

# Kangaroo Mother Care

English Version

*“The Kangaroo Mother Care has the merit of associating a more humanizing and good quality attendance with lower cost, affording possibility of caring for a larger number of premature babies. The method is an excellent instrument for an adequate health policy in Brazil.”*

*José Serra*

**MINISTER OF HEALTH**

# Kangaroo Mother Care

## PRESENTATION

One of the ways to deal with social projects is the study of the so-called “best practices,” an innovative form that deals with social questions. When one encounters projects that exemplify innovative practices it is possible to reproduce those practices in analogical situations, adapting them to local realities.

As it is the intention of the BNDES to continually search for innovative social practices and reproduce them, the Bank created the Program to Support and Disseminate Social Projects in 1997, that permits providing assistance, with non-repayable resources originating from the Social Fund for awards, for those who have been awarded, as well as the dissemination of selected projects. Within the sphere of this program, in which the BNDES participates, is included the award presented by the Ford Foundation and the Getulio Vargas Foundation, for “Public Administration and Citizenship.”

In 1977 one of the finalists for the award was the Kangaroo Mother Project initiated by the Maternal-Infant Institute of Pernambuco, the IMIP. The Kangaroo Mother Care method of treating premature and low birth weight newborns is based on removing the newborn children from the incubators, if they are healthy, and placing them in skin-to-skin contact with their mothers, their heads placed near the heart of the mother.

The results are significant in terms of temperature stability and the heartbeat of the baby, as well as the proportional comfort and the bonding that results between mother and child. The proximity also easily permits breast-feeding, which is not possible when the mother returns to her home, leaving the child in the incubator.

The BNDES provided assistance for the expansion of the IMIP maternity facilities and, observing the benefits of the method, made the decision to take actions which would disseminate the method throughout Brazil, since the information gained revealed that the qualities of the method could be extended to any premature mother and child.

These facts motivated the development of an amplified support project for the method throughout Brazil, implemented by the Ministry of Health, with the support of the BNDES, and in partnership with Orsa Foundation.

In this publication we present a description of the Kangaroo Mother Care and its benefits, and relate the process that permitted this procedure to be more than just a limited experience in some Brazilian maternity facilities, becoming a part of the health policy of the nation.

LA METODOLOGIA MADRE CANGURO rescata el derecho a la ternura, al respeto por los sentimientos del bebé y su familia convirtiéndose en un nuevo punto de partida, donde el pequeño ser, que lo necesita todo, recibe el amor, el calor y el alimento para el cuerpo, para el espíritu y para la vida – fundamentos inigualables para asegurar un adecuado crecimiento humano y divino.

Es en los brazos de la madre, en el nido de su seno, en donde el Prematuro recibe la mirada dulce y tierna, el arrullo que madurará su centro nervioso, y las voces armoniosas que le irán a trazar un nuevo lenguaje que, más tarde, □se volverá universal, como ha sucedido a través de la historia de la humanidad...

Esta nueva forma de manejo y de generar vida nació en 1979, en el Instituto Materno Infantil de Bogotá, Colombia, cuando con observación, ciencia, experiencia y un uso racional de la tecnología se establece un manejo más humano para el niño y la niña de bajo peso al nacer.

Hoy... esa leche la de la vida, ese calor capaz de hornear al universo, y ese amor que trascenderá para siempre...se ha detenido sobre Brasil, empezando en Recife y extendiéndose por todo el país.

HÉCTOR MARTÍNEZ GÓMEZ

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## PART 1: KANGAROO MOTHER CARE

### KANGAROO MOTHER CARE AS A NEW PARADIGM FOR PERINATAL ASSISTANCE

#### Precedents

*"The Kangaroo Mother Program is a ray of hope for the millions of children throughout the world who are born premature and underweight."*<sup>1</sup>

UNICEF

- 1 UNICEF, Kangaroo Mother Program. Ambulatory Treatment for Premature Babies. Promotional Pamphlet, UNICEF, Bogota, Colombia, 1998.

In 1979, the doctors Héctor Martínez<sup>2</sup> and Edgar Rey Sanabria, of the Maternal-Infant Institute (IMI) at the San Juan de Dios Hospital of Bogota, in Colombia, initiated a significant transformation in the concepts of providing care for prematurely born and underweight infants. The newborn children were laid in critical overcrowded facilities (more than one child in each incubator), subject to cross infections and the lack of technical resources. The premature weaning required the utilization of infant formulas for feeding the babies. The levels of neonatal mortality were extremely high and maternal abandonment was frequent.

- 2 This dear, gentle and charismatic neonatologist was in Brazil on various occasions, promoting the Kangaroo Mother Program, and we owe him a debt of gratitude for the teaching methodology and the rapid expansion of this method in our country. In conjunction with his friend and colleague Dr. Sanabria, Dr. Martínez received the Sasakawa Health Prize, in 1991, at the 44th World Health Organization Assembly (author's note).

These dramatic conditions led Dr. Martínez and Dr. Sanabria to create the Kangaroo Mother Program, a pragmatic solution that was to revolutionize the manner of treating newborn babies who were born under weight and offer these children the possibility of growing up healthy with a better quality of life.

The existing health condition at the beginning of the Kangaroo Mother Program (and which continue to exist in some areas of Brazil) was set forth by Dr. Martínez and Dr. Sanabria in the following manner:

"Immediately after being born, the underweight newborn was placed in an incubator, which was often shared with one or more other newborns. No one was allowed access, including the mother, to the child in the Intensive Care Unit (ICU) of the Maternal-Infant Institute of Bogota. The mother could only see the child after the baby was released from the ICU. The initial feeding of the child was with dextrose and infant formulas based on the child's weight. The premature child was only removed from the incubator and placed in a special nursery when the initial pathology had been treated and the child's weight was determined satisfactory.

The time that the child remained in the hospital was extremely variable, sometimes reaching periods of up to three months, when the mother remembered her child and came to reclaim it. The number of abandoned children was very high due to the lack of contact that established an emotional bond between mother and child. Not to mention the chance for contagion, the low defense mechanisms of these newborns and the high volume of patients that produced a high percentage of infectious diseases, especially gastrointestinal, leading to blood poisoning and death."<sup>3</sup>

- 3 Gómez, H.M., Sanabria, E.R., Navarrete, L., Marquette, C.M. Programa Madre-Canguru em el Instituto Materno-Infantil de Bogota, Colombia, in Primer Encuentro Internacional Programa Madre-Canguru, 1990.

The Kangaroo Mother Program created by Dr. Martínez and Dr. Sanabria consists in the reduction of the time the newborn remains in the incubator, the placing of the child on the mother's chest in the kangaroo position (skin-to-skin contact and the preventing posture against gastroesophageal reflux and pulmonary breathing), in exclusively feeding the child at the mother's breast and in the follow-up program of the medical facility.

The most important transformation of the program consists in the manner in which the premature babies are treated based on their clinical conditions rather than their weight, releasing them as quickly as possible, the utilization of the kangaroo position and the follow-up control of the medical facility. The newborn is placed at the mother's breast, with skin-to-skin contact (to transmit body heat and sensorial stimulation) and in a vertical position to prevent gastroesophageal reflux and eventual broncho-respiration.

There, under its mother's clothing, the child remains 24 hours a day, as well as when the mother is asleep, using a semi-seated position. Any member of the family (properly trained) can replace the mother while she is attending to her personal cleanliness and other necessities. The intimate contact with the mother, her voice and her touch, the beating of her heart, the rhythm of her breathing and her movement as she goes about her household chores are a constant stimulation to the child's breathing, thus preventing apnea. And all of this continuous contact, direct and warm, develops a bond and affection between the mother and her child as well as between other members of the family.

*In synthesis, love, warmth and breast-feeding are the essence of the Kangaroo Mother Program.*

This revolution in the care of premature babies has been recognized internationally with the official seal of UNICEF, which financed the construction of special locally operated child care units at the IMI, widely known as "La Casita," for the ambulatory care of kangaroo groups consisting of mothers and their babies.

According to doctors Martínez and Sanabria, the Kangaroo Mother Program is a technique that medical teams should propose but never impose.

The Colombian doctors concluded that some women are only ready (physically and emotionally) for "body-to-body" contact (when both the mother and baby are fully clothed) as opposed to "skin-to-skin," which is the basis for the transmission of sensorial stimulation and body warmth.

## **Kangaroo Mother Program**

### **Basic elements**

**Early discharge**, making possible shortened hospitalization period for newborn babies under good clinical conditions, irrespective of weight and gestational age criteria.

**Exclusive breast-feeding**, utilizing the mother's milk as the only source for nutrition and protection during the first months of life.

**Kangaroo position to promote warmth**, love, stimulation, and to prevent regurgitation, irregular breathing, abandonment.

