KMC, Concepts, definitions and praxis: What elements are applicable in what settings in which local circunstances?

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Fundación Canguro

IHS

Background

- Kangaroo Mother Care (KMC) method : Set of interventions for providing appropriate health care to preterm and/or low birth weight infants, based on the so-called kangaroo position (skin-to-skin contact).
- Since it was first described (Rey 1978) considerable variability has been developed about: a) definition of the target population and of the therapeutic goals, b) time for starting skin-to-skin contact, c) continuity and duration of the kangaroo position, d) feeding strategies, and e) discharge and follow up policies.
- There was an urgent need to standardize the intervention, based on scientific evidence that supports its benefits and limitations.

Objective

- To develop a set of recommendations about the characterization and proper use of the different components of the KMC method and to support each assertion with a systematic review of evidence.

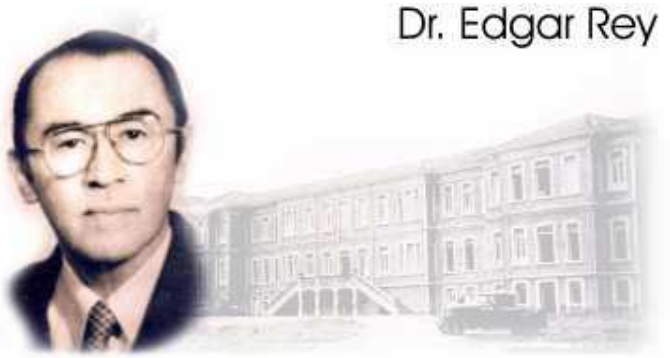
Design/Methods

- A multidisciplinary group including experts in the field, heath care workers, users, parents of patients, and methodological and content experts worked between 2005 and 2007 in Bogota. After defining terms and characterizing components of the intervention, a systematic review of published literature (Medline, Lilacs, hand searching and review of previously compiled bibliographies) was conducted to identify, appraise and summarize the evidence regarding the effects, risks, expected benefits and limitations of each component. Evidence based assertions were widely discussed until consensus with each statement was achieved, and then were evaluated by external peers experts in KMC method in developed countries.

Results

- Standardized definitions of Kangaroo Mother Care and its components, variants, target population, indications and precautions were produced. An evidence-based foundation for each component was developed, identifying the strength of the evidence, the knowledge gaps, the areas of controversy and the needs for further research.

- The Kangaroo Mother Care (KMC) Program was initiated at the “Instituto Materno Infantil” (IMI) in Bogotá by Dr. Edgar Rey in 1978.
- Coordinated by IMI’s pediatricians Héctor Martínez and Luis Navarrete, the program consolidated in its first 15 years and came to be known as “Kangaroo Mother Program”.
- In 1989 a group of investigators initiated a systematic assessment of the IMI's Kangaroo Program, and in 1994 these researchers established the Kangaroo Foundation – an NGO in charge of evaluating, improving and disseminating the KMC method around the world.



INTERVENTION	EVIDENCE		
KMC and mortality	Cochrane review Update March 2014	1 meta analysis	
KP and thermal regulation	4 RCT,1Cross Over Study,	6 Pre-Postest (PPT),	1Observational Study (+++)
KP and physiological stability	3 Cross Over Studies	1 PPT	1Observational Study (+++) after stability (FC, FR, Apneas), 2 RCT (-) before stability
KP and apnea	5RCT	5 PPT	3 Observational Studies, Analogy (++)
KP and GERD	3 Cross Over Study	1 PPT	1Observational Study, Analogy (++)
KP, mother-infant bonding, neuro-development	7 RCT	3 PPT	1 Observational Study, 1 Historical Study,1Case Control Study, (+++)
KP and neonatal transportation	1 Observational Study, (+)	Experts 'opinion	
KP and Pain	1 Cross Over Study	2 PPT, (++)	
KP and breastfeeding	6 RCT (++)		
KP and early discharge home	2 RCT, (++)		
KP and and sense of responsibility of the family	Qualitatives studies (++)		
KP and somatic growth	6RCT (+) Head Circumference		
KP and critical child	No evidences, (+),	Experts'opinion	

Intervention

Kangaroo Mother Care Method has three fundamental components:

1) **Kangaroo position** (KP) - ideally 24hrs/day

2) **Kangaroo nutrition** and feeding strategy based on breastfeeding (KN)

3) **Kangaroo discharge policy:** Timely (early) discharge in kangaroo position with close and strict outpatient follow-ups.

