Update of the Technical Guidelines for the Implementation of Kangaroo Mother Programs in Colombia, with emphasis on nutrition for premature or low birth weight newborns

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BACKGROUND

- **OBJECTIVES:**

➢To increase and strengthen hospitals' capacity to implement KMC in an integrated manner

➢To provide hospitals or KMC specialized centers, the necessary methodological tools to perform Kangaroo Mother Care Method with a high level of quality

➢It is not a Clinical Practice Guide

LINEAMIENTOS TÉCNICOS
PARA LA IMPLEMENTACIÓN DE
PROGRAMAS MADRE CANGURO
EN COLOMBIA

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Practical Guidelines for the KMC implementation
20 years of improvement

KANGAROO MOTHER CARE PRACTICAL GUIDELINES

CONTENTS

Kangaroo Foundation (N. Charpak, Z. Figueroa, R. Martínez)

1997

→ Due to the advances that have been made in recent years, in relation to:

- Resolution 2003 of May 28, 2014 by which the procedures and conditions of registration of the Providers of Health Services and of the qualification of health services are defined, and include the Kangaroo Mother Care Program
- New scientific evidence regarding the use of some drugs used in the KMCP

→ It was necessary to update the technical guidelines for the country concerning the care of the premature and/or low birth weight newborns taking into account the experience of the KMCP all around the country that were following the 2010 guidelines

UPDATE METHODOLOGY

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1. Evaluate the experience of 10 KMC programs in the country following the 2010 KMC Technical Guidelines of the Health Ministry

2. Identify new scientific information to be incorporated in the updated version

3. Review and update the content of the Technical Guidelines

4. Socialization of a preliminary version

MAIN MODIFICATIONS

Kangaroo nutrition strategy

- Connection of Human Milk Banks
- Promotion of exclusive breastfeeding

Kangaroo transportation (Referral of patients in kangaroo position)

- As a safe and adequate alternative when transport incubators are not available

Screening for the detection of ROP

- all newborns <33 weeks and/or <1.800 grams, between 33 and 36 weeks and/or 1.800 and 2.000 grams according to risk factors and newborns > 2000 grams according to the neonatologist criteria

Audiological screening

- Auditory Evoked Potentials
- Otoacoustic Emissions

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MAIN MODIFICATIONS

Neuromotor test	Amiel Tison test at 40 weeks and INFANIB at 3, 6, 9 and 12 months of corrected age is recommended.
Psychomotor development	All Kangaroo Mother Care Programs must have a psychologist
Expanded immunization plan	Biological supply with **acellular Pertussis** component The biological supply of **dead or inactivated polio** for the first 2 doses is highly recommended.
Use of medications	The use of metoclopramide for gastroesophageal reflux is not recommended
	Prophylactic use of xanthines in newborns who are discharged from the hospital with less than 34 weeks (and are included in a KMCP) to avoid episodes of apnea at home
	Palivizumab - Not considered in the Technical Guidelines

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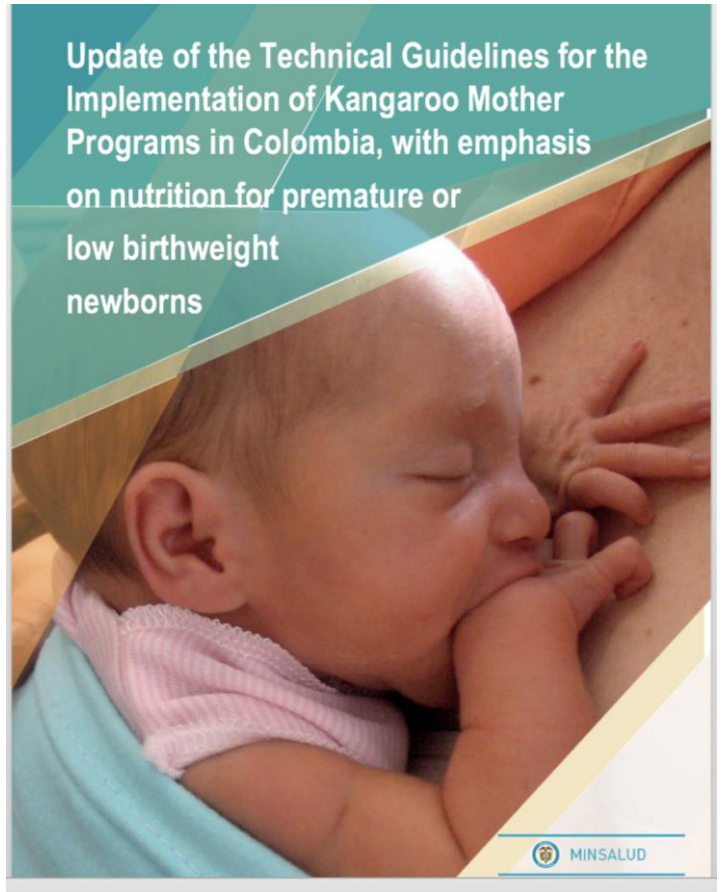
FINAL PRODUCT



