

Decreasing Barriers to KMC Utilization in USA NICUs



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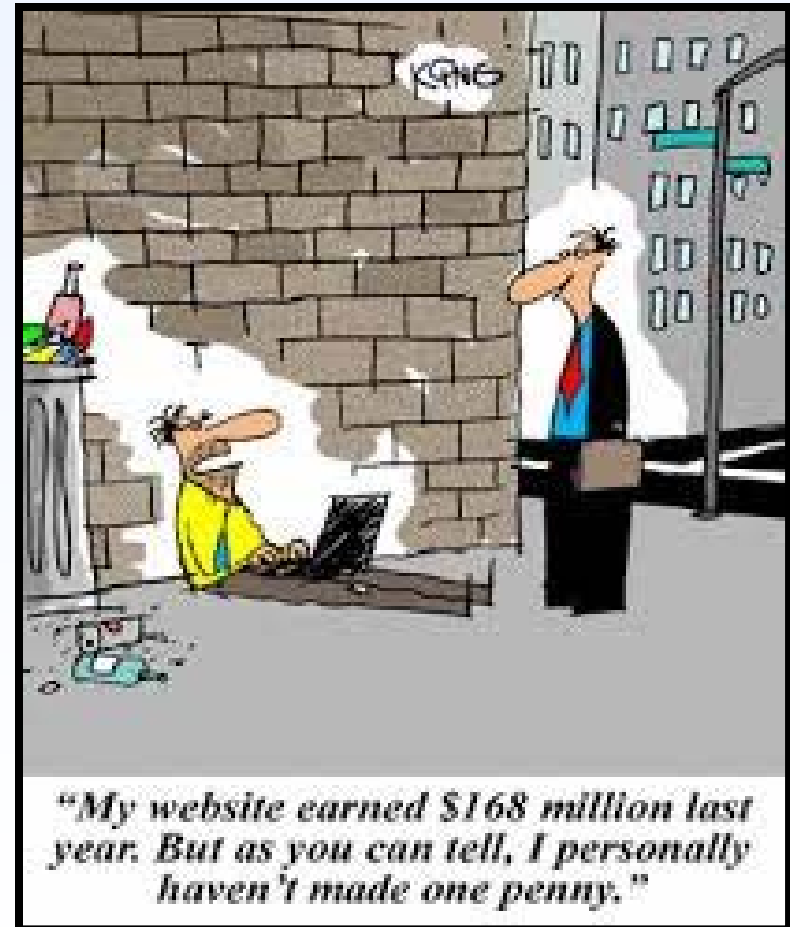
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Decreasing KMC Barriers: Talking Points

- KMC Use in the United States
- Provider Barriers to KMC Use
- Strategies to implement and increase KMC

Disclosures

- I have no disclosures



KMC: Positive Therapy Option for the NICU Infant

- KMC is used to provide sensitive developmental support for the Child/Family/Staff
- KMC modifies the environment, individualizes care for the infant, and promotes parental closeness and confidence
 - Humanizes Neonatal Care
 - Decreases Length of Stay
 - Enhances Bonding
 - Dampens Infant Pain
 - Improves short term outcome
 - May be financially beneficial

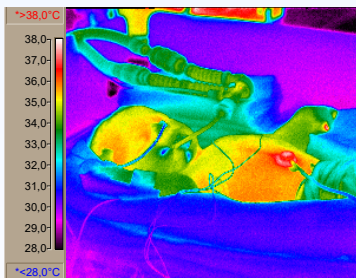


KMC Benefits for the Infant in the NICU



Benefits: Infant

- ↓ Cerebral remodeling effects of Repetitive Pain
- Improves feeding/weight gain
- Temperature stability
- Stabilized Heart Rate and Respiratory Status
- Improved Oxygenation
- Shorter Length of Hospitalization

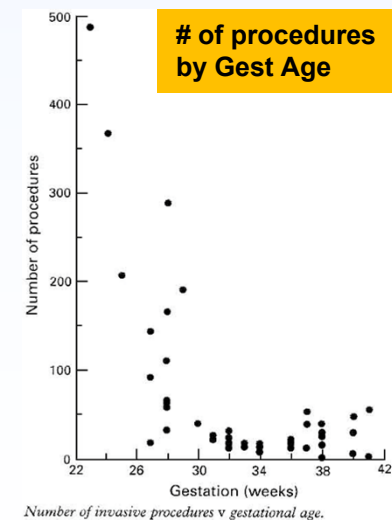
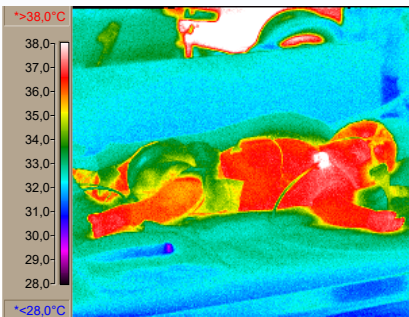


Benefits: Mother

- Increased Breast milk supply
- Improved Bonding

Benefits: Fathers

- Improved Bonding



KMC Potential to Decrease NICU Morbidity

Parents as KMC Care Agents: Provide Developmentally Appropriate Treatment



- Parents as Part of Care Team
 - Handling
 - Understanding Development
 - Providing Support and infant care with guidance

Why Continued Barriers to KMC?

