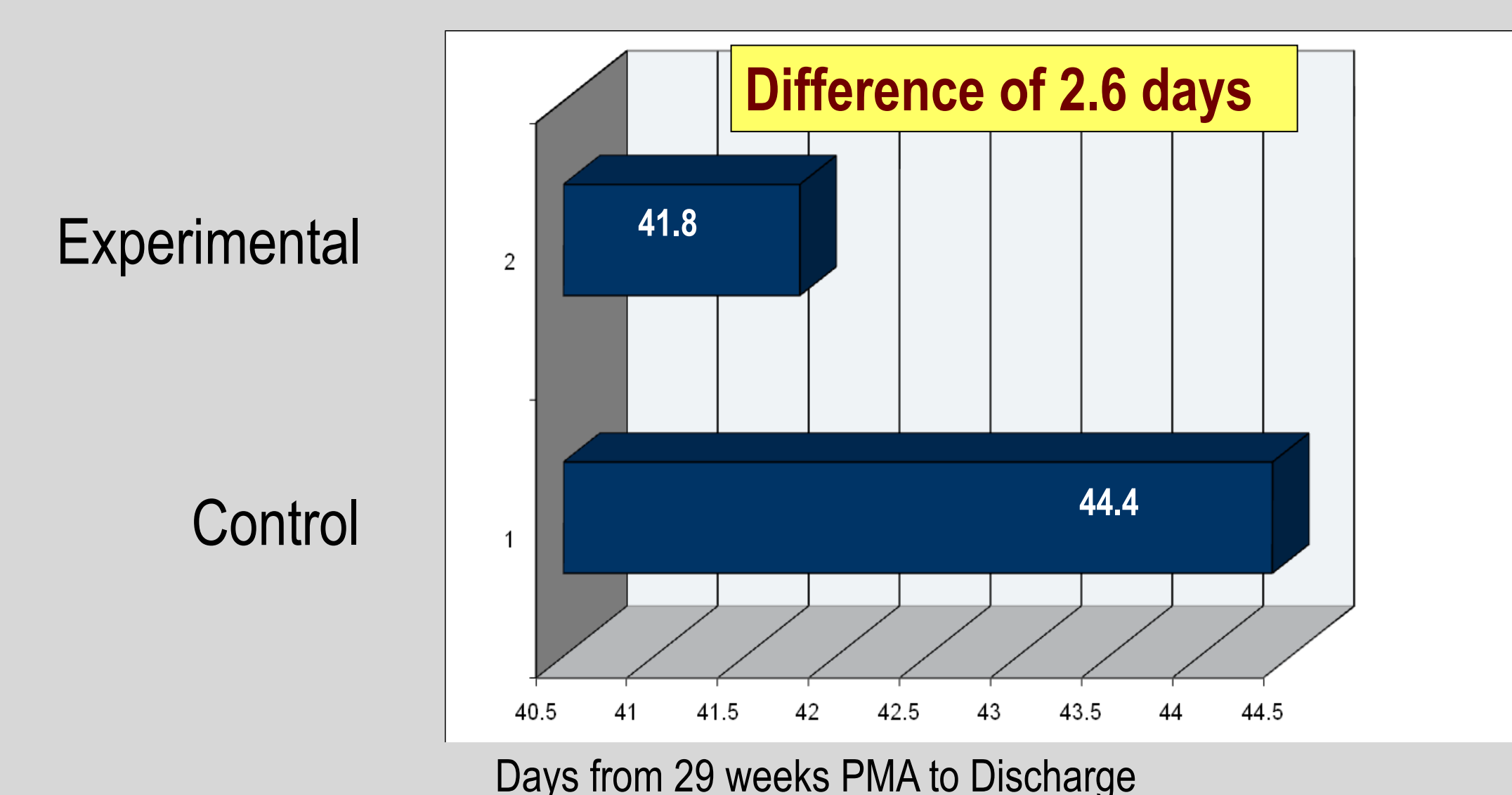


- The PIOMI group transitioned to total oral feedings **5 days sooner** than controls ( $p = 0.043$ )
- 29 week PMA infants tolerated the PIOMI. Of the 182 times the PIOMI was done, it was never terminated due to adverse responses of infants. There were only 4 single delays for apnea, which were self-corrected, and the PIOMI was continued.