To allow the actors of the Social Security Health System to adopt the "**Kangaroo strategy"** as a tool for reducing the morbidity and mortality of child population and **reducing the consequences of prematurity and low birth weight** anywhere in the national territory, as a guarantee of high quality services provided and the conditions under which they are delivered.

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Basic characteristics of the Kangaroo Mother Care Method (MMC)

- Target population
- Kangaroo Position
- Kangaroo feeding and nutrition based on breastfeeding
- Kangaroo policies for hospital discharge and outpatient follow-up
- Multidisciplinary follow-up
- Collective consultation

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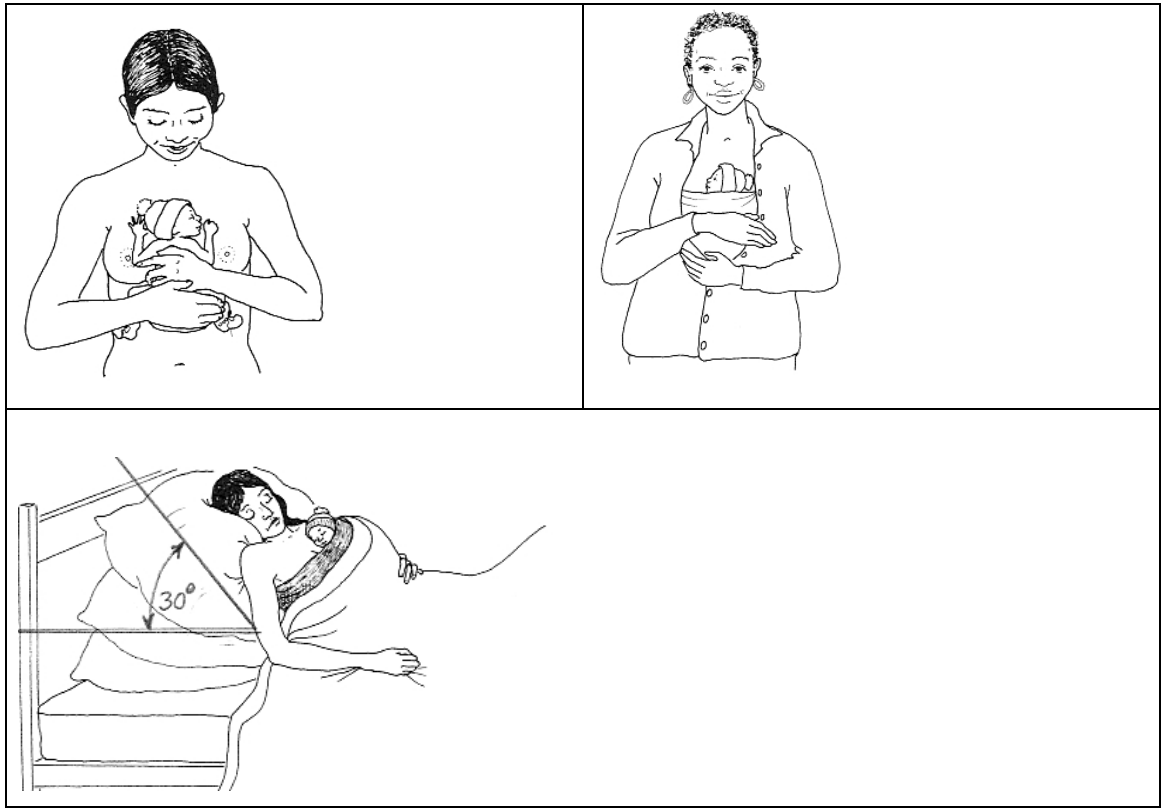
PURPOSE OF THE KANGAROO POSITION