**Education/Information of the mother**, the parents and the family in the care of the premature baby. Information on the subject increases the self-esteem of the mother, providing confidence, thus reducing the eventual sense of guilt that she might feel, for whatever reason, for the child being born premature.

**Ambulatory follow-up** to monitor the growth and development of the infant and continue the health education actions taken with the family.

### **Characterization**

In well-equipped ICUs for newborns, the so-called “conventional care” (principally the use of incubators), the newborn are associated with a significant reduction in infant mortality rates. The use of that technology, however, is restricted, due to difficulties in its acquisition, distribution, access, use and maintenance of equipment and medicine and also the difficulties related to specialized human resource participation.

### **Outcomes that surprise:**

#### **1. Infant development**

*From 1979 to 1986, the Maternal-Infant Institute of Bogota provided treatment to 1,654 premature babies with less than 2,000 grams, in the Kangaroo Mother Program. Of this total, 65 premature babies were discharged from hospital during the first three days of life and 87% (approximately 1,440 children) during the first 14 days of life. The increase in weight during the first year was 4.5 times the birth weight (the average weight gain is 3.5 to 4.5 times birth weight). The increase in height during the first year, on average, was approximately 28 cm (the average height gain during the first year is 25 cm). And also very important: the head circumference grew on average 14.5 cm during the first year (the average normal growth of the head circumference during the first year is approximately 12 cm).*

*The global mortality of the 1,654 children treated by the program on follow-up was only 6%, as described below:*

- of the 40 newborn babies with a weight of less than 1,000 grams, 9 died (22.5% of births);*
- of the 413 newborn babies with weight between 1,001 grams and 1,500 grams, 52 died (12.6% of births);*
- of the 1,201 newborn babies with a weight between 1,501 and 2,000 grams, 44 died (3,6% of births).*

#### **2. Cost savings**

*The related care costs of these premature babies in the Kangaroo Mother Program were relatively low due to the simplicity and natural aspects of the program, as well as the limited resources of the country. The following comparison clearly reveals:*

- in a developed country, the treatment cost for a premature that is born with a weight of 1,000 grams can be as much as US\$ 800 per day;*
- in Bogota, the cost for treatment of this same premature baby in an incubator is US\$ 89 per day;*
- in the ambulatory Kangaroo Mother Program, the treatment cost is only US\$ 2 per day.*

*The Program presents an effective health care model, with an excellent cost-benefit ratio, combining hospital treatment with outpatient/home follow-up, which increases perspectives for survival and improves quality of life of the premature baby, besides abandonment, which is common in these cases.*

Conventional care generates problems in rich countries as well. In addition to being very expensive, contributing to the increase of health care costs, it separates the newborn from the mother, making more difficult the process of breast-feeding, and mechanizing

care, thus reducing the human contact between mother and child and health care professionals.

The Kangaroo Mother Care (KMC) is a method that resolves the question of how to establish appropriate neonatal technologies with a higher level of efficiency, effectiveness and social/cultural acceptance. The cost-effectiveness of the program is very positive because it offers an appropriate alternative to long hospitalization periods. The program introduces a model with a good cost-benefit ratio, whose objective is to increase the survival rates of premature babies, as well as increase quality of life and prevent abandonment.

The Kangaroo Mother Program is best defined by the skin-to-skin contact between the mother and her low-weight newborn. This prolonged and continuous contact, which begins in the hospital and can be continued at home, after an early discharge, can be maintained until the gestational age of the child reaches 40 weeks. During the entire period, the mother attempts to only breast-feed her child, and she also receives adequate accompaniment from health care professionals. The baby is, in general, placed in the face up, in the semi-declining position between the mother's breasts (frog position).

During the outpatient appointments anthropometric measurements (which include weight, height and head circumference) of the infant are recorded. The child is psychologically and physically examined by an interdisciplinary team composed of neonatologists, phon audiologists, ophthalmologists, nutritionists, social workers, lactation consultants and psychologists, receiving all the necessary vaccines, as well as given the test for inborn metabolism. Data is recorded on a special "Children's Health Card." The mothers, fathers and family participate in group meetings and receive educational information about adequate stimulation, child care, hygiene and nutrition. The importance of breast-feeding is always emphasized.

Because the method was created as an attempt to reduce the high levels of infant mortality by cross infection existing in Bogota, it was, above all, utilized as a response to an urgent necessity felt in maternal-infant health services. The Kangaroo Mother Program was not initially examined as a part of a study using scientific evaluation methodology and for this reason was criticized.

Today, however, the effectiveness of the Kangaroo Mother Care is recognized by the international scientific community, and is being used in many countries as a partial or total alternative to conventional care with premature, low-weight newborn babies.

In hospitals with few resources, the method can contribute to a reduced hospital infant mortality rate.

In situations where there is a reasonable availability of conventional care, the Kangaroo Mother Program promotes maternal breast-feeding, improving the adequate growth of the baby, reducing the incidence of contagious diseases during the first six months of the child's life, and contributes to reduced health care costs.

In those settings with ample resources, the Kangaroo Mother Program, in addition to emphasizing maternal breast-feeding, facilitates the reduction of the time period transition between the incubator and the crib, contributes to a reduced time in the hospital, a faster stabilization of temperature control, heart rate and breathing, as well as to humanizing the neonatal intensive care.

### ***Milk worth its weight in gold***

*The maternal breastmilk is extremely rich and is an enormous help in the development of premature and underweight newborns. One of the greatest concerns of prenatal physicians is with the caloric or the energetic content of breastmilk for premature babies. The caloric value of human milk can be measured by a technique known as "creamtocrit"(crematócrito), in which a milk sample is placed in a small test tube and*



*rotated in a micro-centrifuge. Using this test one can calculate serum and cream (fat) contents present in the milk.*

*Normally, secondary breastmilk is used to feed the baby. (Secondary milk is that which is a product of the let down reflex and is often called hind milk, measured by the oxytocin hormone.) This milk is two or three times as rich in lipids than the milk that first fills the human breast. To implement the "creamtocrit" test, there is no need for a milk bank.*

The method has been accepted by both mothers and health care professionals in various cultures and distinct circumstances and improves maternal-infant bonding. For all of these reasons, the program is being recommended in various countries with different levels of health assistance.

In fact, if it is analyzed from the position of technological incorporation in the health care area, the method contains all of the prerequisites necessary for the immediate implementation of neonatal units. Studies point out that:

- It is a secure method of assistance for the premature newborn;
- It offers advantages over conventional assistance, including social benefits, like the participation of the families and reduction of costs;
- It can be adapted to different cultures and types of hospitals.

The greatest obstacles to its implementation are: attitude and lack of knowledge of health professionals; hospital infrastructures; social problems of the mothers and the families and the lack of sufficient information of the sanitation officials, directors and administrators of hospitals related to the subject.

### **The KMC around the world**

UNICEF had been the international supporter of the Kangaroo Mother Care since its beginning, providing both funding and moral backing for the implementation of the technology in Colombia and in other countries. Presently, the program has been developing throughout the world, adapting to the medical, social and cultural necessities of each country. The Kangaroo Mother Care can be classified in three basic models, in accordance with the socioeconomic development of the country:<sup>4</sup>

4 Charpak, N., Calume, Z.F., and Hamel, A. O Método Mãe-Canguru. Pais e familiares dos bebês prematuros podem substituir as incubadoras. Rio de Janeiro: McGraw Hill, 1999.

- the method as a partial or complementary alternative to the incubator – this is the principal application in Colombia, Bolivia, Equator, Guatemala, Peru, Mozambique, Argentina, Nicaragua and in some regions of Brazil;
- the method as a total substitute of incubators – this is the application of the method in Zimbabwe and other African countries;
- the method as a process of strengthening of the bond between mother and child in neonatal health services – this is the method used in Great Britain, Germany, Denmark, Switzerland, Canada, France, South Africa and Brazil.

Consequently, there is no single KMC method used universally. The operating forms of the method are diverse and vary according to the culture, the social conditions and the development of health services in the country where it is utilized.

In Colombia, where the method began, the program is essentially outpatient. In Bogotá, for example, there does not exist a Kangaroo Mother maternity unit. Rather, the method is implemented in the home of the mother, with outpatient care. In Brazil, the Kangaroo Mother Program is being implemented principally in hospitals.

### **Scientific confirmation**

Medical study centers in countries around the world have produced scientific reports on the Kangaroo Mother Program, all providing conclusive proof of the efficiency and quality of the method.