##### Study Timeline



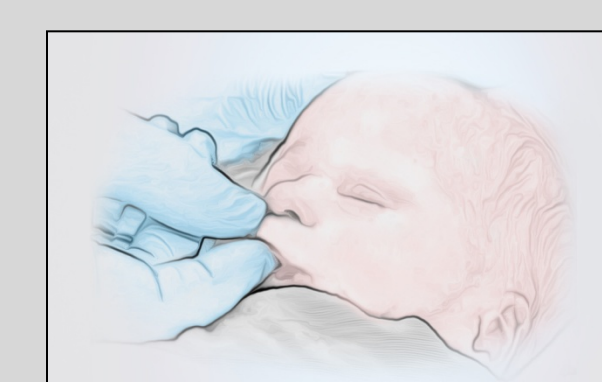
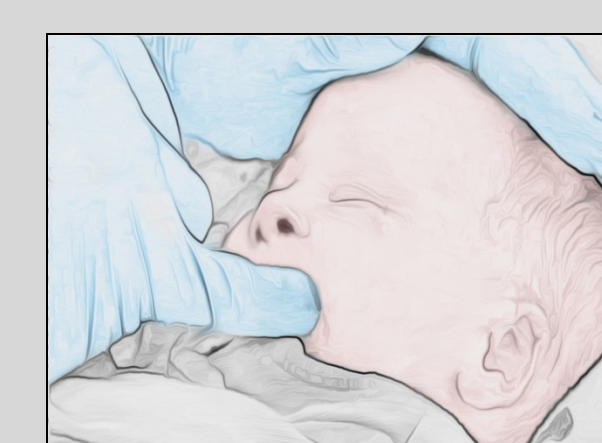
#### PIOMI = Reduced LOS by 2.6 days



- The PIOMI group was discharged **2.6 days sooner** than controls ( $p = .541$ )
- A 3-day decrease in LOS would **save our nation more than \$2 billion annually**

#### Reliability Study on the PIOMI: 98% Agreement

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



### EVIDENCE INTO PRACTICE

#### Translational Theory

#### Diffusion of Innovations Model

Rogers (2003)

*Adoption of an innovation is influenced by the nature of it and the manner in which it is communicated to users in a social system.*