- Permanent source of body heat,
- Kinetic and sensory stimulation,
- Keeps the airway open
- Stimulates and promotes breastfeeding.
- Establish or reinforce the healthy biological and affective bond that must exist between every newborn and their mother



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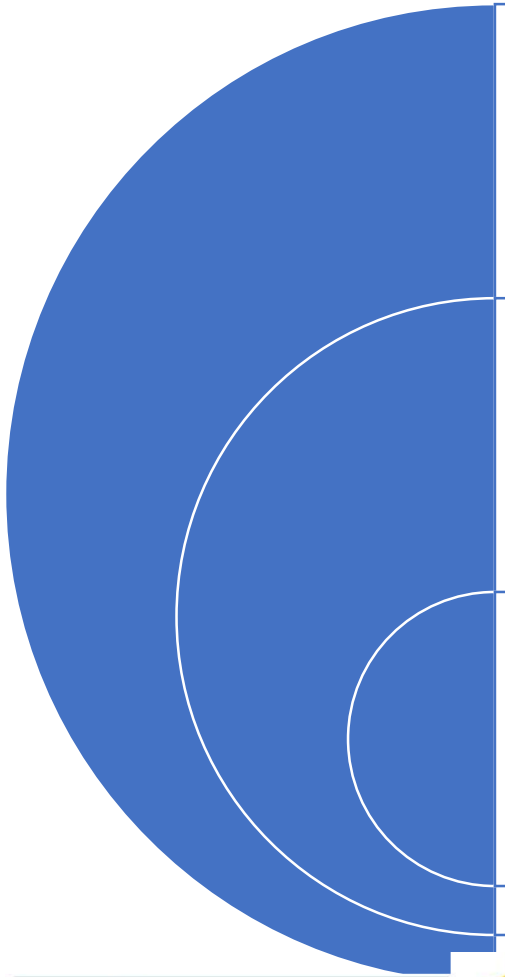
KANGAROO NUTRITION BASED ON BREASTFEEDING



The *“transition period”* from birth to the completion of the main aspects of the immediate and mediate transition to extrauterine life

The period of *"stable growth",* from the time the transition is completed until the end, which looks like the period of intrauterine growth that would have occurred if the neonate had been able to reach the end of the pregnancy in his mother's womb

The “after discharge” period , from the term until one year of corrected age

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WHAT ARE THE GUIDELINES FOR THE IMPLEMENTATION OF THE KMCP?

>INSTITUTIONAL CONDITIONS FOR THE DEVELOPMENT OF PROCESSES FOR THE IMPLEMENTATION OF KANGAROO MOTHER CARE PROGRAMS

GUIDELINES AND TECHNICAL REQUIREMENTS FOR THE IMPLEMENTATION OF INPATIENT KANGAROO MOTHER CARE METHOD IN NCUs

- Organization
- Healthcare professionals
- Administrative support
- Infrastructure
- Furniture and supplies
- Assistance priority processes
- Clinical records
- Referal of patients
- Tracking risks in the provision of services

Institutional conditions for the development of processes for the implementation of Kangaroo Mother Care programs.

WHAT ARE THE GUIDELINES FOR THE IMPLEMENTATION OF THE KMCP?

>INSTITUTIONAL CONDITIONS FOR THE DEVELOPMENT OF PROCESSES FOR THE IMPLEMENTATION OFKANGAROO MOTHER CARE PROGRAMS

GUIDELINES AND TECHNICAL REQUIREMENTS FOR THE IMPLEMENTATION OF AN AMBULATORY KANGAROO MOTHER CARE PROGRAM

- Organization
- Healthcare professionals
- Administrative support
- Infrastructure
- Furniture and supplies
- Assistance priority processes
- Clinical records
- Referal of patients
- Tracking risks in the provision of services
- Other equipment
- Furniture and supplies
- Medicines

INPATIENT KMC

Health professionals who belong to the KMCP

- Nursing Professionals

Health professionals belonging to the NCU that are required by the inpatient KMCP

