

**KMC AND BREASTFEEDING THE PREMATURE INFANT:  
EXPERIENCE AND RESULTS AT ONE YEAR OF CORRECTED AGE  
IN A COHORT OF 11422 INFANTS DISCHARGED HOME IN  
KANGAROO POSITION (2001-2011).**

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# STUDY DESIGN

- **Objective:** Evaluate the results on breastfeeding and growth according to the feeding pattern, at one year of corrected age in a cohort of 11422 preterm and/or low birth weight (LBW) infants who receive attention in our ambulatory KMC program from 2001 to 2011.
- **Patients and design:** Prospective cohort of 11422 LBW infants (GA  $\leq$ 37 weeks at birth or BW<2500g) who were discharged home in kangaroo position (KP) with periodical follow-up until 12 months of corrected age. The promotion of breastfeeding is part of the KMC intervention.

# KMC INTERVENTION

- 1) Continuous KP (skin-to-skin contact 24 hours).
- 2) Exclusive breastfeeding whenever possible and
- 3) Early discharge in KP with close monitoring and follow-up



# KMC FEEDING STRATEGY

## Kangaroo Nutrition.

- Based on breastfeeding (hind milk, suction, dropper or spoon).
- Addition of vitamins.
- Fortified or supplemented with preterm formula in infant not thriving properly (15/kg/day) with dropper or cup.
- Up to 47% of kangaroo infants thrive properly with exclusive breastfeeding 1,2

1 "Predictional need for supplementing breastfeeding in preterm infants under KMC" *Acta Paediatrica*, 91 :1-5, 2002

2 "Influence of feeding patterns and other factors on early somatic growth of healthy, pre-term infants in home-based Kangaroo Mother Care: A cohort study". *J Pediatr Gastroenterol Nutr.* 2005 Oct;41(4):430-437.

# KMC FEEDING STRATEGY (II)

## FEEDING METHODS

1. Tube: It starts when the baby is receiving oral feeding and is too immature to suck.
2. Suction: The sucking reflex is present from 24 weeks and become stronger from week 32. Non nutritive sucking will begin as soon as possible to stimulate the maturation of the suction. The goal is to achieve a good synchronization between sucking, swallowing and breathing which allow full enteral feeding directly from the breast.
3. Oral route or drip cup: In the absence of the mother, breastmilk could be given orally with a tube, a cup or a dropper. The use of rubber bottles or teats should be avoided.
4. Mixed techniques: Use one or the other or combine them according to each case.



# KMC FEEDING STRATEGY (III)

## BREAST-FEEDING AND KANGAROO NUTRITION STRATEGIES

The nutritional requirements and limitations of the LBW infant feeding are multiple:

1. The weight and gestational age at birth.
2. Post birth periods.
  - Transition period.
  - Period of stable growth.
  - Previous post-stable growth.
3. Co-morbidity.
  - Prenatal (IUGR).
  - Post-natal (NEC).





# KMC FEEDING STRATEGY (IV)



## POST BIRTH PERIODS

### Transition period.

- The priority is the immediate survival and adaptation, in general, parenteral nutrition.
- Short delay in the onset of enteral feeding.
- Transitional process with colostrum feeding.
- Slow progress in addressing the rapid volume need.
- Breast milk against formula feeding

### Period of stable growth.

- Transition to full enteral feeding.
- The priority is to normalize the body composition.
- And to avoid complications (eg NEC).

### Following post-stable growth.

- Exclusive breastfeeding.
- Recovery in growth.

# WHAT DO WE HAVE?

A premature not tolerating any enteral food, probably suffering and feeling alone

A mother is stressed, she feels alone, she is unable to produce milk, just worries for her baby

## WHAT DO WE NEED AS HEALTH PROFESSIONALS IN A NEONATAL UNIT?

A neutral environment that contributes to the maturation of newborn (including his brain).



A mother who wants to learn to handle your baby, offer the nipple for non-nutritive sucking, which helps speed up milk production



# RESULTS AT ONE YEAR OF CORRECTED AGE OF OUR KMC FEEDING POLICIES IN A COHORT OF 11422 INFANTS DISCHARGED HOME IN KANGAROO POSITION (2001-2011)



## CHARACTERISTICS AT BIRTH

		No.	%
Weight (g)	<1000	549	4.8
	1001-1200	598	5.2
	1201-1500	1305	11.4
	1501-1800	2069	18.1
	1801-2000	2053	17.9
	>2000	4868	42.9
Gestacional age (weeks)	<30	1536	13.4
	31-32	1682	14.7
	33-34	3222	28.2
	35-36	3529	30.8
	>37	1476	12.9
Lubchenco	PTAEG	8107	71.0
	PTPEG	1863	16.1
	ATPEG	1476	12.9

# RESULTS (II)

## ANTHROPOMETRIC DATA DURING THE YEAR OF FOLLOW UP ACCORDING TO IURG AT BIRTH

Age	IUGR	Weight (g)	Height (cm)	HC (cm)
Birth	No	1875	43.4	30.9
	Si	1847	43.5	30.8
40 weeks	No	2977	47.0	34.8
	Si	2597	45.6	33.9
3 months	No	5559	57.2	40.0
	Si	5125	55.7	39.2
6 months	No	7026	63.7	42.9
	Si	6469	62.0	42.1
9 months	No	8030	68.0	44.6
	Si	7357	66.4	43.8
12 months	No	8827	72.0	45.8
	Si	8097	70.2	45.0

Our observation:  
One year is not  
enough to do  
adequate follow  
up for the  
premature  
babies.

# RESULTS (III)



## DISTRIBUTION OF THE COHORT ACCORDING TO FEEDING PATTERN DURING ONE YEAR OF FOLLOW UP

Age	Exclusive BF %	BF+ formula %	Exclusive formula %
40 weeks	56,2	41,9	1,9
3 months	30,4	51,6	18,9
6 months	18,0	31,5	50,5
9 months	11,8	22,8	65,5
12 months	6,6	13,7	79,7

The Colombian law changed and now mothers of premature babies can recover the weeks of prematurity

# CONCLUSION

## KMC AND BREASTFEEDING

¿Are there evidences supporting that the KMC method promotes the production of milk by the mother and the duration of the breastfeeding?

Based on evidence: Yes. In premature as in term infant, there are evidences showing that KMC increase the number of mothers who breastfeed their infants and the duration of breastfeeding. Mechanisms are various including biological effects of the skin to skin contact, as well as changes in the emotional behavior of mothers, shortening of separation between mother and baby, the mother is more available and receive more support from staff.

Level of evidence: RCT Meta analysis.

References: Whitelaw A, 1988, Sloan NL,1994 , Balyore Bier JA 1996, Cattaneo A, 1998, Ramanathan K. 2001 , Charpak N, 2001, Anderson GC, 2003, Rojas M 2003, BooNY 2007, Renfrew MJ,2009



# RECOMMENDATION

Considering the beneficial effects of breast milk on digestive tolerance, nutritional quality and protection against infection and the anthropometric results of this cohort the arguments to stimulate feeding in preterm babies with the milk from their own mother are valid. Breastfeeding the premature y/o LBWI is the cornerstone of the KMC nutrition strategy, one of the 3 components of the KMC method.



Studies to identify and quantify variables that influence breastfeeding of preterm and / or low birth weight, with the aim of preventing and intervening factors that may lead to resistance, thus achieving a higher rate of success.