One example of this proof was published in an article of the specialized magazine Pediatrics. In 1993, the Kangaroo Mother Program was initiated in the Clínica Del Niño (Child Clinic) in Bogota, Colombia. This program – accompanied by the World Laboratory (a non-governmental organization of Switzerland) and by the Social Insurance Institute (ISS), under the coordination of the doctors Nathalie Charpak and Zita Figueroa de Calume – provided assistance to more than 8,000 kangaroo mother/child units by the year 2000. This program provides health care of the premature newborns as well as outpatient services and is based on three basic components:

- the kangaroo position;
- nourishment based principally on breast-feeding;
- early hospital discharge for mother and child.

### **Why “Kangaroo Mother?”**

*The Kangaroo Mother Care adopted this name from a group of marsupials that originated in Australia, because the young of this mammal are born before they reach the end of the gestational period. The kangaroo babies have an extra-uterine gestation. Nature provided the female kangaroo with a pouch where the gestational period is completed: in this pouch the kangaroo babies are provided with warmth and are fed until they are strong enough to leave the pouch. The mother's nipples, which are located inside of the marsupial pouch, produce a special milk; younger offspring feed on one set of nipples while the older offspring feed on another, thus providing each with the type of milk that it requires at each stage of its growth.*

*Skunks, a breed of mammals that exists in Brazil, have a gestation that is similar to that of the kangaroo. Skunks are mammals which give birth outside the placenta, and have nipples that are located in marsupial pouches, where they can feed between 10 and 18 newborn offspring, each about 1 centimeter in length, where they remain until they abandon the mother's pouch. For semantic reasons, the name Kangaroo Mother was also the preferred term for the method in Brazil. After all, what mother would wish to be called a skunk, in spite of the dedication that a female skunk might have for her offspring?*

*In addition, the kangaroo has been, for many years, a symbol for neonatal physicians. Since its foundation in 1947, the National Child Care Center of Paris has used the kangaroo for its logo.*

*The offspring of the kangaroo are born “premature” (from our point of view) and are only about 13 millimeters in length. This means that the offspring is 12,000 times smaller than the mother. The kangaroo mother carries her offspring in her marsupial pouch for approximately 18 months. This is a form of extra-uterine gestation of the kangaroo baby, where the umbilical cord is replaced by the mother's nipple. For this reason the marsupial pouch can be considered a natural incubator, in which the kangaroo young remains for a period that is five times longer than it remains in the mother's uterus.*

Part of the results were published in Pediatrics,<sup>5</sup> revealing that the random and controlled study demonstrated scientifically that there was no increased risk of infant mortality using the Kangaroo Mother Care in relation to traditional health care for the premature child. The study also demonstrated that there were no negative repercussions related to the somatic growth of the babies, and that they were continually under observation until they reach an age of seven years.<sup>6</sup>

5 Charpak, N., Ruiz Peláez J.G., Figueroa de Calume, Z., and Charpak, Y. Kangaroo mother versus traditional care for newborn infants less than 2000 grams: a randomized controlled trial. *Pediatr. Res APS – SPR* 1997; 41:192<sup>a</sup>.

6 The INCLEN (International Clinical Epidemiology Network) awarded a prize to this article as being the best published by the Pediatrics journal in 1997-1998.

Other studies of high scientific quality also proved, in a clear manner, the efficiency of the Kangaroo Mother Care were the following:

- Kangaroo mother method: randomized controlled trial of an alternative method of care for stabilized low-birth weight infant.<sup>7</sup>

7 Sloan, Nancy L., Camacho, Lenin W., Leon, Rojas, Ernesto Pinto, and Stern, Claudio. Kangaroo mother method: randomized controlled trial of an alternative method of care for stabilized low-birth weight infant. *Lancet* 1994, v. 344, p. 782-785.

- Kangaroo mother care for low-birth weight infants: a randomized controlled trial in different settings.<sup>8</sup>

8 Cattaneo, A., Davanzo, R., Worku, A., Sujorno, A., Echeverria, M., Bedri, A., Haksari, E., Osorno, L., Gudetta, B., Setyowireni, D., Quintero, S., and Tamburlini, G. *Acta Paediatrica* 1998, v. 87, p. 976-985.

## PART 2: KANGAROO MOTHER CARE IN BRAZIL

### PREMATURE BIRTH AND INFANT MORTALITY IN BRAZIL

*Every year, in the world, more than 20 million children are born premature and underweight: of these, one-third dies before completing their first year of life. Nine out of every ten newborns with a weight less than 1,000 grams at birth die before completing their first month of life.*

UNICEF

Infant mortality has been steadily declining in Brazil over the last few decades. From a coefficient of 85.0 per thousand born alive, the infant mortality rate fell to 34.6 per thousand in 1999, which represents a significant reduction of 59.3% during the period. The statistics, provided by the IBGE and published in 2001, show that the infant mortality rate in Brazil is very close to the 33.0 per thousand rate established by the UN for the year 2000.

Despite the significant reduction in the rates registered throughout the country during the period, it is important to note that the highest rates of infant mortality are in the neonatal group (from birth to a period of 27 days), as compared to the more favorable results presented by the post-neonatal group (those surviving from a period of 28 days to 1 year). Beginning in 1993, a higher death rate was registered in the neonatal group in relation to the post-neonatal group. A stabilization was registered, or even an increase in the number of deaths of newborns, in comparison with the older children. The most significant reduction in mortality in the post-neonatal group was expected, due to the implementation of basic health care practices and the improvement in sanitary conditions.

Over the last decade, the efforts to reduce infant mortality have been directed against malnutrition and diarrhea, respiratory infections and those diseases that are preventable through vaccination, health problems that are more prevalent in children over the age of one month. For this reason, there has been a higher reduction in the infant mortality rate of the post-neonatal period. According to the IBGE data, the rates related to infectious and parasitic diseases decreased from 13.5% to 11.0% within the total infant mortality rates, while the incidence of perinatal diseases increased from 41.5% to 50.7%.

The mortality in the perinatal period represents the principal contingent for the death rates of those with less than one year, and these rates have become a challenge, not only for the health service community but also for society in general. It is well known that the underlying causes of these deaths are closely tied to health condition and nutrition, educational levels and the life-style of the mother and the family, principally to the quality of health care during the gestational period, as well as the actual birth, the post-natal care and the initial care given to the newborn. Consequently, what is crucial is the promotion of

multi-sector intervention directed to providing a better quality of life and health for women as a basic right and necessity, as well as a guarantee of a safe birth and survival of their newborns.

### **Premature death**

The majority of deaths during the first month of life are tied to the premature neonatal period, or rather the first week of life, especially those deaths that occur during the first day of life, which represent approximately 36%. In all regions of Brazil, death resulting from perinatal diseases represents more than 72% of the neonatal death rate and more than 50% of those who die during the first year of life.

As opposed to developed countries, where the primary cause of death during the perinatal period is congenital malformation – a condition which is almost impossible to prevent – in Brazil, the majority of perinatal deaths are determined by the conditions of health care service provided in the prenatal stage, the actual birth and to the newborn, realities that are confronted by health care professionals and health care services.

Among the principal causes of death are premature births and the accompanying complications, like pulmonary infections in the newborn, hyaline membrane (pulmonary immaturity), intrauterine and intrabirth asphyxiation, low birth weight, obstetric trauma and intrauterine infection.

Studies made in Pelotas, in the State of Rio Grande do Sul, demonstrate that a baby which is born with a weight less than 2,500 grams (with low blood pressure) is 18 times more likely to die during the first year of life, as compared with newborns that are born heavier. It is well known that low blood pressure at birth is one of the determining factors in neonatal death. In Brazil, of the deaths until the 7th day of birth, with death certificates in which the weight of the newborn was registered, 70% occurred in those newborn children whose birth weight was under 2,500 grams.<sup>9</sup>

In developed countries, the rates of low birth weight (LBW) are between 5% and 6%, while in Brazil, according to the National Research on Demographics and Health (PNDS-1996), the prevalence of low birth weight is 9.2%, surpassing 10% in the rural regions. The World Health Organization (WHO) reported that the low birth weight rates are around 12%, reaching 14% in the Northeast and 17% in the rural areas.<sup>10</sup>

The prevalence of low birth weight found in Brazil, in spite of reaching the standards of the World Group in Favor of Children, reaching rates that are lower than 10% of live births, are still unsatisfactory, especially when the rates in developed countries are around 5%.

In addition, low birth weight is an indication of the quality of women's reproductive health care, since the majority of the causes (premature birth, infections during pregnancy, tobacco, early pregnancy and delivery intervals of less than 2 years) are, in the large part, possible to control with adequate care given to women during the fertile period.