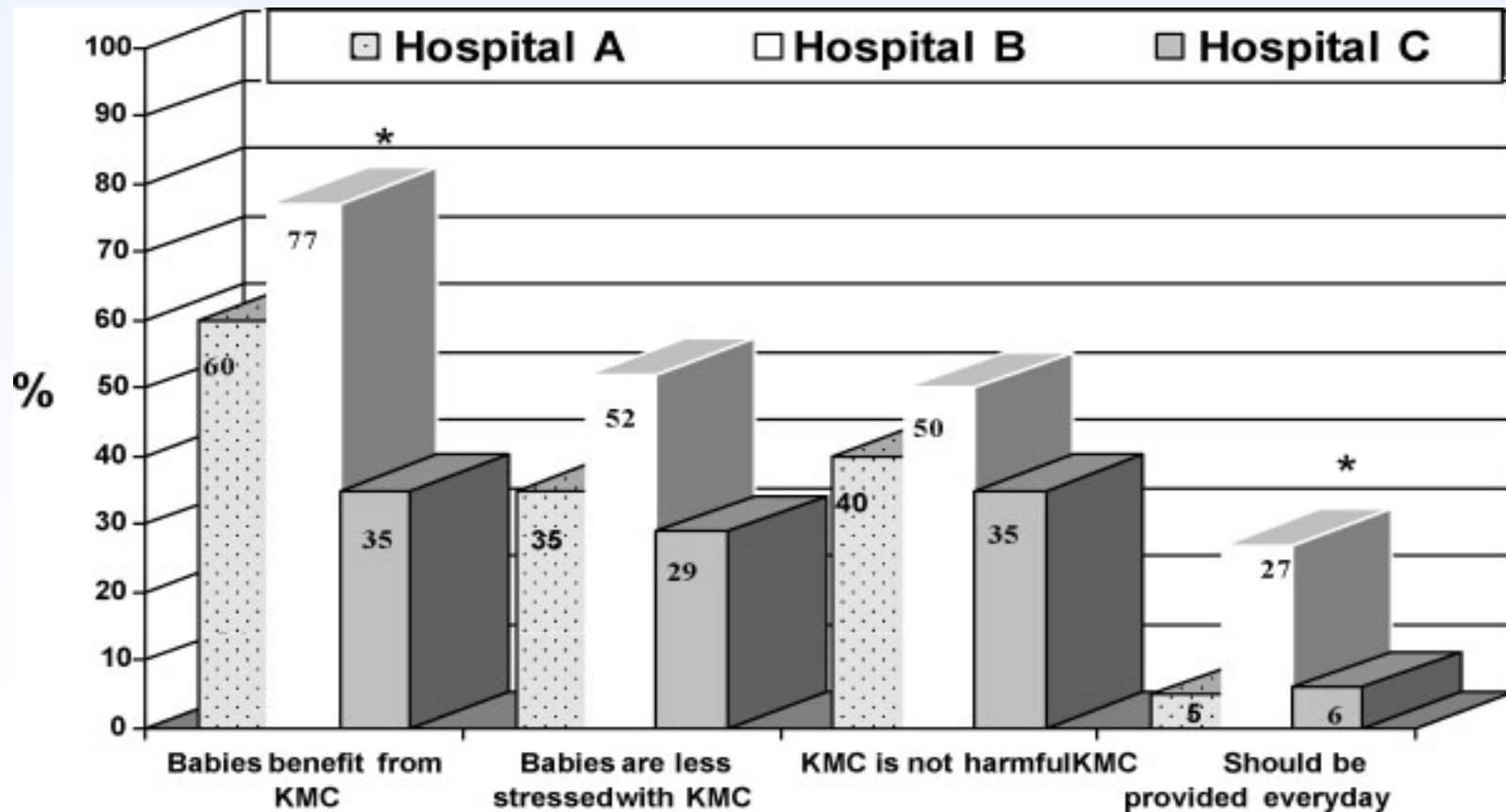
Historical View of Medical Culture of NICU Care in US

