THE MOTHER KANGAROO METHOD

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“Mother kangaroo” is an innovative method for the treatment and outpatient care of premature and low birthweight children. Warmth, lactation and the kangaroo position are the basic foundations of the method. But more than anything, it is the loving and close relationship established between mother and child that allows the little ones to survive. The important and ongoing stimulus, affectionate as much as physical, improves and guarantees the respiratory and cardiac rhythms. The mother’s voice, her cooing, the surrounding family, all serve as enriching triggers from the neurological and cognitive perspectives. It is the mother, and not the doctors or the hospital, who is in charge and responsible for the care of her baby.

In September 1979, at the Maternal-Infant Institute (IMI) of Bogotá in Colombia, doctors Héctor Martínez Gómez and Edgar Rey Sanabria began to modify the traditional care of premature and low birthweight babies. The new method was coined the “Mother Kangaroo Programme”. The name derives from the similarity between the way that a kangaroo carries her baby after birth, and the way the mothers in the programme carry their premature newborns.

The Mother Kangaroo Method is a model for secure and humanised attention, with an important cost-benefit ratio that allows not only for higher survival rates but also better quality of life. The model may be applied in developed countries as well as in less technologically developed countries. But more than anything, the Mother Kangaroo Method assures the strengthening of close bonds between mother and child and provides the necessary support and emotional balance.

The method combines care in the hospital, an outpatient (ambulatory) clinic and at home, and achieves better results than the more expensive alternative of prolonged hospitalisation. The estimated cost of care in an intensive care unit for premature babies in the United States is approximately US$3,000 to $5,000 per day (UNICEF). Similar care in developing countries is estimated at US$200 per day, while, in contrast, the Programme costs only US$4.60 for the meeting with the hospital.

UNICEF has followed and supported the development of the Mother Kangaroo Method. Since 1979, the innovation has been duplicated in most of the Latin American countries, in several European countries, in some states in the U.S.A., in Asia and in Africa. The method has been adopted in places as dissimilar as the National Institute for Mother and Child in Lima (Peru) and the Soenderborg Hospital (Denmark).

During the 44th Plenary Assembly of the World Health Organization, Héctor Martínez and Edgar Rey were awarded the 1991 Sasakawa Health Prize.
The Mother Kangaroo Method arose in Colombia at the end of the 1970’s as a pragmatic response to a critical situation of overcrowding and to a not very humane practice of separating small babies from their own mothers. The newborn wards were characterised by limited high-technology resources and by extremely high mortality rates for babies with low birthweights. Furthermore, the possibility of crossed infections worsened the prognosis for those babies. The Programme was not conceived initially as a controlled experiment. Rather, it emerged as an alternative to the excessive use of high technology that, by substituting the mother, lost sight of the human element which is irreplaceable for the adequate physical and emotional development of the premature infant, or of the low-birthweight boy or girl.

At the beginning of the 1980s, the category of the IMI was changed from a General Maternity Hospital to a Third Level Maternity Hospital for the care of high-risk obstetric and newborn cases. Because of the specific category of patients, the hospital saw a reduction in the number of births, from around 21,000 in 1979 to 8,600 in 1987. Nevertheless, the proportion of low birthweight children remained the same, approximately 15% of the total live births.

It is estimated that the median newborn mortality rate for all children during the period 1977-1984 was 52 per 1,000 live births (Díaz y Bellman, 1984). According to hospital statistics, before the Kangaroo Programme was started, no children survived with a birthweight of under 1,000 grams, while 35% survived among the group weighing 1,001 to 1,500 grams and 81% survived in the group of children between 1,501 to 2,000 grams (Martínez y Rey, 1983).