### ***PREVALENCE OF LOW WEIGHT BIRTHS (<2,500g) IN URBAN AND RURAL REGIONS IN BRAZIL, 1989-1996***

	<i>PNSN 1989*</i>	<i>PNDS 1996**</i>	<i>Variance</i>
	<i>%</i>	<i>%</i>	<i>%</i>
<i>Brazil Total</i>	<i>10.1</i>	<i>9.2</i>	<i>-8.9</i>
<i>Urban Brazil</i>	<i>9.6</i>	<i>8.6</i>	<i>-10.4</i>
<i>Rural Brazil</i>	<i>12.3</i>	<i>11.0</i>	<i>-10.6</i>
<i>Northeast</i>	<i>12.0</i>	<i>9.4</i>	<i>-21.7</i>
<i>North</i>	<i>12.2</i>	<i>8.7</i>	<i>-28.7</i>
<i>Central-South</i>	<i>9.5</i>	<i>9.7</i>	<i>-4.3</i>

\* PNSN – National Research on Health and Nutrition – children under 5 years old, survivors.

\*\* PNDS – National Research on Demographics and Health – children born in the 5 years before the research.

The evaluation of the causes of hospitalization and death of children during the first year of life reported by the Single Health System (SUS) in 1966, revealed that the principle factors associated with perinatal causes of death are premature birth and low birth weight, with both representing 69% of all neonatal deaths.

The precarious life conditions of the mother could well be one of the principal reasons for low birth weight, as well as the lack of adequate prenatal care. An additional important risk factor is premature birth. The gestational age serves as an indicator of neonatal mortality and this is in direct relation to low birth weight. In other words, children that are born early have a greater risk of death. In the Pelotas study referred to above, 20% of premature newborns die during the neonatal period. One can observe that, among the deaths analyzed between 1990 and 1995, approximately 30% were children with less than 37 weeks gestational age.

### **Assistance for premature infant**

Over the last few years, the number of neonatal ICUs has been increasing, allowing better care in cases of premature and low birth weight babies. The incorporation of expensive and sophisticated technology should be contributing towards reducing the neonatal morbidity and mortality. Instead, when one observes the mortality caused by respiratory distress syndrome in ICUs, it is worth noting that it is four or five times greater than in first-world countries. This difference can be the result of many different factors, some of which are: scarcer resources, overcrowded maternity wards, deficiencies in basic care of newborn children (like thermal-regulation, feeding and infection prevention), as well as capabilities, and the quantity and quality of specialized human resources.

### **Premature infant – a special being**

*The premature newborn has characteristics or specific needs that require attention for its development and growth. The principal characteristics of the premature baby are:*

- *Low iron (anemia) and caloric (carbohydrates and fat) reserves;*
- *Fast metabolism (a rapid growth rate);*
- *High protein expenditure, with respect to rapid growth;*
- *Elevated necessity for glucose (energy and metabolism of neural cells);*
- *Increased necessity for fat (cerebral development);*
- *Increased loss of water;*
- *Slower intestine peristalsis;*
- *Limited production of digestive enzymes;*
- *Presence of diverse stress factors, like lack of oxygen, infection, respiratory disturbances, ICU noises, injections, tubes, catheters, interrupted sleep, separation and lack of contact with parents.*

*Consequently, one may note that the Kangaroo Mother Care, associated with adequate medical assistance, can improve the health conditions and development of premature babies.*

The reversing of the high neonatal mortality rates thus becomes a question of improving the quality of initial care for the newborn in neonatal ICUs, the intermediate units and the wards that are connected to the maternity facilities.

Presently, with technology becoming more sophisticated a greater number of premature and low birth weight infants are surviving. But this does not change the fact that a large segment of the Brazilian population is still subjected to precarious life threatening conditions as a consequence of the lack of access to prenatal obstetric care, causing the number of those who are born into a high risk condition to continue to rise.

Premature babies have a higher risk of becoming sick, attacked by vascular perinatal infirmities, like cerebral hemorrhage and retrolental fibroplasia, or by metabolic disturbances like hypoglycemia. They also have increased difficulty in maintaining thermal

stability, resulting in hypothermia. There is also the difficulty in feeding these newborns, resulting in a longer period of hospital care that demands complex technological and human resources. These facets of underdevelopment of the premature newborn are factors that increase the mortality rate.

The separation of the mother-child binomial, imposed in conventional ICUs, can result in the mother of a premature or low birth weight baby being unable to produce breast milk and, consequently, not remove, conserve and provide the special nourishment that protects the baby against infection. This also generates waste of this precious nourishment and increases costs through the necessity of purchasing high-priced infant formulas. Despite the fact that the network of human milk banks in Brazil is the largest in the world, with 164 units, it is still insufficient to provide adequate coverage. The separation of the baby also generates psychological-attachment difficulties as a result of the restrictive visiting hours that are imposed by the conventional method. Generally speaking, these parents create a low bonding-touch level with their premature children, generating increased abandonment or children that are neglected and maltreated in the future.

### ***Premature mother – a special milk***

*Each woman produces a specific milk for her baby, but the mother of a premature baby produces a milk that is low in lactose content, which is necessary for digestion, because premature babies do not have lactase – the enzyme that breaks down this special sugar. The content of human milk is modified as the newborn grows. Breastmilk, principally colostrum, is rich in antibodies – immunoglobulin, that protect against infection. In addition, human breastmilk contains other anti-infection properties – like interferon hormones, growth properties and anti-inflammatory components. Very premature or sick babies that cannot breastfeed can benefit from small quantities of breastmilk, fed to them from a dropper.*

The care of premature newborns requires a complex set of medical equipment and medicines as well as specialized health care professionals, making this type of care very expensive for the state and society. In poor countries, the difficulties in acquiring medicines and incubators and complementary equipment, its use and maintenance, in addition to the recruiting of skilled professionals in the quantities needed, place great demands on both public and private funding. In all of the regions of Brazil, there is a deficiency in the number of beds in neonatal ICUs. What is even more disconcerting is that there seems to be no solution to the problem in the short term.

Low birth weight and premature newborns are extremely fragile individuals that need special care: increased warmth, greater efficiency in the detection and treatment of infections, additional help with nourishment, more contact with their mothers and families, and finally, the special attention of health care professionals and high-quality health services.

Because of the circumstances and characteristics of the medic-social picture presented above, the Kangaroo Mother Care for premature and low birth weight newborns is presented as a child care module that can be an integral part in the reduction of this dire problem in the country's public health sector, significantly reducing the infant mortality rates during the first year of life.

## **THE KANGAROO MOTHER EXPERIENCE IN BRAZIL'S NORTHEAST**

Since 1994, the Pernambuco Maternal-Infant Institute (IMIP), a maternity clinic which has become a point of reference for cases of high-risk gestation, has adopted the Kangaroo Mother Care. The institute, founded in 1960, and integrated with Single Health

System (SUS), has attended women and children from the low-income classes of Recife and other regions of the State of Pernambuco. The institute is the regional reference center, as well as being known for its humanization of medical services, especially in the treatment of mothers and children.

The institute is directed by Dr. Fernando Figueira, a medical specialist known for his defense of breast-feeding – and who, incidentally, prohibited the use of cans of powdered milk and baby bottles in the maternity clinics of the state when he was Health Secretary. At the IMIP, it is also prohibited to use baby bottles and pacifiers, which limit the establishment of breast-feeding techniques.

It was in this context that the Kangaroo Mother Program began, in 1994, directed by Dr. Geysi Lima. In the same manner as the Colombian doctors, the pediatrician started to practice the method as a solution to a critical situation: The number of premature and low birth weight infants was higher than the number of incubators available.

At the IMIP, the hospital Kangaroo Mother Care is utilized, that is, the mothers remain in the maternity ward, accompanying the babies during the period that they are in the incubators, and remain with them during the Kangaroo Mother practice. The families are allowed to visit and can also take the newborn children and place them in the kangaroo position. During the stay in the maternity ward, the mothers attend classes in cooking, nutrition, perform domestic chores and other activities.

The installation of a KMC maternity ward is a revolutionary form of care: now, the mothers are inside of the hospital taking care of their babies and watching and learning from the health professionals. At first, the professional teams within the maternities could reject this “invasion;” afterwards, there is a general tendency to pass on to the mothers too many responsibilities. Balance is obtained with training and a constant dialogue.

Between 1994 and 2000, around 2,400 newborn babies were part of the Kangaroo Mother Program at the IMIP. At the current time, the maternity clinic is attending 16 kangaroo-babies at the same time.

### **The Award**

In 1997, the project developed by IMIP was one of the finalists of the social projects competition sponsored by the Ford Foundation in conjunction with the Getulio Vargas Foundation and the BNDES.

The Ford Foundation-Getulio Vargas Foundation Award for Public Administration and Citizenship has the objective of recognizing the innovative initiatives in the area related to social issues.