- Medical view of critical care exclusive of parents
- View of increased risk of infections “from parents”
- U S Medical Education does not include families as part of care team
- High resource facilities leads to ambivalence of medical need for KMC or parent input



Examination of Neonatal Nurse Perceived Value of KMC

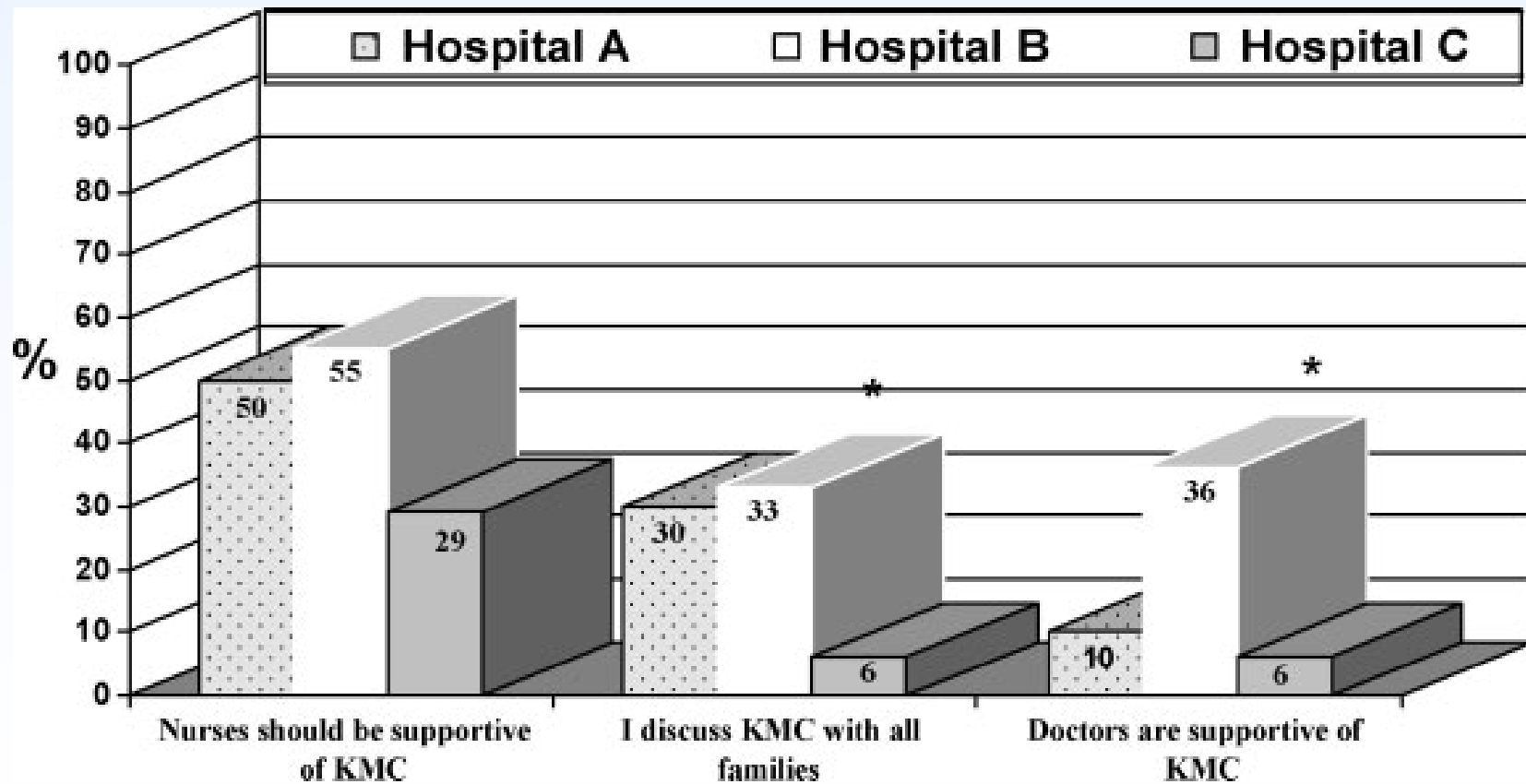
The Perceived Value of Kangaroo Mother Care