By the end of the 1970’s, the rates for low birthweight children were considered unacceptable. The lack of technological resources meant that more than one infant had to be placed in each incubator and there was a problem of crossed infections; along with maternal abandonment, these situations led to poor prognosis.
The seriousness of this situation, and the desire to improve the kind of attention in a more humane and scientific way, led the IMI staff to seek a fast solution. The first step was to replace formula feeding with maternal lactation. Mothers able to feed their babies and to be with their children as soon as possible were encouraged to enter the newborn care wards with the purpose of feeding them directly and forming that all-important attachment. When it was not possible to nurse at the breast, babies were given milk expressed by their own mothers, or by other mothers in the hospital. The reduction of infections thanks to the antibodies present in the mother’s milk, along with the strengthening of the affectionate relationship between mother and child, were the main benefits obtained by this procedure.

The programme staff identified these efforts as the main cause of the immediate drop in gastrointestinal infections in low birthweight babies in the newborn care wards. With breast-feeding established in the newborn care wards, the programme’s central idea took hold. Other steps such as the kangaroo position (skin to skin contact) and the outpatient check-ups meant that the mother became directly responsible for the care of her small child — and had been prepared to do so.

The most important change was to provide care to premature infants not according to weight, but according to clinical conditions, trying to discharge them from the hospital as soon as possible after birth. That reduced the risk of crossed infections. The kangaroo position and a visit to the outpatient clinic immediately after hospital release complemented the development of this new method.

The Mother Kangaroo Method is an important model of cost-benefit ratio in which the premature infant survival rate, along with quality of life, is improved, and abandonment (so frequent in these cases) is avoided.

The method combines hospital, outpatient and home care, achieving better results than the more costly alternative of prolonged hospitalisation.

The mobile care at home allows for the non-use of ultrasounds and monitors; the baby will not use incubators, which avoids nosocomial infections, thus sparing the hospital the use of drugs and other hospital supplies and services.

**OBJECTIVES OF THE MOTHER KANGAROO METHOD**

- Improve the prognosis and development of low-weight children
- Encourage a close relationship between child and mother as soon after birth as possible
- Humanise hospital and outpatient care of premature babies
- Teach the mother to offer her child the best possible care at home
- Make more rational use of technological resources, especially when they are limited
- Reduce the costs of hospitalisation
The Mother Kangaroo method in practice

With the Mother Kangaroo Method, an underweight baby leaves the hospital to go home with his or her mother as soon as possible after birth, upon confirmation that his or her clinical condition is stable. Before leaving the hospital, the mother participates in a process of adaptation and education with respect to the methodology of the programme.

Once home, the mother cares for her baby continuously, in a way similar to that of the baby kangaroo, under her clothing, in contact with her skin. One of the points emphasised most during the adaptation period is that of feeding, which much be done exclusively with breastmilk. Education of the mother, and care for the baby’s health, continues after release from hospital, via outpatient clinic visits.

BASIC ELEMENTS OF THE MOTHER KANGAROO METHOD

- **Early return** home for babies in good clinical condition, regardless of weight.
- **Breast-feeding** only as the sole source of nutrition and protection during the first months of life.
- **Kangaroo position** in order to provide warmth, love, stimulation, ease and security through the mother’s care.
- **Education of** the mother on caring for her small son or daughter.
- **Outpatient care** in order to follow the growth and development of the baby and continue the mother’s education.

The baby is placed against the mother’s breast, with direct skin to skin contact, and in frog position, vertically, in order to avoid regurgitation and bronchial aspiration. There, under the mother’s clothing, the infant must stay 24 hours a day, even when sleeping. The mother should sleep in a semi-seated position. If she needs time for her own personal hygiene or for other reasons, the father, older siblings, or any other member of the family may take the place of the mother. The proximity to the mother — her caresses, her voice, her heartbeat — are considered important factors in the stimulation of the child’s breathing to avoid apneas. The continuous skin-to-skin contact helps the infant maintain adequate body temperature and stimulates the development of a close emotional bond between mother and child. Love, warmth and maternal lactation are the essence of the Mother Kangaroo Method.
CRITERIA FOR ADMITTANCE TO THE OUTPATIENT CLINIC

Generally the programme deals with those infants who weighed less than 2,000 grams upon leaving the hospital, considering that an infant who weighs more does not need to be cared for with the mother kangaroo method.