Who, where, when and how to implement the Kangaroo position (KP) ?

- Babies are eligible for the KP if they are stable, with vital signs and other physiological parameters that remain normal during KP.
- Parents, and particularly the mother or the main provider of the KP, should freely manifest their willingness to implement the KP once they have been adequately informed and their doubts and concerns have been carefully met.
- Care and administrative staff must be prepared and motivated.
- Mother/baby separation time should be minimized and appropriate physical interaction between parents and their baby guaranteed.
- Adequate breastfeeding policies, supported by appropriate infrastructure and healthcare staff training.

Place, Time and Mode of Initiation

- A nurse trained in the KMC method identifies candidates to the position in the maternity ward, in the mother's room or among babies admitted to the neonatal unit, including NICU. This member of the “kangaroo care team” contacts mothers and initiates family’s sensitization to the KMC method
- The mother is the ideal, main provider of the Kangaroo Position.
- Depending on the work load, this same person or a second member of the nurses' group in the kangaroo team may be in charge of initiating the process of adaptation to the Kangaroo Position.
- KP should start as soon as possible according to the setting and expertise of the staff.
- Adaptation occurs in a hospital setting and over a variable period of time depending on the mother-child dyad’s response to the KP.

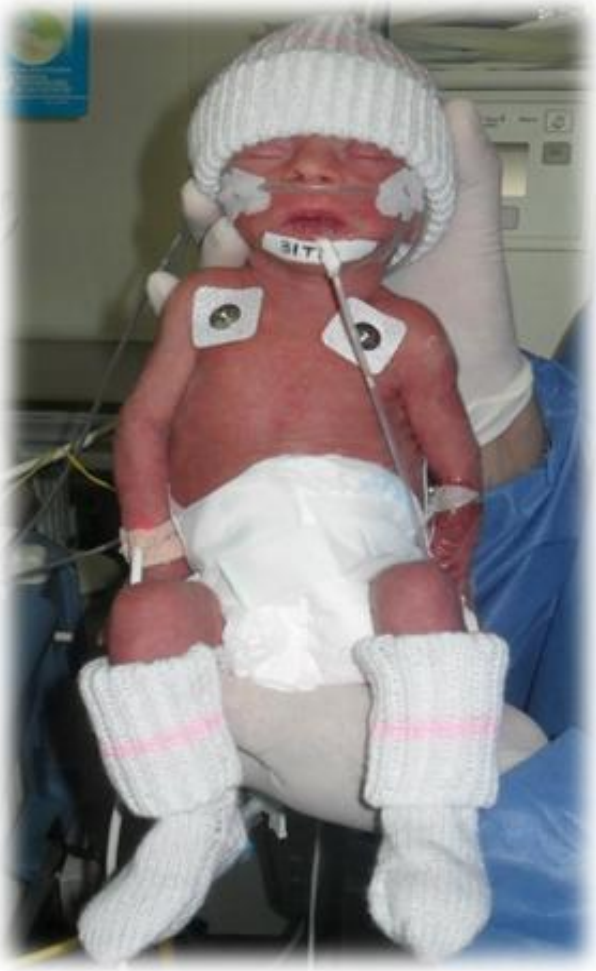
Positioning and Maintenance of the Kangaroo Position

- The kangaroo infant should be kept upright all the time, placed prone, with body and cheek against the mother's chest ("frog" position). The head should be turned to the other side in each feed .
- The use of an elastic piece of clothing that surrounds the mother’s torso and keeps the infant inside can provide the necessary support while allowing the infant to be safely positioned without restricting respiration and posture changes .
- The support system or “pouch” (band, binder or “body”, or the most adequate and locally available device) should make the mother feel secure but should not replace her monitoring the baby.