Variability in Nursing view among – 1 Private (A) and 2 Public (B & C) Hospitals

Examination of Neonatal Nurse Perceived Value of KMC

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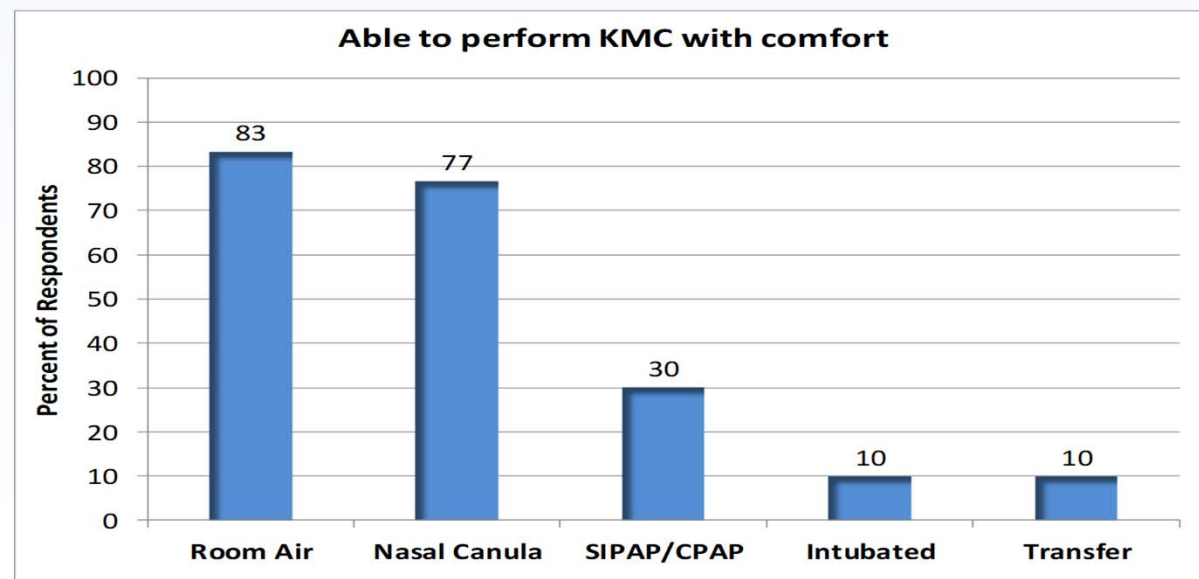


Variability in Nursing view among – 1 Private (A) and 2 Public (B & C) Hospitals

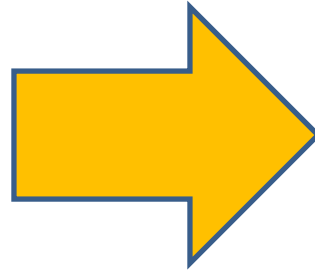
Examination of Neonatal Nurse Perceived Value of KMC

Nursing Barriers included:

1. Staff perceived increased work in work in teaching mothers
2. Consideration of safety in technical transfer of the infant
3. Questioned Medical use of KMC in critically ill stable infants
4. Variability in Medical staff definition of stability
5. Medical research doesn't strongly support use in resource rich NICUs



What changes do we make in our NICU Culture Setting?



Paradigm Shift in Medical and Nursing Care

Conventional Neonatal Care

Infant removed from Mother.
Nurses takes care of the infants

KMC Neonatal Care

Infant remains with Mother.
Nurse-Medical Care that
incorporates the Mother

KMC: Hypothesis to Decrease Barriers

We hypothesized that a structured training and education of the nurses will increase:

- 1) Nursing Competency in KMC Use
- 2) Nursing Value of KMC
- 3) The use of KMC with infants in the NICU



Structured KMC Training Methodology

Training included :

- Multi-discipline led Didactic + Practicum
 - **Didactic Included -7.5 hours**
 - Scientific basis of KMC
 - Impact of KMC on breastfeeding
 - Supporting families during KMC,
 - Assessing and identifying infants, as well as parent and staff readiness for KMC
 - **Manikin Simulation Practicum Included 1 day:**
 - Training Curriculum and Competency Training for Staff
 - Inclusion and Exclusion policies for KMC use
 - Use of Simulation and Role Play to teach and assess competency in KMC provision and KMC parent education
 - Checklist for Competency and Ongoing infant KMC use

Structured KMC Training Methodology

- Use of infant high fidelity mannequins controlled by a biomedical engineering technician
- Five Clinical Practicum Stations with simulation of apnea and bradycardia episodes.
 - (1) room air
 - (2) nasal cannula
 - (3) nasal continuous positive airway pressure (NCPAP)
 - (4) synchronized inspiratory positive airway pressure (SIPAP)
 - (5) intubation on conventional ventilators.



Structured KMC Training: Family Teaching Simulation

Practicum and Simulation focused on Role Play with various Clinical scenarios related to Parental Training of KMC with Competency Skills Checklist.