- Pediatrician
- Psychologist
- Social worker
- Ophthalmologist
- Physiotherapist

INPATIENT KMC - ORGANIZATION

- ***To belong and operate in a II or III level Health Organization that has a Newborn Unit***

- ***The Health Service Organization must have motivated staff who know the MMC***

- ***Have a written institutional policy to support the implementation of the KMC (Kangaroo Position and Kangaroo Nutrition).***

- ***Allow parents access to the NCU 24 hours a day.***

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RISK FOLLOW-UP

QUALITY INDICATORS OF INPATIENT KMCP

Adherence indicators

- “Early lost to follow-up”.
- “Delay in the admission in an ambulatory KMCP”.
- “Outpatient criteria from a KMCP not respected”.
- “Accessibility to the Neonatal Care Unit”.

Outcome indicators

- “Exclusive breastfeeding when leaving the Kangaroo adaptation”.
- “Exposure to the Kangaroo Position in the Neonatal Care Unit”.

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AMBULATORY KMPC -ORGANIZATION

To belong and operate in a II or III level Health Organization

- ***Pertenecer y funcionar en una IPS de II o III nivel de atención.***

The ideal is for the Ambulatory KMCP to be in the same institution as the Inpatient KMPC, but often this is not possible if there is not enough volume of patients to guarantee its cost-effectiveness.

- ***Have a written institutional policy to support the implementation of the KMPC in the institution.***

All II and III level Health Organizations with NCU must have an inpatient KMCP. II level Health Organizations can have an ambulatory KMCP if they can ensure these mandatory criteria (as the minimum)

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AMBULATORY KMPC -ORGANIZATION

Health professionals who belong to an Ambulatory KMCP

- Pediatrician
- Nursing Professional
- Nursing Assistant
- Psychologist
- Social worker

Availability

- Ophthalmologist
- Phonoaudiologist
- Optometrist
- Physical Therapist * Dictates the stimulation workshops.

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Health professionals of the II or III levels Health Institutions that are required by the Ambulatory KMPC

- Physical Therapist
- Ocupational therapist
- Language therapist
- Neuropediatrician
- Pediatric Orthopedist
- Pediatric pulmonologist
- Nutritionist

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QUALITY INDICATORS OF THE AMBULATORY KMCP UP TO 40 WEEKS

Adherence indicators

- “Lost to follow-up at 40 weeks”.
- “Ophtalmology at 40 weeks”.
- “Ultrasound at 40 weeks”
- “Neurological evaluation at 40 weeks of gestational age”.
- “Vaccinations at 40 weeks”.

Outcome indicators

- “Exclusive breastfeeding at 40 weeks”.
- “Rehospitalization at 40 weeks”.
- “Mortality at 40 weeks”
- “Mortality at home at 40 weeks”.
- “Growth in weight, height and cephalic perimeter at 40 weeks”.
- “Compliance with anthropometric measurements at 40 weeks”.
- “Emergency visits before 40 weeks of gestational age”.

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QUALITY INDICATORS OF THE AMBULATORY KMCP UP TO 1 YEAR OF GESTATIONAL AGE

Adherence indicators

- “Lost to follow-up at 1 year of gestational age”.
- “Optometry and audiology at 1 year of corrected age”.
- “Neurological and psychomotor development at 1 year of corrected age”.
- “Complete vaccination scheme at 1 year of corrected age”

Outcome indicators

- “Exclusive breastfeeding at 1 year of corrected age”.
- “Rehospitalization at 1 year of corrected age”.
- “Mortality at 1 year of corrected age”
- “Growth in weight, height and cephalic perimeter at 1 year of corrected age”.
- “Compliance with anthropometric measurements at 1 year of corrected ag

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WHY THE KANGAROO MOTHER CARE PROGRAM?