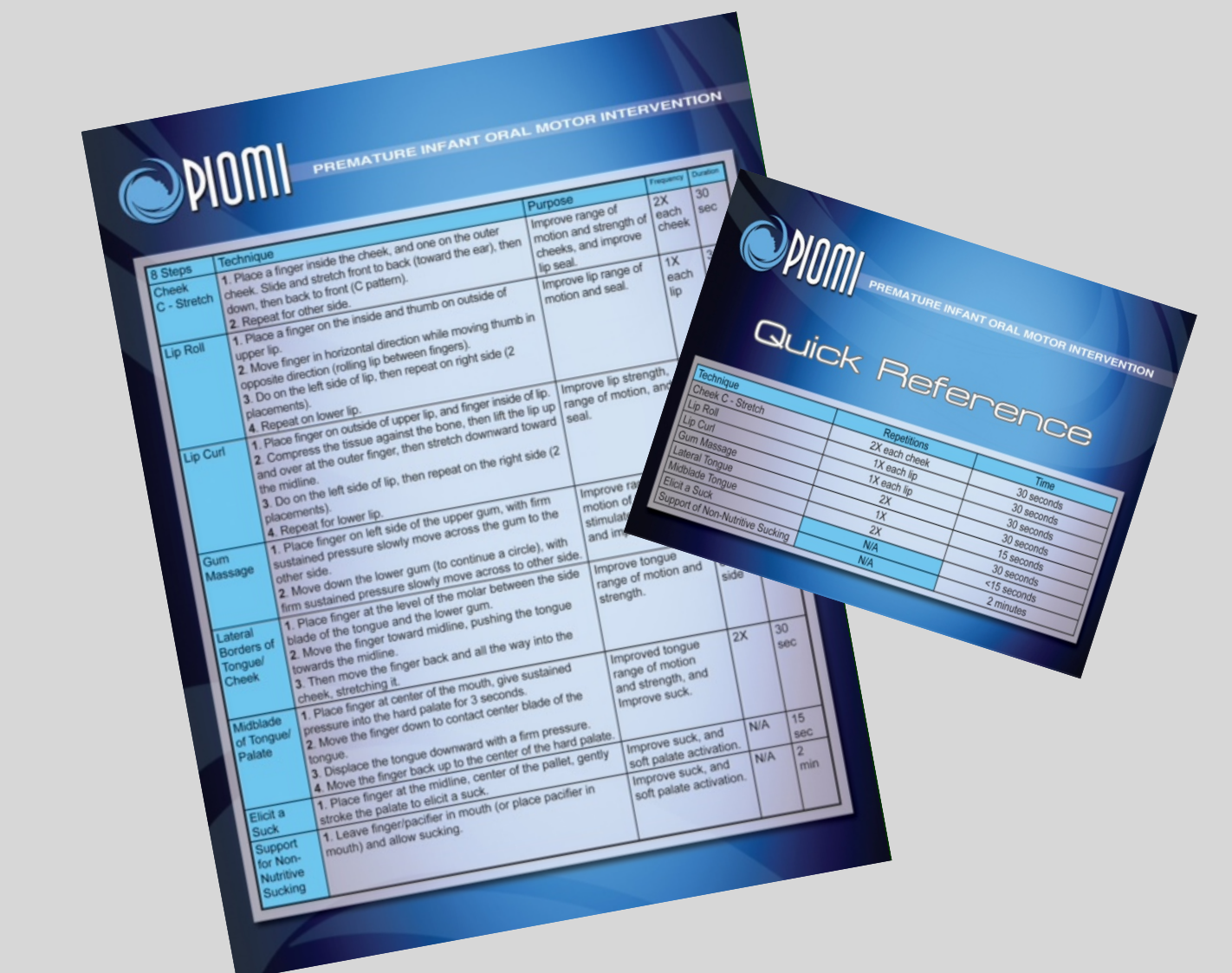
- Publication of the PIOMI Study
- One-on-one discussions with researcher on unit
- Disseminate publication to the "innovators" on unit
- Establish website: [www.PIOMI.com](http://www.PIOMI.com)
- Cross all disciplines involved

- Enhanced by staff involvement in the research
- A positive Reliability Study
- Compatibility with unit "norms"
- Already familiar with oral motor

- Researcher engages key players in discussions
  - RN's
  - Neonatologists
  - Policy makers
  - Speech-Language Path's
- Target "Opinion Leaders" and "Early Adopters"
  - 10% of system members adopt an innovation = rapid adoption by remaining members
- Strong interpersonal ties with opinion leaders is more effective than mass-media campaign
- Tipping Points:
  - FREE (no equipment)
  - Benefits (feeding)
  - East of Use (simple)
  - Time (quick)

#### 5 STEPS

- KNOWLEDGE:** Person becomes aware of the innovation & what it is
- PERSUASION:** Person forms favorable or unfavorable attitude towards innovation
- DECISION:** Person engages in activities towards a choice to adopt or reject innovation
- IMPLEMENTATION:** Person puts innovation into use
- CONFIRMATION:** Person evaluates results of using innovation



- Adopt as Unit/Department Policy
- Researcher consulted in policy development
  - Nurse Practice Council
  - Feeding Council
- Train Staff
  - RN's
  - SLP's
  - PIOMI "Super-Users" or "Champions"
- Develop professional training materials
  - DVD
  - PIOMI Tool
  - Quick Reference
  - Reliability Checklist

- Evaluate training methods
- Periodic testing of reliability
- Continue research

#### Future Research

- Multi Site Sample
- Dose-response studies
  - More times per day
  - Longer period of days (to discharge?)
- Nurse/Parent responses to the PIOMI
- PIOMI on cardiac infants
- PIOMI on "known poor feeders"
- Effect on Breastfeeding
- Parents administering PIOMI
- Evaluate Training methods



#### Training Materials

[www.PIOMI.com](http://www.PIOMI.com)



#### Primary Reference

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.