Medical and Nursing Role Play included:

- Practicing parent education about KMC
- Assessing parent readiness



Structured KMC Training Methodology

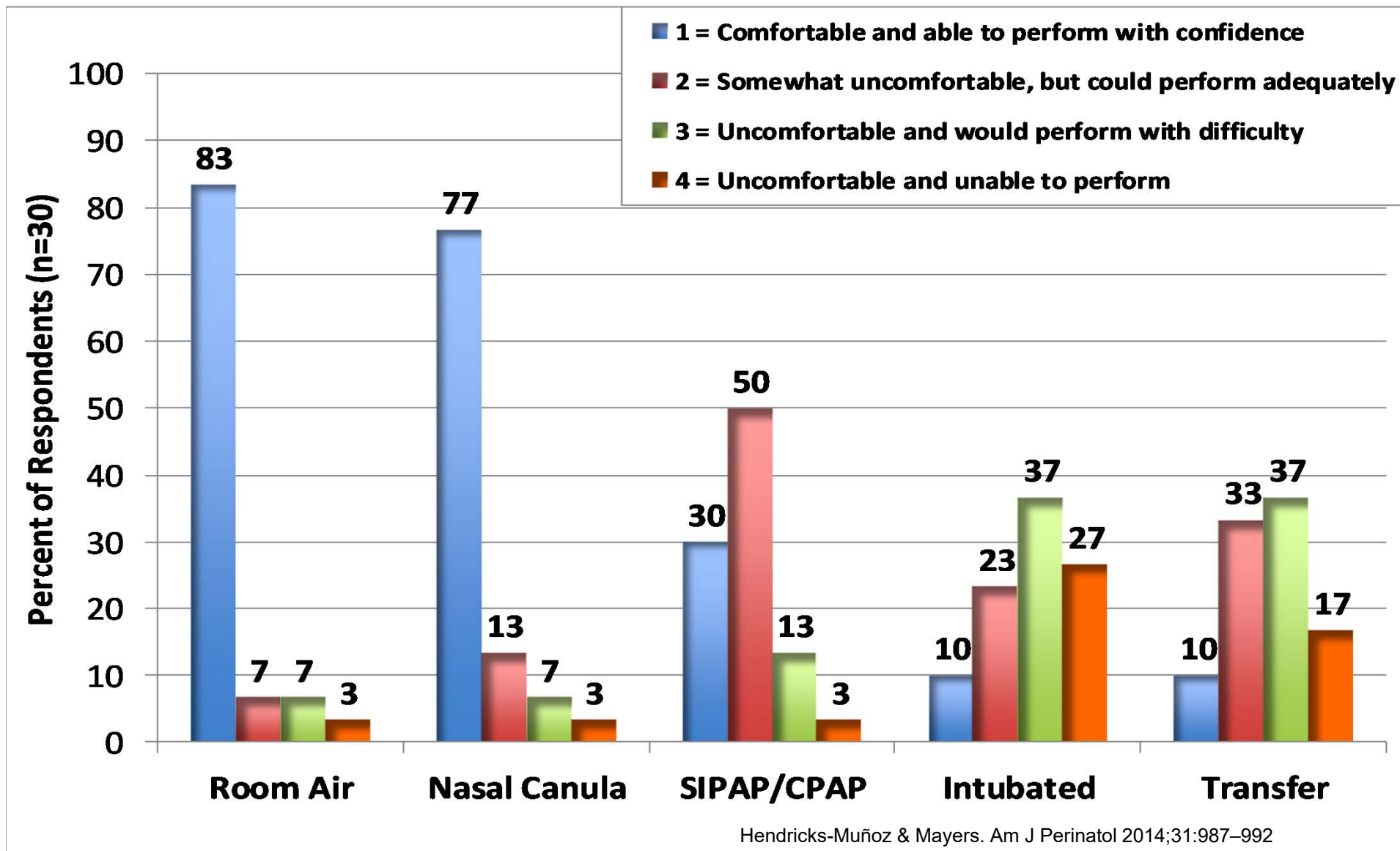
Curriculum, Policy and Checklist development focused on Identified Definitions of “KMC Ready Infants”:

- Team Sign off for KMC readiness with physician order
- Infant requiring respiratory support NOT a contraindication
- <5 BDs/ day and without an increase in past 24 hours
- No Temperature instability past 24 hours
- No weight cut off
- Mother with minimum of 1 hour available for KMC