- Continuous and integral attention
- Facilitates follow-up
- Health professionals trained (sensitivity, quality, service optimization)
- Research
- Implementation of new technologies
- Networks

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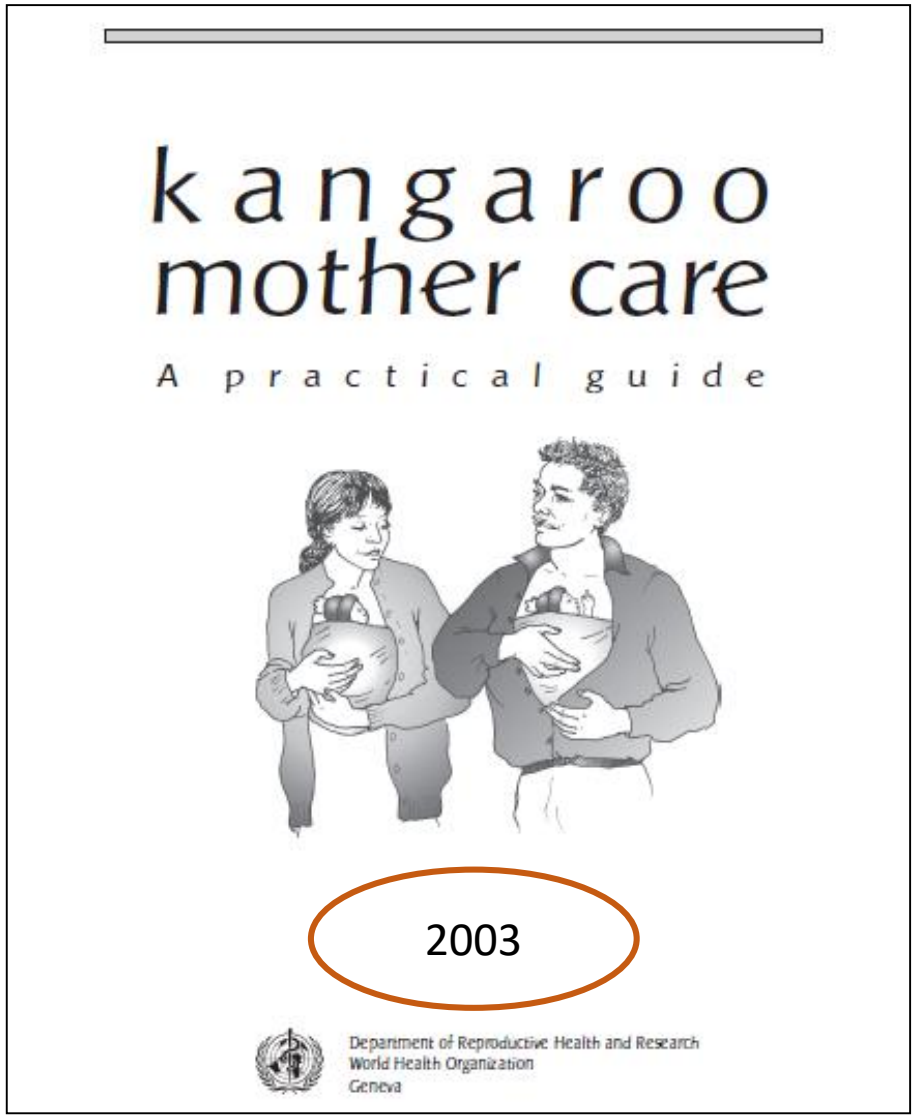
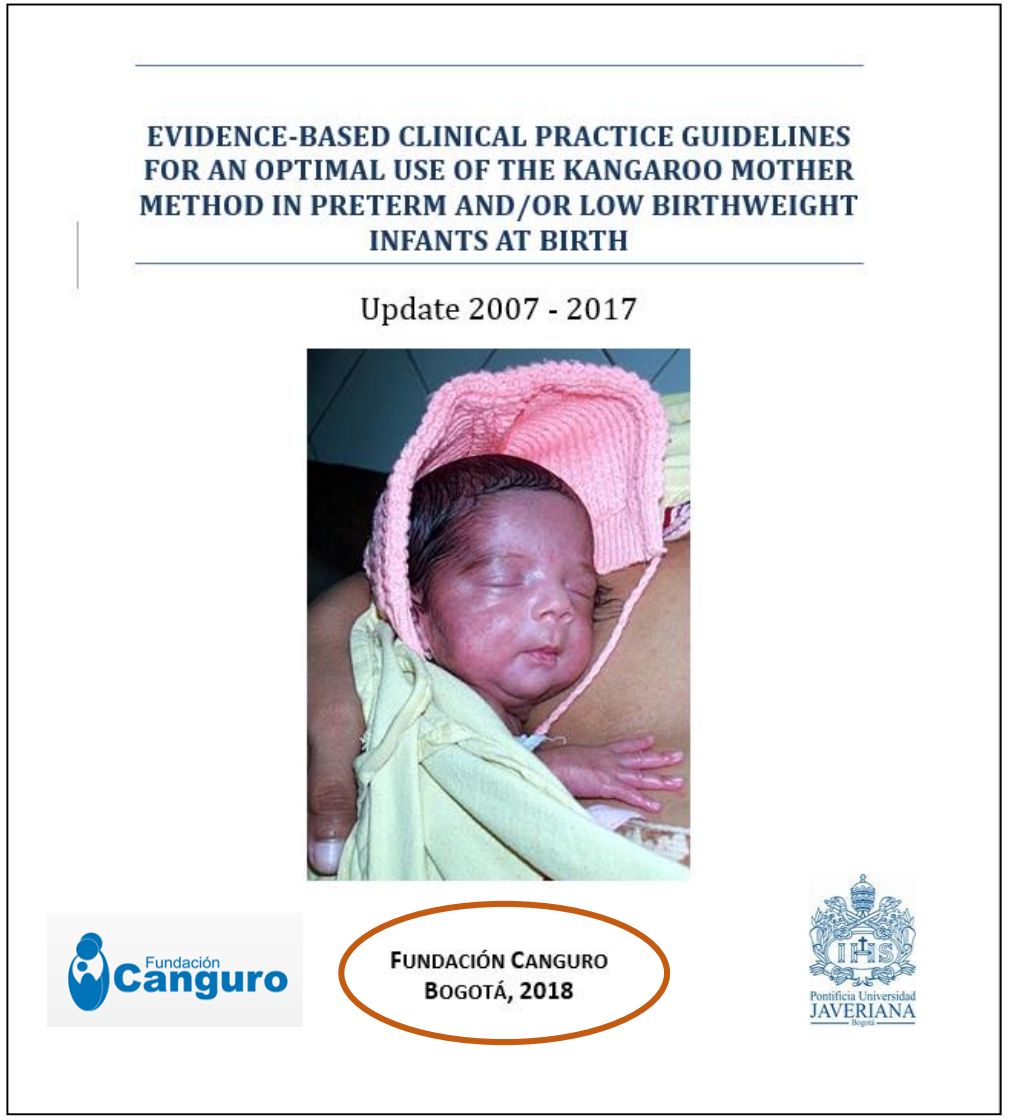
Evidence based guidelines for the KMC method