The history of the award is very interesting. It began in the United States, during the administration of Ronald Reagan, as a reaction to the notion that only non-governmental organizations (NGOs) and private-sector companies were capable of doing significant work in the social area – not the government agencies. The Ford Foundation therefore initiated the award, in an effort to find the “best practices” initiated by agencies of states’ and municipalities’ governments. In Brazil, the award has been given since 1996, in conjunction with the Getulio Vargas Foundation. The BNDES has provided assistance to the competition since 1997.

At the beginning of its first year of participation, the BNDES team from the Social Development Division perceived the practical aspects and efficiency of the Kangaroo Mother Care for the humanization of neonatal assistance. For this reason, the BNDES decided to support the IMIP using non-repayable funding originating from the Bank’s profit – the Social Fund.

### **THE KANGAROO MOTHER CARE TECHNIQUE AND THE BNDES**

Beginning with the first award given to the Maternal-Infant Institute of Pernambuco that the BNDES entered into direct contact with the Kangaroo Mother Project. The results

presented by the utilization of the method in the Northeast region were brought to the attention of the technicians of the Bank, who began a detailed study of the program, examining the Kangaroo Mother Project from its creation, in Bogota, researching and analyzing documents and articles, from the aspect relative to the humanization of the medical procedures, breast-feeding, as well as other aspects relative to the subject.

After a technical analysis, the BNDES financed the expansion of the Kangaroo Mother maternity ward at the IMIP and decided to direct its efforts in providing funding and information, and increasing the utilization of the project throughout the country.

The studies made by the BNDES revealed that the quality of the Kangaroo Mother Care could be extended to any premature mother-baby couple, to any socioeconomic level and could be used in any maternity clinic whatever the quality of the available medical services.

In addition, the Kangaroo Mother Care presented other specific advantages to low-income communities or maternity clinics with few resources. The sum of all of the qualities of the Kangaroo Mother Program resulted in a “best practice” method, or in other words, an intervention with social aspects, with results that were both expressive and concrete in the communities where the method is utilized. The benefits offered by the program include social assistance and information on hygiene and nutrition, going well beyond the concept of a mere medical treatment.

### **Kangaroo Mother Care as a “best practice”**

A way of addressing social issues is through a study of the so-called “best practices,” that is, the study of new ways of dealing with a practical problem or for offering a service to the general population – whether it is related to health care, education, the environment or any other sector in the social area.

One of the principal characteristics of a “best practice” is that it must be innovative, that is, it must present a new way of dealing with social issues, a way that has not been put in common usage or is unknown by those who administrate public or social policy.

Another important characteristic of the “best practices” concept is the existence of a leader, someone who decides to innovate, to break with the inertia that exists in the normal and usual procedures of a specific social problem.

A desirable characteristic includes the possibility that this new way of addressing social problems can be repeated, or, if necessary, adapted to similar situations.

The best practices reduce global costs, prevent and minimize negative social effects and reduce future governmental costs. In this sense, best practices reduce costs, which of course are not immediately measurable.

As was mentioned, the Kangaroo Mother Care has all of the qualities of a “best practice” technique, creating a quality social project, with low-cost implementation and maintenance and with the following characteristics:

- The introduction of the method does not require large investments; to the contrary, it deals basically with acquiring ability, once the mother plays the main role in the program;
- Once this ability is acquired, medical care can be provided for a large number of mothers and babies;
- The method allows the incubators to be freed for the use of other babies, that is, in addition to not being “capital intensive” (in other words, it does not require large resources) its adoption actually diminishes the necessity to utilize equipment;
- It is estimated that the daily hospital cost in the maternity ward of a Kangaroo Mother facility is 25% of the cost of incubators;
- The hospital costs are less, reducing the total cost of care for the premature child;
- Breast-feeding eliminates early contact of the baby with non-potable water used in infant formulas for the feeding of premature babies and, consequently, prevents diarrhea and other infections which are responsible for a significant number of infant deaths;



- Factors like the low level of education and low-income level of the mothers and the high incidence of adolescent mothers that give birth to premature babies must be taken into consideration. As long as they remain in the maternity ward, these mothers are given instruction and help in providing care to the premature child, the feeding, hygiene etc., reducing the incidence of infant mortality from sickness;
- Being as it is not uncommon that babies die in incubators from hospital infections, the method can help reduce the mortality rates from this cause.

For all of these reasons, one can conclude that the poorer the community, the greater the impact of the Kangaroo Mother Program has on the care of premature babies and their mothers.

For this reason, the use of the Kangaroo Mother Program should not be seen just as a medical procedure, but also as a social program, with a growing positive effect on low-income communities. It was on this basis that the BNDES team classified the Kangaroo Mother Program as one that was efficient and effective, a “best practice” that deserves to be adopted throughout the country and thus publicized among the sanitary authorities and in the communities.

### **The mobilizing event**

The initial publicizing of the Kangaroo Mother Program by the BNDES was the result of a large conference on the theme. The objective of the conference was not only to make known the program but also to evaluate the level of interest of professionals and health authorities in the method.

The National Conference on the Kangaroo Mother Care, held in Rio de Janeiro in March of 1999, was a great success. The event was opened by the Minister of Health, José Serra, and had as its principal speaker the creator of the method, the Colombian doctor Héctor Martínez. More than 850 participants came from all over Brazil and the level of interest far surpassed expectations. In addition to Dr. Martínez, many professionals already utilizing the Kangaroo Mother Program participated in the conference panels sponsored by the BNDES.

Representatives from all of the areas involved in health services for newborns participated in the event, including state health secretaries, municipal authorities, pediatric councils, third-level maternity complexes, medical publications and groups of mothers, as well as university groups that work with studies related to the Kangaroo Mother Care. Among other participants were representatives from areas that included general medicine, psychology, nursing, the physical therapy area and phonoaudiology.

Also present at the conference were international groups from the health care area and organizations dedicated to the well being of children, for example, UNICEF and the Pan-American Health Organization.

The results of the seminar sponsored by the BNDES – a proven success due to the number of participants and by the exceptional interest of the public in the individual conferences – provided the Bank with the clear indications that the Kangaroo Mother Program was a method that could be implemented throughout the country and would produce excellent results within the objectives specified – that of providing adequate care for premature babies and their mothers.

### **ADOPTING THE METHOD AS PUBLIC POLICY**

After the conference sponsored by the BNDES in March of 1999, the Minister of Health designated a group of pediatricians to study the Kangaroo Mother Care and evaluate the possibility of making it public policy.

The Coordination of Women’s and Children’s Health, a division of the Ministry of Health, studied the various application forms of the method and defined which procedures should be considered when a neonatal facility begins to utilize the KMC.

Just eight months after the conference held by the BNDES, the Kangaroo Mother Care was included as part of the government public health policy. The announcement was made on December 8th, the official saint's day of Our Mother of the Conception (Dia de Nossa Senhora da Conceição) one of the most popular saints of the Brazilian people. On this day, the official norms of the KMC were published.

From this date onward, the Kangaroo Mother Care passed from being just an alternative medical process and became a medical assistance procedure officially recognized by the Brazilian government, today included on the Single Health System (SUS) list, that is, a procedure that is paid for by the Brazilian government.

### ***The 10 steps of the Kangaroo Mother Program***

*As was the case of the Baby-friendly Hospital effort, the mobilizing strategy and the 10 steps for the publicizing and dissemination of the Kangaroo Mother Program can be used, as follows:*

<b><i>Baby-friendly</i></b>		<b><i>Kangaroo Mother</i></b>
<i>Written policy</i>	1	<i>Written policy</i>
<i>Specially trained personnel</i>	2	<i>Specially trained personnel</i>
<i>Well-informed women</i>	3	<i>Well-informed women</i>
<i>Initiate at birth</i>	4	<i>Initiate as quickly as possible</i>
<i>Demonstrate</i>	5	<i>Demonstrate</i>
<i>Exclusive</i>	6	<i>Skin-to-skin breast-feeding contact</i>
<i>Room for both mother &amp; child</i>	7	<i>Bed for both mother &amp; child</i>
<i>Freely accepted breast-feeding</i>	8	<i>Accompanied breast-feeding</i>
<i>No pacifiers and bottles</i>	9	<i>No pacifiers and bottles</i>
<i>Assistance groups</i>	10	<i>Assistance groups</i>

### **THE DISSEMINATION PROJECT**

To disseminate the Kangaroo Mother Program, the Ministry of Health began producing material and to offer training so that maternity facilities could adopt the method. The BNDES, for its part, decided to collaborate on a widespread campaign of publicizing the method, in such a way as to make it known and adopted throughout the country.

In the first phase, three non-governmental organizations that work with social projects tied to infant health were invited to a meeting where the Bank presented its work proposals.

The Orsa Foundation showed interest in participating in the project and formed a partnership with the BNDES for the dissemination of information on the Kangaroo Mother Project.