Structured KMC Training Analysis

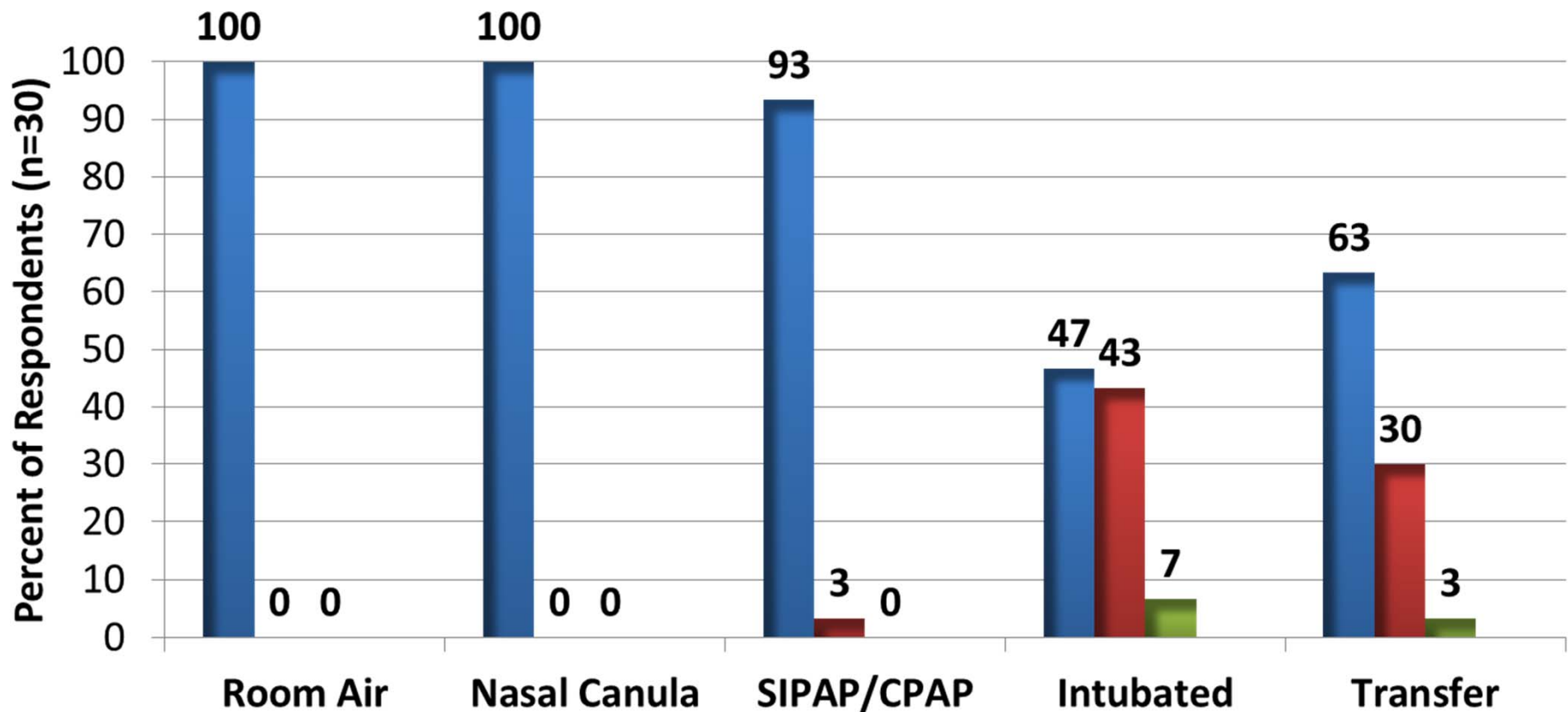
- **Study received Institutional review board approval**
- **Nursing Survey N=30 Nurses**
 - Pre and Post Training Competency Analysis
- **Infant Outcome Analysis N= 112**
 - Retrospective analysis of preterm infants <34 weeks admitted 6 months prior and 18 months post Training
- **Statistical Analysis**
 - Chi-square
 - Student T-test