Question 1

EVIDENCE-BASED CLINICAL PRACTICE GUIDELINES FOR AN OPTIMAL USE OF THE KANGAROO MOTHER METHOD IN PRETERM AND/OR LOW BIRTHWEIGHT INFANTS AT BIRTH.
UPDATE 2007-2017 (Draft)
Kangaroo Foundation/Fundación Canguro, Bogota, Colombia

QUESTION 1

Should an open or closed neonatal unit be used for the care of preterm or low birth weight infants at birth?	
POPULATION:	Infants born prematurely or with low birth weight
INTERVENTION:	Open neonatal unit
CONTROL:	Closed neonatal unit
PRINCIPAL OUTCOME MEASURES:	Practice of the kangaroo method; Maternal breastfeeding; Hospital stay; Maternal stress; and Somatic growth

EVALUATION

Strength of evidence
What is the general certainty about the effects of the intervention?

FINDING	INTERVENTIONAL EVIDENCE			ADDITIONAL CONSIDERATIONS
oVery low oLow ●Moderate oHigh oNot applicable	**Outcome measures**	**Importance**	**Strength of evidence (LEVEL)**	The evidence comes from observational studies that have a good design quality. Given the type of intervention a clinical experiment is not ethically viable. For this reason, this is considered the best available evidence.
	Initiation of kangaroo mother care method (Pierrat 2016) Evaluated on: Proportion of neonates that initiated the mother care method	CRITICAL	⊕⊕⊕◯ MODERATE	
	Days alive at initiation of the kangaroo mother care method (Rajskila 2014) Evaluated on: Postnatal days alive	CRITICAL	⊕⊕⊕◯ MODERATE[a]	
	Gestational age at initiation of the kangaroo mother	CRITICAL	⊕⊕⊕◯	

Value

Is there significant uncertainty or variability in how people value the main outcomes?