Mothers of infants who remain hospitalised may enter the newborn care wards several times a day to feed their babies and practice the kangaroo position before the child is released from hospital. The time is used to educate mothers about the importance of breast-feeding, the correct way to maintain the kangaroo position in order to transmit warmth and avoid bronchial aspiration, and to favour a loving relation between mother and child.

Acceptance of babies into the kangaroo programme is handled according to the following flow chart, using as a starting point the infant’s clinical condition and Apgar score at birth.

FLOWCHART FOR ACCEPTANCE INTO MOTHER KANGAROO PROGRAMME

BIRTHWEIGHT LESS THAN OR EQUAL TO 2,000

INTERMEDIATE CARE ← INTENSIVE CARE EARLY CONTACT

KANGAROO MOTHER

DISCHA

JOIN PROGRAMME DO NOT

OUTPATIENT APPT WITH PROGRAMME HOUSE CALL

FOLLOW UP

The criteria used for early discharge from hospital involve the mother as much as the infant. The infant’s clinical condition, more than his or her weight, is the determining factor for rapid discharge from hospital. The final physical exam determines the date of release. The mothers should be in good physical condition, and willing to assume responsibility for the special care that her premature son or daughter requires.

When possible, no child is released on Fridays or Saturdays if the outpatient clinic is closed on the weekends. Emergency cases are always attended to, guaranteeing the little ones coverage 24 hours a day, seven days a week.
OUTPATIENT CARE

Following the adaptation period in the newborn care units, the mothers and infants who fit the criteria for leaving the hospital are released and go to the outpatient clinic, preferably the day after leaving the hospital.

GENERAL CRITERIA FOR RAPID DISCHARGE FROM HOSPITAL

INFANT
- Absence of: difficulty breathing; infections; neurological problems; metabolic disorders: hypoglycaemia, hypocalcaemia, etc.
- Presence of: ability to suck, good response to stimuli; ability to maintain a stable temperature when in the kangaroo position.
- Weight is not a determining factor for release.

MOTHER
- Absence of: infectious diseases; psychological problems.
- Presence of: physical and mental ability to feed and keep her child in the kangaroo position.
- Training in: breast-feeding exclusively; kangaroo position; attention to the infant’s condition; stimulation of the child; regular visits to the outpatient clinic after release.

The staff that exams the infants in the outpatient clinic comprises paediatric doctors, a qualified nurse, a nurse’s assistant, as well as doctors and nurses in training. The staff encourage and make it possible for the mothers to come to the clinic as many times as necessary during the first weeks and months of life. During the doctor’s visit, the mothers of the smallest premature infants keep their babies in the kangaroo position, underneath their clothing. There the child receives the warmth and stimulation that he or she needs. It is not unusual for another family member, often the father, to be the one to hold the child in the kangaroo position while attending educational talks or awaiting their turn for the baby’s examination. Being together in a group allows the mothers to get to know each other and encourages exchange of experiences for dealing with the babies. A cordial atmosphere is created between the mothers in the programme and the staff who see them, which is very positive and supportive.
Before beginning the medical check-up, the programme staff (paediatricians, nurses and nutritionists) take advantage of having the mothers together in a group to give brief educational talks which may be complemented with audiovisual aides. Topics covered include those relating to the importance of maternal lactation, the nutritional value of different foods, vaccination, measuring body temperature, infant development and adequate stimulation, and the detection of alarm signals.

Once the educational sessions are over, the nursing staff is in charge of weighing and measuring the height and cephalic diameter of the babies and recording the information on the respective chart. The medical personnel then begin the clinical examination of each child, noting his or her physical condition, weight gain, growth and development, and teaches the mother what to do during outpatient care.

The therapists and psychologists pay special attention to psycho-motor development, using various measuring and evaluation scales. They also work with the mothers in relation to the child’s development, instructing them on adequate stimulation, as well as showing them how to make toys at home that are inexpensive and use different colours in order to help the process of stimulating their children. The mother is shown how to stimulate each of her boy or girl’s five senses.