Nurse Comfort Level in KMC Use Pre-Training

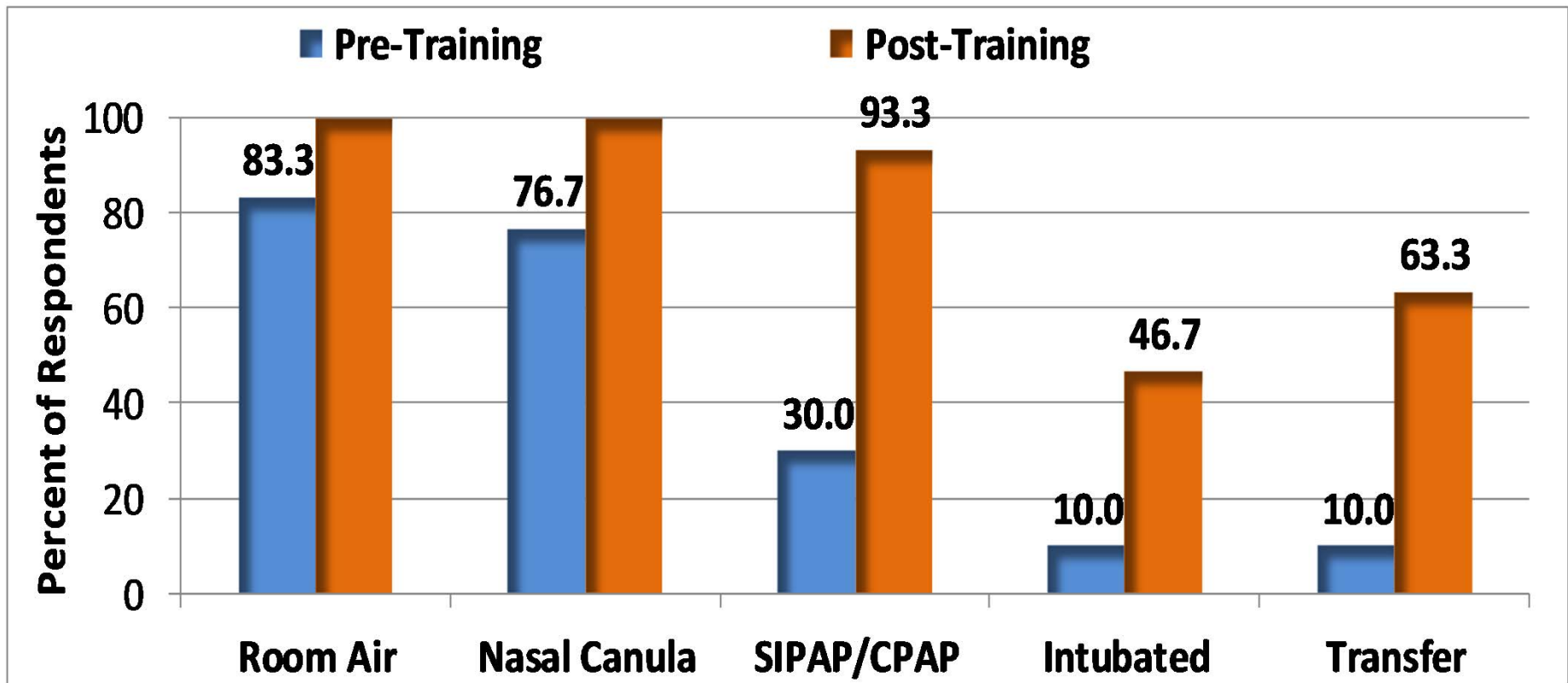


Nurse Comfort Level in KMC Use Post-Training

- 1 = Comfortable and able to perform with confidence
- 2 = Somewhat uncomfortable, but could perform adequately
- 3 = Uncomfortable and would perform with difficulty
- 4 = Uncomfortable and unable to perform



Pre- and Post-Training Comparison Competence: Q: Comfortable and able to perform with confidence