FINDING	INTERVENTIONAL EVIDENCE	ADDITIONAL CONSIDERATIONS
oSignificant uncertainty or variability oLikelihood of significant uncertainty or variability oLikelihood of no significant uncertainty or variability ●No significant uncertainty or variability	Parents who have the possibility to remain with their children in open neonatal units state that this allows for active participation in the care of their newborn, including activities such as changing diapers, tube feeding and bathing. In addition, parents acquire the confidence to perform these tasks without supervision. Parents also highlight the importance of events such as eye contact, direct contact, the first time the baby receives breast milk and the first time they can stay with their child without being disturbed. (Baylis et al., 2014)	The right to non-separation of parents from their sick child and the right of non-separation of sick children from their parents are two rights that must be respected. (Declaration of the Rights of the Child). The only way to do so is to open the neonatal units and adapt these to allow parents to stay with their child under acceptable conditions

Balance of outcome measures

Does the balance between favorable and unfavorable outcomes favor the intervention or the control?

FINDING	INTERVENTIONAL EVIDENCE	ADDITIONAL CONSIDERATIONS
oFavors the control oLikely favors the control oFavors neither the intervention nor the control oLikely favors the intervention ●Favors the intervention oVaries oInconclusive	See table below	In the Colombian clinical practice guidelines for the optimal care of preterm or low birth weight infants at birth, published in 2013, this question was addressed in the following manner: *"There is evidence from observational and experimental analyses and results from qualitative investigations that suggest that the policy of an open unit favors the bond, is valued by families, empowers parents, allows the use of kangaroo mother care method and translates into better growth, maturation, timely discharge and better competence of the parents for post-discharge care of their premature infant. There is observational evidence (epidemiological vigilance) that demonstrates that open unit policies do not increase risk of infection or other unfavorable outcomes."*

Outcome measures	With closed neonatal unit	With open neonatal unit	Difference	Relative measure of effect (95% CI)
Initiation of kangaroo mother care method Evaluated on: Proportion of neonates that initiated the mother care method (Pierrat 2016)	390 per 1,000	**678 per 1,000** (490 to 826)	**288 more per 1.000** (100 to 436 more)	**OR 3.3** (1.5 to 7.4)
Days alive at initiation of the kangaroo mother care method Evaluated on: Postnatal days alive (Raiskila 2014)	The average count of postnatal days alive at initiation of kangaroo mother care method was	The average count of postnatal days alive at initiation of kangaroo mother care method was **19.3 days less**	Difference of averages **19.3 less days** (24.09 to 14.51 less days)	-

parent and the development of the infant. Also addresses benefits of hospital stay.

Acceptability

Is the intervention acceptable to the interested parties?

FINDING	INTERVENTIONAL EVIDENCE	ADDITIONAL CONSIDERATIONS
oNo oLikely not ●Likely yes oYes oVaries oInconclusive	Baylis and collaborators conducted a study in which they evaluated the time when parents had their first events with their premature babies and their interaction during the hospital stay in two intensive care units which provided different opportunities to be present and involved in the care of the newborn born. One of these units was open with amenities for the parents' stay and in which visits from other relatives were allowed. The other was a unit, in which although unrestricted visits of the parents were allowed, there were restrictions with regard to overnight stays and to visits from relatives. In both, they promoted skin-to-skin care and parents' participation in child care activities (Baylis et al., 2014). In the first encounter with the newborn, 2/3 of the parents could not carry their baby in the delivery room and those who did had skin-to-skin contact. Most of the parents touched their children (61% of parents - 53% of mothers) at the time of delivery; after birth, almost all parents saw their children, fathers in a greater proportion than mothers, and mothers of babies tended	Some interest groups might not be willing to open the units. They may think and assert that the presence of parents results in more work for the staff. Experience shows the contrary, that parents quickly become permanent assistants in the care of their child and allow for a lowering of work load for the staff, in this way health personnel become responsible for the teaching of care to parents. There is no evidence of increased infection from parental visits; on the contrary, once the parents understand the importance of hand washing there is a decrease in nosocomial

Viability

Is it possible to implement the intervention?