Positioning and Maintenance of the Kangaroo Position

- the positioning should be performed under the supervision of trained nurses following a detailed and explicit protocol.
- The mother should be trained in carrying the baby, ensuring easy and secure mobility. She should hold the baby with one hand placed behind the neck and on the back, letting the fingers reach the lower part of the jaw in order to prevent the head from slipping down and blocking the airway while the baby is in an upright position. The other hand should be placed under the baby's buttocks.

Kangaroo Clothing



- The baby's head should be covered with a cap to avoid temperature loss.
- The baby should also wear a sleeveless cotton T-shirt or shirt, open on the front, which allows for skin-to-skin contact with the mother's thorax. The shirt might not be necessary in a properly warmed environment.
- Diapers are absolutely necessary to protect the mother and the baby from excreta.

- *The Kangaroo Position Provider*

Even if the mother should be the kangaroo caregiver given the positive effects of the KP on milk production and on the relationship between mother and baby the father must nevertheless participate and help, especially when the mother needs time to look after herself, and to establish a father/child relationship vital for the baby's future.

- *Care of the infant in Kangaroo Position*

The kangaroo baby should be constantly maintained in the KP , except when changing diapers and for breastfeeding.

As long as the baby requires the KP to regulate their temperature, no immersion baths should be given since this generates heat dissipation

- *Duration of the Kangaroo Position*

Preterm and/or low birthweight babies are not “discharged” from the Kangaroo Position using external criteria; instead, they are meticulously observed until they “request” the discharge: when the position is no longer tolerated and the infant is thriving adequately.

KMC method: Bonding, breast feeding, less infections…

The Kangaroo Nutrition

- The aim of Kangaroo nutrition by breastfeeding is to take the most advantage of unaltered breast milk, particularly considering its immunological properties, the balanced intake of essential nutrients and its safety profile in terms of the risk of enterocolitis. The growth objective is a weight gain at least as significant as that of the intrauterine growth (15 g/kg/day until term).
- Initially, breastfeeding is given at fixed intervals and not on demand, to ensure an appropriate, minimal intake
- If the goal is not achieved with exclusive breastfeeding, conditions that may explain inadequate weight gains should be investigated .
- If the above still fails, or if no secondary causes for inadequate growth were found, breastfeeding should be supplemented either with fortification or with preterm formula, using a drop or spoon to avoid interfering with breastfeeding
- the ultimate aim is to attain exclusive breastfeeding at 40-weeks of gestational age.
- The kangaroo feeding strategy is designed for babies in the so-called steady growth period

The Kangaroo discharge policies: Hospital Discharge in Kangaroo position and Outpatient Follow-up Policies

- The use of KMC method allows to gradually transferring the responsibilities for the baby's emotional and physical care from the health care staff to the baby's family, particularly the mother.
- The kangaroo follow-up with early discharge from the neonatal unit in the KP is one of the basic components of the KMC Method, and is assimilated to "home neonatology" until the baby reaches full term or 2500g in the case of a hypotrophic infant, date in which the kangaroo follow-up theoretically ends.
- After a successful adaptation to the KP and Kangaroo feeding, the hospital can offer very little which cannot be given to both in an appropriate outpatient setting. Therefore hospital kangaroo adaptation may be seen as a preparation for an appropriate, safe and successful discharge for both mother and child, and to enable home kangaroo care as long as required by the baby.

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"Early" (timely) discharge in a Kangaroo Position

- Is one of the components of the Kangaroo Mother Care Method.
- This early discharge, together with a close strict outpatient follow-up program, becomes a safe and effective alternative to permanence in the Neonatal Unit during the "steady growth" phase.
- Though discharged, the baby continues to receive health care at least as comparable in terms of intensity and quality as that they would receive in a neonatal minimal care unit.
- Additionally she/he is physically and emotionally integrated in the family, and at the same time nosocomial risks are prevented.