After the first visit, which is recommended to take place as soon as possible after discharge from hospital, the parents may return as often as they like. The very small babies may and should come every day, and as the baby grows the visits are spread out until they occur at least once a month. There is a telephone number for the mothers to call the clinic when they need to. The staff is very willing to hear any of the problems the mother may have, often dealing with her concerns over the telephone.

Those boys or girls who stay longer in the intensive care units because of their clinical condition may also benefit from direct maternal care, especially being fed with breast milk and developing loving attachment between mother and child.
The Mother Kangaroo Method is an important model of cost-benefit ratio which improves the survival rate and quality of life of premature infants, and avoids the abandonment which is so often seen in these cases. The method, which combines hospital treatment with outpatient and home care, has achieved better results than the more costly alternative of prolonged hospitalisation.

During more than twenty years of applying the Mother Kangaroo Method, the Mother-Infant Institute of Bogotá has developed a philosophy which differs from traditional methods. The mother (not the hospital, not the medical staff) becomes the one in charge of caring for her premature infant. Her access to the newborn care wards, breast feeding and contact with her baby are decisive in stimulating the formation of a close bond that helps in her adopting and learning the techniques of baby kangaroo care. Open, friendly and effective visits to the clinic allow necessary follow-up checks to be carried out.

The benefits of the mother kangaroo position apply to both the mother and the baby. The vertical position protects babies from bronchial aspiration, one of the common causes of illness and death in low-weight babies. The ongoing proximity to the mother’s breast stimulates milk production, which otherwise is a frequent problem for mothers and low-weight babies when they are separated for long periods of time. The sociological benefits of close physical contact between mother and child has been associated with a decrease in the problem of abandonment (Whitelaw and Sleath, 1985; Martinez and Rey, 1983).
Replication of the Mother Kangaroo Method in other Colombian cities and in other countries in the Americas, Europe and Asia has allowed it to be adapted to differing conditions. It has also generated the development of prospective studies for objectively measuring the advantages and benefits of the Mother Kangaroo Method, carefully evaluating the safety of the method in terms of maintaining body temperature, cardio and respiratory rates, prevention of recurrent apnea and bronchial aspiration. Above all, the studies have validated the importance of constant stimulation via movement, caresses, cooing, singing and smells that the baby gets from his or her mother.

Positive results have been demonstrated through several evaluations carried out in various places and countries, with Programmes already established on the five continents. At Huddinge Hospital in Sweden, in cooperation with the World Health Organisation, an article was written on the effectiveness of the kangaroo position or direct skin contact as a method for obtaining an adequate temperature (WHO, 1986). Results show that for a 2000 gram baby, dressed, in an environment at room temperature, direct skin contact is much better than the warmth provided by a thermal blanket, incubator with hot water mattress, a special silver fabric or common incubator. The proximity of mother and baby has been associated with an absence of cries, which are known to cause additional expenditures of energy, and with the reestablishment of foetal circulation (Anderson, 1986). The kangaroo position allows babies to be isolated from infections and mothers to keep close watch. The mother’s caresses, her voice, her cooing, and even her heart beat are important factors for stimulating the baby, for his or her breathing, and in the prevention of recurrent apnea, common in premature newborns.
The Mother Kangaroo Method is supported by UNICEF’s Regional Office for Latin America and the Caribbean. The WHO, in addition to rewarding a prize to the authors of the innovation, has supported the implementation of the Mother Kangaroo Method.

The programme’s norm of feeding solely with breast milk is consistent with the World Health Organisation, which considers milk from the baby’s mother to be ideal in that it provides specific nutrients for the pre-term infant, along with equally specific immunological components, and it allows for the adaptation of immature digestive organs (WHO 1985, and Anderson 1986).