The Orsa Group is a conglomeration of paper and cardboard industries, ranked fourth in the sector at national level. The group has facilities in Suzano, Paulínia, Alphaville, in the Greater São Paulo area, in Nova Campina, Manaus and Jari. Orsa promotes social projects not only in the regions where their facilities are located, but also through independent actions through the Orsa Foundation, which was founded in 1994.

The assistance of the Foundation is directed to a public that consists of high-risk children and adolescents who are in dire need of help. The Orsa Group provides the Foundation with 1% of its annual gross revenue, which is approximately R\$ 300 million.

### **The project**

The objectives of the project related to the dissemination of the Kangaroo Mother Program were to promote the method and to provide incentives for its adoption and

implementation, giving priority to those maternity facilities that give assistance under Single Health System (SUS), through:

- Production and publicizing of specific informational material for the different groups of professionals working in the area and for the general public;
- Personnel training through seminars and courses;
- Definition of installation of regional reference centers and providing incentives for this;
- Development and preparation of databases and performance measurement;
- Production of informational material for the mothers and other members of the family involved with the babies;
- Organization of regional conferences.

For personnel training and development, health care professionals will receive additional instruction to enable them to act as professors/multipliers of the Kangaroo Mother Program in the reference centers of the project, training other health professionals.

A further objective of the project is to accompany the installation of reference centers and produce specific material for these units. The reference centers are excellence institutions where the Kangaroo Mother Care is implemented and/or in the process of implementation. These will be institutions accredited by the Ministry of Health, where qualifying courses are given. To select these centers, the existing installed base will be utilized – the maternity facilities that are already using the method and have demonstrated interest and an affinity with the project – as well as population density.

To carry out the project, a Strategic Directive Committee (SDC) was established, with representatives from the Ministry of Health, the BNDES and the Orsa Foundation. The function of the committee is to define the strategies and priorities for the execution of the project, making decisions regarding the actions that are to be taken, considering the technical aspects, as well as the political, administrative, financial and social marketing aspects, and defining strategies for promotion, events, media relations and institutional contacts.

There will also be a Technical Committee and an assistance secretary, the latter being established at the Orsa Foundation. The Technical Committee will define all of the material content, accompany the execution and suggest activities and events for the project.

Also within the project, there are five major conferences that will be held in different regions of Brazil.

## **PERSPECTIVES OF KANGAROO MOTHER CARE IN BRAZIL**

In spite of the countless benefits presented by the Kangaroo Mother Care technique, as well as those that relate to medical and financial aspects, and principally as an effective method for caring for premature newborns and reducing the infant mortality rate in this area, there still exists some resistance to be overcome for the full acceptance and implementation of the program in Brazil.

The evaluations of specialists, presented at the First International Encounter of the Kangaroo Mother Program that was held in Colombia in 1990, in the International Workshops (Italy, in 1996, and Colombia, in 1998), at the National Encounter (Recife, in 1999) and the National Conference (Rio de Janeiro, in 1999), permitted the definition, with a reasonable degree of exactitude, of what were the facilitating conditions and the possible barriers to the acceptance and implementation of the program in Brazil. In the meantime, it must be considered that, no matter from which angle it is examined, the Kangaroo Mother Program is a success, because of the number of ongoing programs – more than 160 – distributed across the country.

### ***The allied banks***

*Brazil has the largest network of human milk banks in the world. It is composed of 164 units, in which human breastmilk – according to standards of quality – is collected and subjected to pasteurization process. Pasteurization allows that a mother donates (always for free) her milk, that can then be used principally by babies in greater need of it – the premature and low birth weight babies.*

*In the National Reference Center of the Fernandes Figueira – Fiocruz Institute, human milk is dehydrated, which permits increased and adequate usage for the specific necessities of the baby that is hospitalized. The National Network of Human Milk Banks in Brazil has the technical capacity to implement the “creamtocrit” technique, thus humanizing the treatment of the premature child in the intensive care units.*

### **The favorable conditions**

- There exist more than 160 operating programs in Brazil today;
- The success of the I National Kangaroo Mother Assistance Encounter, held in Recife in January, 1999;
- The positive results of the National Conference on the Kangaroo Mother Care, held in Rio de Janeiro in March, 1999;
- The funding and assistance of the Social Area Division of the BNDES in equipment acquisition and installation;
- The development of the Orientation Norm established by the Ministry of Health;<sup>11</sup>
- The Ministry of Health's personnel training and the implantation of reference centers;
- The opportunity to humanize the premature infant care;
- The existence of 174 Baby-Friendly hospitals, that are integrating the program;
- The existence of 164 human milk banks, that can provide support for the Program;
- Ongoing research at medical institutions, universities, and non-government organizations;
- International events that provide support and further prove the efficiency of the program, for example:
  - The First International Encounter in Bogota, Colombia, 1990;
  - International Encounter in Trieste, Italy, October, 1996;
  - International Encounter in Bogota, Colombia, December, 1998;
  - International Encounter in Jakarta, Indonesia, November, 2000;
  - KMC Guidelines, of the World Health Organization.
- Support of UNICEF, the World Health Organization (WHO) and the Pan-American Health Organization (PHO).
- The participation of the media in the dissemination of information related to the Program;
- The dynamic utilization of the Internet to provide a forum on the Program and promote debates, information exchange and discussion through the creation of various sites;
- The support of the Orsa Foundation and the BNDES to make possible the dissemination of norms and procedures of the Kangaroo Mother Program.

11 See ANNEX: Orientation Norm for the Introduction of Kangaroo Mother Care.

### **Barriers**

- Ignorance about the advantages and impact of the method;
- Lack of access to scientific literature on the theme;
- Lack of knowledge of some of the sanitary authorities and the incipient formalization of the method in the National Health Policy;
- Lack of education, motivation, resistance and reluctance of health professionals;
- Reluctance resulting from medical specialist sectors that deal with neonatal and ICU neonatal care;

- The strength of the medical-industrial complex: neonatal ICUs, equipment suppliers, pharmaceutical companies, manufacturers of infant formulas and nutrition for human milk;
- Isolated implementation initiatives;
- Precarious conditions of maternity wards, especially in the public health system;
- Poor dissemination of national rules and consensual criteria;
- The belief that the program is for poor and low-income people and is principally an alternative for medical assistance services with few resources;
- Prejudice because the program was developed in Colombia, a country without a tradition of medical research.

Fortunately, the resistance has not resulted in impeding the advance of the Kangaroo Mother Care in Brazil. Between 1999 and 2000, more than 50 maternity facilities have started to use the KMC, some of them utilizing the study base provided by the BNDES, from information obtained at other conferences and through informal information exchange. After the training program conducted by the Ministry of Health, around 100 maternity clinics are implementing the method.

The adopting of the Kangaroo Mother Care does not require new technology nor does it represent a departure from traditional technological standards, that more often than not necessitate large implementation investments.

Medical studies and social evaluation of the KMC show that the method represents, in essence, the recuperation of the principal role played by the mother, as well as the child, during the traumatic circumstances of a premature birth, in conjunction with the presence of the family unit and the help of a well-trained and qualified team of health professionals. It is possible to gradually initiate the practice of the Kangaroo Mother Care through the reduction of weight and age limits for the application of the method, step-by-step, as the health professionals within the maternity facilities gain experience.

Within a very short period, it is likely that all maternity facilities – including those in the private sector – will also offer this type of assistance. For the quality of life and the health of both mothers and their premature babies it is important that everyone participates in promoting and in implementing this method.

## ANNEX

Ordinance 693/GM  
On July 5, 2000.

The interim State Minister of Health, in exercise of his powers, hereby resolves:

SECTION 1 – To approve the Orientation Norm for the Introduction of the Kangaroo Method, designed to promote humanized health care to underweight newborn infants.

SOLE PARAGRAPH: The Orientation Norm dealt with in this Article is an integral part of the Annex to this Ordinance.

SECTION 2 – This Ordinance takes effect on its publication date.

Barjas Negri

## ANNEX TO THE ORDINANCE

### ORIENTATION NORM FOR THE INTRODUCTION OF THE KANGAROO MOTHER CARE

#### I INTRODUCTION

- 1 This rule shall be complied with by the Medical-Welfare Units belonging to the Hospital Information System of the Single Health System (SIH/SUS). The Units that already develop the Kangaroo Mother Care shall continue their work, merely introducing the new adaptations in the sense of improving the efficiency and effectiveness of the attention.
- 2 Considering that the technological advancements for the diagnosis and handling of newborns with disorders, notably those under weight, improve the chances of survival of this age group in an extraordinary manner and that the adequate development of these children is determined by the balance between the satisfaction of their biological, environmental and family needs, it is important to establish a continuous adaptation both of the technical approach and the attitudes that result in environmental and behavioral changes capable of promoting the humanization of health care.
- 3 The adoption of the Kangaroo Mother Care strategy may be essential in the promotion of an institutional change in the pursuit of attention to health centered on the humanization of assistance and principle of family citizenship.
- 4 The recommendations contained herein should be considered as an ideal minimum for the adoption of conducts aimed at adequately attending to underweight newborns, with humanized procedures aimed at securing a greater attachment between mother and child, an incentive to breast-feeding, the better development and security of the child, including with respect to handling and the family relationship.