Criteria for Kangaroo babies home discharge
1.A successful kangaroo adaptation (to the Kangaroo Position and feeding by both mother and child) has been completed
2.The baby can suck, swallow and breathe synchronically
3.The family is willing and able to follow the protocols and the recommendations of the program and the follow-up policies strictly.
4.Access to a systematic, rigorous, well-established program of outpatient care and kangaroo follow-up is available.
5.The infant can have ambulatory oxygen by nasal canulae; in this case family must be trained in the management of ambulatory oxygen before discharge.
6.Infant can be discharged on xanthine treatment for apnea. Treatment will be continued and discontinued during ambulatory care.

Kangaroo Follow-up: the KMC program

- After discharge, babies are controlled on a daily basis, monitoring weight until they get to a daily weight gain of 15 g/Kg/day.
- Subsequently, weekly controls are performed until they reach full term (40-week gestational age and 2500 g). This is the outpatient equivalent of hospital minimal care and may be termed "outpatient neonatal minimal care".
- This includes systematic prophylactic treatments such as anti-reflux measures and drugs, vitamins, prophylaxis of the prematurity primary apnea, etc. Eye and neurological (including a brain ultrasound scan). Screening tests (eyes and brain) are performed during this follow-up.

Where to implement a KMC program?

- Because it is part of neonatal care, it should be situated within a hospital structure, ideally in a location with professionals who know how to handle sick new born infants.

Who is going to run the KMC program?

- A multidisciplinary team is available: pediatrician, nurse, psychologist, social worker, nutritionist, physical therapist, ophthalmologist, optometrist, speech therapist, each contributing from their discipline. The best format is to develop the outpatient care in a collective consultation

Why the KMC program is a collective consultation
Because education takes place daily and is collective, which makes it possible to reinforce knowledge as the mother listens to the same talks several times.
Because mothers waiting for their turns listen to other mother's problems and share their anxieties and experiences.
Because anxiety is better dealt with; by watching smaller babies than theirs, mothers confirm that their babies are in better shape; watching the larger ones provides them with an objective to attain
Because a psychologist is available in case of depression, loneliness, and insecurity.
Because the commitment of daily consultations somehow mirrors the same commitment when babies are hospitalized and daily visits to the hospital are necessary to be with them. It is necessary to remind parents that it is about hard work for a short time, until the baby reaches 40 weeks, and that this results in lifelong benefits.
It stimulates solidarity in the family, particularly when the child is oxygen dependent, since one person apart from the mother is needed to be able to mobilize with the oxygen canister.

Follow-up of the high-risk infant

- This final phase of KMC method should be complemented with a high-risk newborn infant follow-up, at least until the baby reaches 1 year of corrected age.
- The rationale for this lies in the fact that kangaroo babies clearly belong to a category of high biological risk for inappropriate growth and sensory and neuro-psychomotor developmental deficits.

The practice of KMC (is or will):
As effective as incubators to keep the baby with unstable temperature regulation, warm but KMC must be continuous
Will not destabilize the already stable LBWI
Will not increase the rate of apneas or GER
Will reduce pain and stress
Will improve sleep organization
Will improve attachment and bonding
Promote breastfeeding initiation, rate and duration
Makes feeding a sociable and pleasant experience
Promote the participation of the mother and father
Strengthen the family role in the care of a fragile infant
Decrease nosocomial infections
Decrease hospital stay
The practice of KMC (seems):
Seems to empower the mother and the family and prevents feelings of helplessness, healing and separation anxiety
Seems to improve neuro-behavioural development
Seems to be an easy and available tool for transportation
Promote the early and opportune discharge home or to a step down facility

Conclusion

"Although sound guidelines should be tailored to local needs and conditions, it is reasonable to expect that many of the recommendations and certainly most of the evidence appraised will be a useful input for guidelines development elsewhere". We scheduled the update of this EB guidelines in January 2015. They can be free-downloaded from the website of the kangaroo foundation