The method has been applied at Hammersmith Hospital in London, with good results. Tube feeding of babies under 1,500 grams diminished; recovery from severe illnesses improved and, thanks to the kangaroo position implemented in this intensive care unit, did not require prolonged hospital stays (Whitelaw and Sleath, 1985). Babies were cared for in the kangaroo position from as early as three days after birth, and it was observed that the position stimulated the production of breast milk. In addition, babies who weighed less than 700 grams were able to maintain their body temperature and not suffer periods of apnea. A similar experience took place in Dusseldorf, Germany and at the Soenderborg Hospital in Denmark, where the method was used successfully and achieved stable respiration in children fed orally (Anderson 1989, and Moeller-Jensen 1987). In Sweden maternal breast feeding was allowed in the kangaroo position in addition to supplements the infants were receiving.

In 1986, at the San Gabriel Hospital in La Paz, Bolivia, a programme was implemented for babies weighing more than 1,000 grams. During the first year, the programme followed 25 babies with gestational ages between 34 and 36 weeks and with birth weights of between 1,501 and 2,000 grams (Yasick et al, 1986). The hospital stays reported during follow-up were 12 days. The most frequent causes of illness during follow-up were connected with the respiratory tract. The study also reported that aspects of psychomotor development, coordination and adaptation, as well as language development, were completely normal, even reaching higher parameters than those of babies cared for traditionally in incubators. In 1987, a programme of early discharge was begun at the Mother and Child Institute in Lima, Peru (Urquiza, 1988). During that year, 70 premature babies were treated whose gestational ages were between 32 and 36 weeks and whose birth weights were between 1,400 and 2,000 grams. The average hospital stay for half of the babies was one week. Brazil has more than 60 Mother Kangaroo Programmes, with known results and benefits.

Replications of the Mother Kangaroo Method, and similar experiences, have been carried out in other cities in Colombia. In Bogota other hospital institutions have initiated early discharge programmes. In Latin America there are Mother Kangaroo Programmes in Bolivia, Brazil, Costa Rica, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Peru.

The industrialised countries that have replicated the Mother Kangaroo Method include Germany, Denmark, Spain, the United States, France, England, Italy, Holland and Sweden, among others.
Adopting the Mother Kangaroo Method in Other Countries

The institution that carries out the Mother Kangaroo Programme is the Maternal Infant Institute of Bogotá, in Colombia. The team in charge of the Programme is available to offer technical assistant for the implementation of the Mother Kangaroo Method in other countries interested in replicating the experience. There are other institutions in Bogota such as the Santa Bibiana Clinic where instruction in the methodology is offered.

All personnel who replicated the methodology in Latin American and European countries received training at the Maternal Infant Institute of Bogotá. The established programmes in almost all of the Americas offer training slots for those who want to learn about the Mother Kangaroo Method. In Brazil there are many and varied Programmes that would provide a good place for gaining experience, if physical presence is necessary.

The Mother Kangaroo Method is none other than an essentially natural method, where a mother takes charge of raising her own child. Thus, adopting it is a simple and easy matter, with a minimum of elements. Under the supervision of a paediatrician, nurse or trained general practitioner, the mother is motivated to make contact with her baby quickly, establishing a bond that from then on will be the essence of a process of bringing up the baby, with the elements described, in a simple way and at minimal cost. The humane and scientific attitude of the hospital staff makes it easier to do what every mother knows how to do and wants to do: care for her own child.

The methodology may be started in a Mother Child Hospital or a General Hospital that includes a maternity ward. The hospital may open an outpatient clinic for checking on these babies. Periodic controls may also be set up at a first-level institution.

The process of raising a child has always been natural and within this parameter a Kangaroo Programme can be set up in accordance with the requirements and necessities of each place. What is most needed is the willingness to watch from the medical point of view something that nature has produced throughout the history of human beings: a mother giving life to her child and taking charge of putting it in contact with the world. The health institutions favour and provide the conditions for the development of the health of their inhabitants.
For more information, and to establish permanent collaborations, you may contact Doctor Héctor Martínez Gómez, M.D. — Mother Kangaroo Method. Adjunct professor Universidad Nacional, Bogotá, Colombia.

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