#### II DEFINITION

- 1 The “Kangaroo Mother Care” is a type of neonatal assistance that implies the premature skin-to-skin contact between a mother and her underweight newborn, in an increasing manner and for the time that they both understand to be pleasurable and sufficient, in this way permitting a greater participation of the parents in the care of the newborn.
- 2 The kangaroo position consists of maintaining the underweight newborn, lightly dressed, in a decubitus pronus, in the vertical position, against the adult’s chest.
- 3 Only units that permit premature contact, conducted in an oriented manner, with free choice given to the family, in a growing, secure manner together with the supervision

of an adequately trained health team in attendance will be considered as the "Kangaroo Mother Care".

### III ADVANTAGES

- a) Increases the mother-child bond;
- b) Diminishes the mother-child separation time, avoiding lengthy periods without sensorial stimulation;
- c) Stimulates mother breast-feeding, favoring the greater frequency, precocity and duration of breast-feeding;
- d) Provides for greater competence and increases the confidence of parents in handling their underweight infant, even after discharge from hospital;
- e) Favors a better thermal control;
- f) Reduces the number of newborns in intermediary care units, due to the greater turnover of hospital beds;
- g) Allows for a better relationship of the family with the health team;
- h) Favors the reduction of hospital infection;
- i) Reduces the hospital stay.

### IV POPULATION TO BE ATTENDED

- 1 Pregnant mothers in higher clinical and obstetric risk situations for the birth of underweight children.
- 2 Underweight newborns, from the moment they are admitted into a Neonatal Unit until their hospital discharge, when they shall be under the observation of a specialized outpatients clinic.
- 3 Mothers and fathers who, with the support of the health team, shall have contact with their infants most precociously and receive adequate orientation to participate in the method.

### V APPLICATION OF THE METHOD

The method will be developed in three stages:

#### 1ST STAGE

Period subsequent to the birth of an underweight newborn, who, being unable to go to a ward with more than one patient, needs to be admitted into the unit. At this stage, the procedures shall follow the special care described as follows:

- 1.1 Orient the mother and family on the state of health of the child, emphasizing the advantages of the method. Stimulate the free and precocious access of the parents to the Neonatal Unit, providing for the tactile contact with the infant whenever possible. It is important that these visits be supervised by the attendance team, in order that such orientations as infection control measures (adequate washing of hands), information on hospital procedures used and environmental particularities may be better understood by the family.

At this stage, the measures for stimulating breast-feeding shall be initiated.

Accordingly, care with the breasts, manual extraction of the milk and respective storage thereof shall be taught. The mother's co-participation in stimulating suckling and administering the milk extracted shall be established, in addition to adequate hygienization measures.

When the infant's clinical conditions so permit, the direct skin-to-skin contact between mother and child shall be commenced, progressing until the placement of the newborn on the mother or father's thorax.

- 1.2 The importance of the active participation of the mother and family in the child's recovery should always be emphasized.
- 1.3 The first five days after delivery shall be used to teach all these aspects to the mother and family. Therefore, the parturient shall be ensured a stay in the hospital unit, at

least during this period, providing her with all the necessary support of the staff in attendance.

- 1.4 Following this initial period, if the infants do not meet the criteria to enter the subsequent stage (2nd) or, in situations where the mother needs return to her domicile, the parturient shall be ensured the following conditions:
- a) Daily visit to the hospital unit, where she will maintain contact with her child, receive orientation and maintain the manual extraction of milk;
  - b) Transport allowance, for her daily visit to the health unit;
  - c) Meals during her day stay in the unit (morning snack, lunch and afternoon snack);
  - d) Adequate space for the stay, that permits rest and may be used for lectures; this space will also serve for conciliation between the mothers, providing for greater maternal confidence;
  - e) Father's free access to the unit and encouragement of his participation in the meetings with the health team.

## 2ND STAGE

The newborn is stabilized and may have the continuous company of his or her mother. In this stage, following the adaptation and training period of the previous stage, the mother and child will be able to stay in a ward with more than one mother and child, where the kangaroo position will be maintained during the longest time possible. This ward will operate as the pre-hospital discharge "stage" of the mother and child.

### 2.1 The eligibility criteria for staying in this ward are:

#### 2.1.1 for the mother:

- a) certify that the mother wants to participate in this type of assistance and if she has the available time and a supporting social service;
- b) ensure that the mother, family members and health professionals make the decision by consensus;
- c) verify the capacity to acknowledge the risk situations of the newborn (changes in skin coloring, respiratory pauses, regurgitations and reduced movements);
- d) knowledge and ability to place the child in the kangaroo position.

#### 2.1.2 for the infant:

- a) clinical stability;
- b) full enteral nourishment (breast, Ryle's tube or cup);
- c) minimum weight of 1,250g;
- d) daily weight gain of more than 15g.

### 2.2 To obtain weight gain, nursing shall be guaranteed every two hours, during the daytime, and every 3 hours at night.

### 2.3 Infants who do not present an adequate weight gain shall undergo supplementary lactation with later milk from their own mother, via a Ryle's tube or cup.

### 2.4 The use of oral medicines (vitamin complex, medication against gastroesophageal backflow, xanthines, etc.) is not contraindicated to the stay in this ward.

### 2.5 The administration of intermittent intravenous medication, through a peripheral intravascular device, is also not contraindicated to continuing in the kangaroo position.

### 2.6 The criteria for hospital discharge, with transfer to the 3rd stage, are as follows:

- a) well oriented confident mother, and family members aware of the infant's home care;
- b) mother psychologically motivated to continue the work commenced in the maternity hospital;
- c) mother and family's commitment to carry out the method 24 hours/day;
- d) guaranty of frequent return to the health unit;
- e) infant with a minimum weight of 1,500g;
- f) infant suckling exclusively from the breast with an adequate weight in the three days preceding discharge;
- g) in case of the need of dietary supplementation, that this is not being given by a Ryle's tube;



- h) condition of continued treatment by an outpatients clinic, where, in the first week, the frequency shall be of three visits; in the second week, two visits; and in the third week and thereafter, at least one visit until the child reaches the weight of 2,500 g;
- i) condition to resort to the hospital unit of origin at any urgent moment, when still in the third stage.

### 3RD STAGE

#### 3.1 Observation Outpatients Clinic

The duties of the Observation Outpatients Clinic are to:

- a) perform a complete physical examination of the infant using as its basic references the rate of development, weight gain, length and head circumference, taking into account the corrected gestational age;
- b) evaluate the psychological relationship balance between the infant and the family;
- c) correct risk situations, such as an inadequate weight gain, signs of backflow, infection and apneas;
- d) orient and monitor specialized treatments, such as ophthalmologic examinations, audiometric evaluation and motor physiotherapy;
- e) orient for the observance of the adequate immunization scheme.

#### 3.2 The observation of the outpatients' clinic shall present the following characteristics:

- a) be carried out by a trained doctor who is familiar with the treatment of newborns in risk situations;
- b) abide by the periodicity already referred to in the preceding item;
- c) have an open agenda, permitting returns without an appointment in case of the infant's need;
- d) the infant will determine the time he or she will continue in the kangaroo position; generally speaking, this occurs when the infant reaches the term or weight of 2,000g.
- e) after reaching the weight of 2,500g, the treatment will be oriented in accordance with the rules for observing growth and development enacted by the Health Ministry.

### VI IMPLEMENTATION RESOURCES

#### 1 Human Resources

It is recommended that the entire health team responsible for attending to the mother and child know the full extent and importance of the method and are adequately trained, in order that this method may be applied in a full manner. Therefore, emphasis is made to the need to change professional behavior and philosophy so that the implementation of this humanized attention does not suffer interruption in any of its stages. Whenever possible, this multi-professional team shall be composed of:

- a) Doctors
  - neonatologist (24-hour coverage);
  - obstetrician (24-hour coverage);
  - pediatrician with training in treating newborns in risk situations;
  - ophthalmologist.
- b) Nurses (24-hour coverage)
- c) Nursing assistants (in the 2nd stage, one nursing assistant for each 6 binomials, with 24-hour coverage)
- d) Psychologists
- e) Physiotherapists
- f) Occupational therapists
- g) Social workers
- h) Phonoaudiologists
- i) Nutritionists

#### 2 Physical Resources

- 2.1 The intensive neonatal and intermediary care sectors shall abide by the already standardized rules for these areas and permit access to the parents with the possibility of developing the tactile contact described in stages 1 and 2. It is important that these

areas permit the placement of removable seating (chairs – stools) to initially facilitate placement in the kangaroo position.