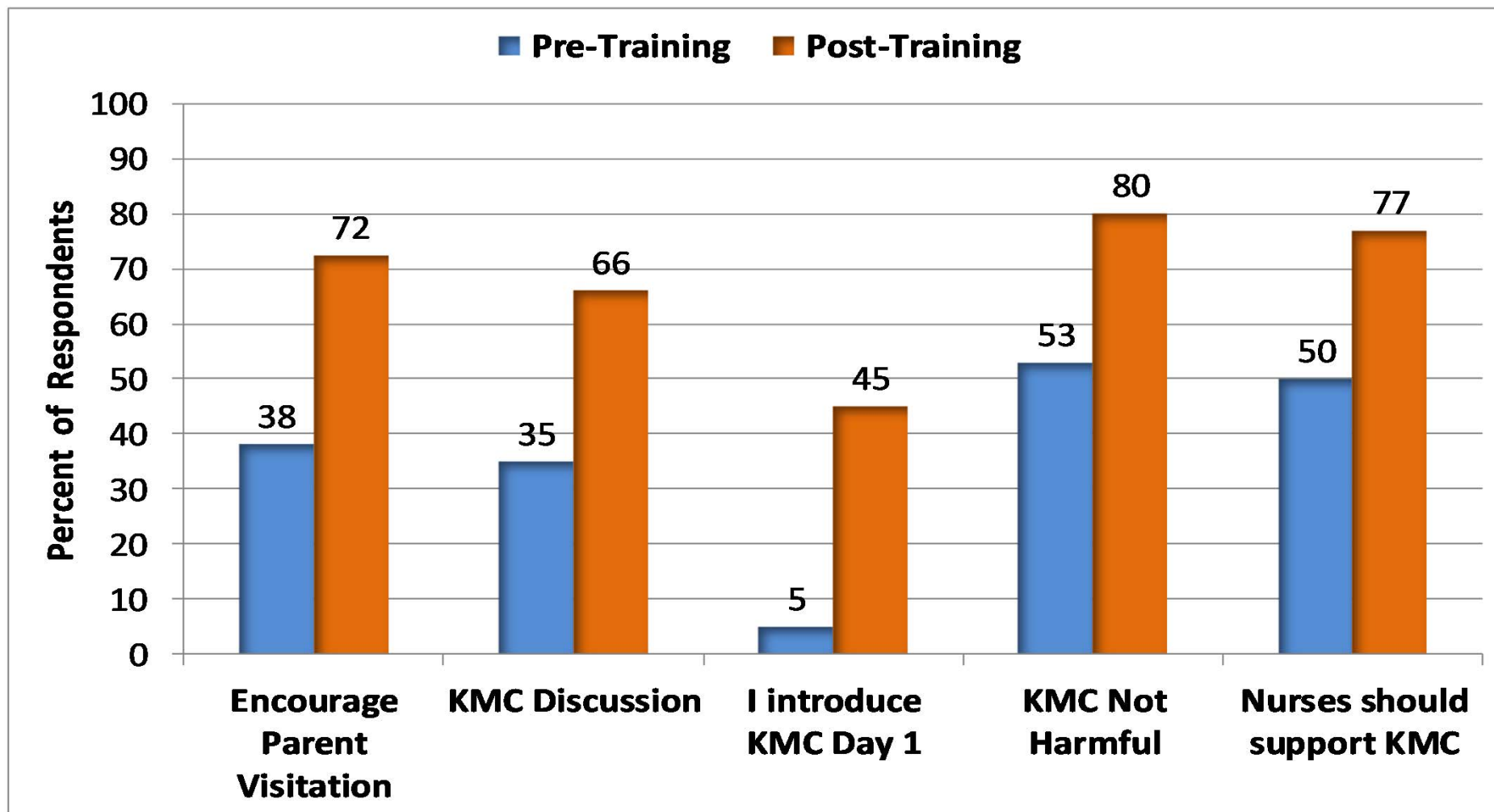
Nurses' competency improved all 5 scenarios especially for CPAP or ventilator support, from 30 to 93% or 10 to 50%, respectively, $p < 0.0001$.

Pre- and Post-Training Comparison Competence: Q: Uncomfortable and unable to perform

	Pre-Training (n=30)	Post-Training (n=30)	Significance p<0.05
Room Air	3.3%	0%	NS
Nasal Canula	3.3%	0%	NS
SIPAP/CPAP	3.3%	0%	NS
Intubated	26.7%	0%	0.005
Transfer	16.7%	0%	0.05

Nurses' competency improved such that No nurse was uncomfortable or unable to perform KMC for all 5 scenarios

Pre- and Post-Training Impact on Nurses Perceived Value of KMC



Neonatal nurses' perceptions of KMC improved in all questions $p < 0.0001$.

Pre- and Post-Training Impact on Use of KMC for the Preterm infant <34 Weeks

	Pre Training N=34	Post Training N=78
Gestational Age at Birth Mean Weeks \pm SD	31.4 \pm 0.4	30.7 \pm 0.5
Participated In KMC – N (%)	9 (27%)	67 (86%)*
Age at First KMC Participation Mean Days \pm SD	18 \pm 2.7	5.6 \pm 1.2*
Duration of KMC Mean minutes \pm SD	73.9 \pm 7.2	203.6 \pm 35.3*

The number of infants who received KMC increased, the average day of initiation of KMC and duration of KMC increased

Pre- and Post-Training Conclusion

A comprehensive didactic and simulation-based KMC Nursing Training Program proved to be effective at :

- Increasing Competency and Confidence in KMC technique
- Improved Perception of KMC value
- Improved Perception of Family Centered Care
- Translated to increased KMC Use in preterm



Decreased Barriers to KMC Implementation and Use!

Decreasing Barriers to KMC: Lessons Learned

- Great variability in the medical views that impact subsequent application of KMC
- Continued investigation needed to understand cultural and local barriers to improve methods for KMC implementation and use
- Standardized surveys and local staff training and education on the benefits of KMC can decrease KMC barriers



Lessons Learned to Decrease Barriers to KMC Use

- **Medical and Nursing Staff**

- Medical Staff BY-IN as Evidence Based
- Competent Nurses, Physicians and other staff with KMC technique
- Competent Staff expertise in parental teaching for parent utilization
- Educated and motivated Mother and Family

- **Educational and Policy Materials**

- Staff training in KMC use
- Collaborative development of KMC Curriculum and guidelines for competency training and use
- Information materials, Posters and video films on KMC

- **Furniture (optional)**

- Semi-reclining easy chairs and/or Beds with adjustable back rest

Thank You