FINDING	INTERVENTIONAL EVIDENCE	ADDITIONAL CONSIDERATIONS
oNo oLikely not ●Likely yes oYes oVaries oInconclusive	The possibility of having maternity leave, transportation or the chance to stay the night can affect the implementation of the intervention. As an example, we have the study of Gonya and Nelin. In the NICU of a level III hospital, in a metropolitan area in Midwest, United States, parents are allowed to visit 24 hours a day, seven days a week, and at the time of the study, the hospital had reclining chairs for the parents but not beds. The researchers wanted to evaluate the factors that determined the frequency of maternal visits to extremely premature babies (<27 weeks) and the skin-to-skin contact. They included a sample of 32 mother-child dyads. In the report researchers describe that mothers lived at varying distances from the hospital. Half of them could not visit their child more than once a week.	Some interest groups might not be willing to open the units due to economic factors and prejudices, nevertheless the health policies that favor childhood would favor the context for the implementation of the intervention. The existence of maternity leave is imperative to give parents the opportunity to be with their hospitalized child. In the United States, the working mother reserves her vacation days for when her child returns home.

SUMMARY OF FINDINGS

	FINDING						
STRENGTH OF EVIDENCE	Very low	Low	**Moderate**	High			Not applicable
VALUE	Significant uncertainty or variability	Likelihood of significant uncertainty or variability	Likelihood of no significant uncertainty or variability	**No significant uncertainty or variability**			
BALANCE OF OUTCOME MEASURES	Favors the control	Likely favors the control	Favors neither the intervention nor the control	Likely favors the intervention	**Favors the intervention**	Varies	Inconclusive
ACCEPTABILITY	No	Likely not	**Likely yes**	Yes		Varies	Inconclusive
VIABILITY	No	Likely not	**Likely yes**	Yes		Varies	Inconclusive

RECOMMENDATION

Strong recommendation against the intervention	Conditional recommendation against the intervention	Conditional recommendation in favor of the intervention or the control	Conditional recommendation in favor of the intervention	**Strong recommendation in favor of the intervention**
○	○	○	○	●

CONCLUSION

Recommendation

It is recommended that neonatal units remain open 24 hours to parents and relatives of infants born prematurely or with low birth weight.

Note of Good Clinical Practice
Open neonatal units must have the necessary arrangements so that parents can stay 24 hours in optimal conditions.

Justification

Despite the variability in the quality of the evidence, the open unit is superior to the closed unit due to the intervention resulting in desirable outcomes in terms of favoring the onset of kangaroo mother care, the earlier start to breastfeeding, the desire of parents to stay with their children, and to the lack of undesirable effects, except for the concerns of the neonatal care staff.

Subgroup considerations

The intervention is applicable to all infants born prematurely or with low birth weight. No analyses were done by subgroups.

Considerations for implementation

Administrative changes that allow unrestricted access to the mother and father of the hospitalized preterm infant. Development of locative facilities for the access and visit of the parents (toilet, lockers, comfortable chairs, cafeteria service, joint lodging).

Investigational priorities

Further investigation, with valid instruments and qualitative analyses, is needed to evaluate the stress of parents exposed to closed units as comparison to the stress of parents that have 24-hour access to their children in open units.

References

(Raiskila et al., 2014; Pierrat et al., 2016; Flacking et al., 2013; Reynolds et al., 2013; Pineda et al 2018)

- Question 2

Should kangaroo mother method be used over traditional handling in incubator for the care of preterm or low birth weight infants at birth?

- Question 3 better the neruo psychomotor development

Should kangaroo mother care method be initiated in the delivery room or should Infants born prematurely or with low birth weight that do not require specific resuscitation maneuvers be dried and placed under a radiant heat source or handled through conventional methods?

- Question 4

Should kangaroo mother care method be initiated early/implemented in-hospital for stable infants born prematurely or with low birth weight or should conventional handling in an incubator be used?

- Question 5

Should kangaroo mother care method or conventional care be used for infants born prematurely or with low birth weight to encourage the adequate formation of a post-natal mother-child bond?

- Question 6

Should kangaroo mother care method or conventional care be used for infants born prematurely or with low birth weight to improve the neurological and psychomotor development of these fragile infants?

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