- 2.2 The rooms or wards for the 2nd stage shall abide by the already established rule for the accommodation of several patients, with approximately 5m<sup>2</sup> for each bed for the mother/cot for the newborn.
- 2.3 It is recommended that the location of these rooms permit easy access to the special care sector.
- 2.4 In order to operate efficiently, the number of binomials per ward shall be a maximum of six.
- 2.5 The nursing stations shall be located near these wards.
- 2.6 Each ward shall have one bathroom (with a W.C., shower and wash basin) and a recipient with a lid for the collection of used clothing.
- 3 Material Resources
- 3.1 In the 2nd stage, the area set aside for each binomial will contain: a bed, a cot (for possible use, but that permits heating and positioning of the infant, with the head of the cot elevated), a central or portable vacuum cleaner, chair and personal hygiene material.
- 3.2 A scale for weighing babies, an anthropometer, a plastic tape measure and thermometer.
- 3.3 A car with the appropriate equipment for cardio-respiratory revival, which shall be located in the nursing stations.

## VII EVALUATION OF THE METHOD

- 1 It is suggested that the following evaluations be conducted periodically:
  - a) Neonatal morbidity and mortality;
  - b) re-admission rates;
  - c) growth and development;
  - d) degree of satisfaction and maternal and family security;
  - e) prevalence of breast-feeding;
  - f) performance and satisfaction of the health team;
  - g) maternal knowledge acquired in respect to caring for the infant;
  - h) time of stay in the hospital.
- 2 The technical Child Health/Health Ministry team can supply the protocol model for the obtainment of the data of these evaluations.

## VIII GENERAL RULES

- 1 The adoption of the “Kangaroo Mother Care” is basically aimed at the change of attitude of the health team and family in handling underweight newborns requiring hospitalization.
- 2 The method described is not a substitute for the neonatal intensive care units, or of the use of incubators, since the use of these resources have their indications well established.
- 3 The method should not be considered as aimed to economize on human resources or technical resources, but basically to enhance perinatal attention.
- 4 The implementation of the appropriate attention to the newborn antecedes the birth period. During the prenatal, it is possible to identify women with a risk of having underweight newborns, to whom information should be supplied on the specific and humanized medical care.
- 5 In situations where there is a risk of the birth of underweight newborns, it is advisable to refer the expectant mother to the services in question.
- 6 In the second stage, the obligatory time in the kangaroo position is not stipulated. This situation should be understood as a fact that occurs based on the security in handling the infant and the pleasure and satisfaction of the infant and mother.

- 7 In the third stage, for greater security, the kangaroo position is recommended full time.
- 8 The participation of the father and other members of the family in the placement of the infant in the kangaroo position shall also be stimulated.
- 9 The presence of the cot in the accommodation of the mother and child, with the possibility of elevating the head of the cot, will permit that the infant remains there at the time of the clinical examination, during his or her and the mother's hygiene and at the moments the mother and health team deem necessary.
- 10 The duties of the health team are to:
  - a) orient the mother and family at all stages of the method;
  - b) offer emotional support and stimulate the parents at all times;
  - c) encourage breast-feeding;
  - d) develop educational actions covering concepts of hygiene, health and nutrition control;
  - e) develop recreational activities for the mothers during their hospital stay period;
  - f) participate in training on the job with the basic condition of guaranteeing the quality of attention;
  - g) orient the family at the time of discharge, creating conditions for communication with the team, and guarantee all the already enumerated possibilities of continued attendance.

## CHILD HEALTH AREA – HEALTH POLICIES DEPARTMENT

Humanized health care to the underweight newborn (Kangaroo Mother Care)

Monthly Evaluation Card – Institutional

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Hospital: \_\_\_\_\_

Address: \_\_\_\_\_

Person in Charge/Head of the Unit: \_\_\_\_\_

Is the hospital a “Baby-friendly Hospital?” ( ) Yes ( ) No

Does the hospital have a Human Milk Bank? ( ) Yes ( ) No

Number of births

Month/year: \_\_\_\_/\_\_\_\_ n.: \_\_\_\_\_

Normal birth n.: \_\_\_\_\_ % Cesarean birth n.: \_\_\_\_\_ %

Weight at birth (in grams):

Number	Percentage %
500 – 999	
1000 – 1499	
1500 – 1999	
2000 – 2499	
? 2500	

Neonatal mortality/weight (in grams):

Number	Rate
500 – 999	
1000 – 1499	
1500 – 1999	
2000 – 2499	
? 2500	

Percentage of newborns that received discharge from hospital exclusively breast-feeding.

N.: \_\_\_\_\_ %

## CHILD HEALTH AREA – HEALTH POLICIES DEPARTMENT

Humanized attention to the underweight newborn (Kangaroo Mother Care)

Evaluation Card of the Newborn

Identification

Name: \_\_\_\_\_

Date of birth: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Weight at birth: \_\_\_\_\_  
Gestational age: \_\_\_\_\_  
Type of delivery: ( ) Vaginal ( ) Operative  
Sex: ( ) Male ( ) Female ( ) Indeterminate  
Gestation: ( ) One only ( ) Double ( ) Triple or more

Delivery room

Revival: ( ) Yes ( ) No  
( ) O<sub>2</sub> Inhalatory ( ) Mask ( ) Intubation ( ) Cardiac massages

Neonatal ICU

Admission: ( ) Yes ( ) No **Nourishment**  
Date of admission: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Extracted mother's milk  
Date of discharge: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Enriched mother's milk  
Weight at discharge: \_\_\_\_\_ ( ) LH  
Date of death: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Enriched LH  
Weight at death: \_\_\_\_\_ ( ) Mixed  
( ) Formula

Intermediary Care Unit

Admission: ( ) Yes ( ) No **Nourishment**  
Date of admission: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Extracted mother's milk  
Date of discharge: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Enriched mother's milk  
Weight at discharge: \_\_\_\_\_ ( ) LH  
Date of death: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Enriched LH  
Weight at death: \_\_\_\_\_ ( ) Mixed  
( ) Formula  
( ) Exclusively breast-feeding  
( ) Breast-feeding complemented

Kangaroo Unit

Admission: ( ) Yes ( ) No **Nourishment**  
Date of admission: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Extracted mother's milk  
Date of discharge: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Enriched mother's milk  
Weight at discharge: \_\_\_\_\_ ( ) LH  
Date of death: \_\_\_\_/\_\_\_\_/\_\_\_\_ ( ) Enriched LH  
Weight at death: \_\_\_\_\_ ( ) Mixed  
( ) Formula  
( ) Exclusively breast-feeding  
( ) Breast-feeding complemented

Newborn in Neonatal ICU

Was the visit of the newborn's parents authorized? ( ) Yes ( ) No  
Did the mother touch the child? ( ) Yes ( ) No  
Date and hour of the first physical contact: \_\_\_\_/\_\_\_\_/\_\_\_\_  
Was the mother oriented in relation to breast-feeding? ( ) Yes ( ) No  
Did she receive information on the child's state of health? ( ) Yes ( ) No  
How frequently were the mother and father with the child?  
Daily ( ) Yes ( ) No  
Every other day ( ) Yes ( ) No  
Every three days ( ) Yes ( ) No  
Weekly ( ) Yes ( ) No

Never visited ( )

Newborn in the Intermediary Care Ward

Were the parents permitted to visit the newborn? ( ) Yes ( ) No

Did the mother touch the child? ( ) Yes ( ) No

Date and time of the first physical contact: \_\_\_\_/\_\_\_\_/\_\_\_\_

Was the mother oriented in respect to breast-feeding? ( ) Yes ( ) No

Did she receive information on the child's state of health? ( ) Yes ( ) No

How frequently were the mother and father with the child?

Daily ( ) Yes ( ) No

Every other day ( ) Yes ( ) No

Every three days ( ) Yes ( ) No

Weekly ( ) Yes ( ) No

Never visited ( )

Newborn in the Ward of Mothers in the Kangaroo Position

Re-admission into the Neonatal Unit ( ) Yes ( ) No

N. of times: \_\_\_\_\_

Did the mother receive orientation on breast-feeding? ( ) Yes ( ) No

Was she discharged from hospital in the kangaroo position? ( ) Yes ( ) No

Suspension of the kangaroo position in the domicile Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Weight of newborn: \_\_\_\_\_

(Note: If the child is not observed in the unit in which he or she received assistance in the Kangaroo Mother Care, this unit will request these data from the observation outpatients clinic).

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