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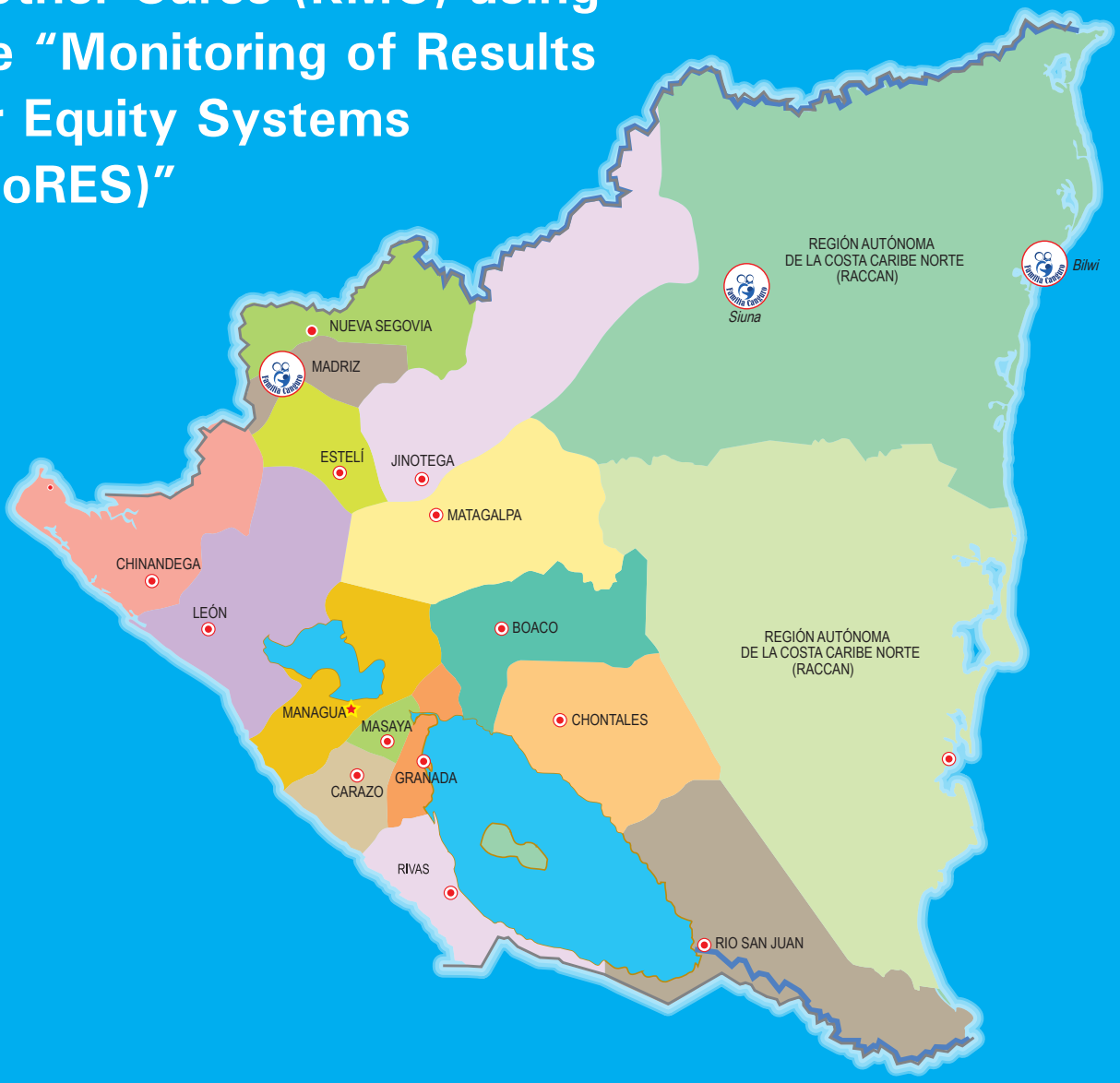
Implementing Kangaroo Mother Cares (KMC) using the "Monitoring of Results for Equity Systems (MoRES)"



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1946 2016 70 YEARS FOR EVERY CHILD

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Background

Each year 15 million babies are born in the world before coming to term, in other words more than one in ten births; and more than a million premature children die due to complications at birth. Many of the premature babies who survive suffer some kind of lifelong disability, in particular learning-related disabilities and visual and auditory problems[1].

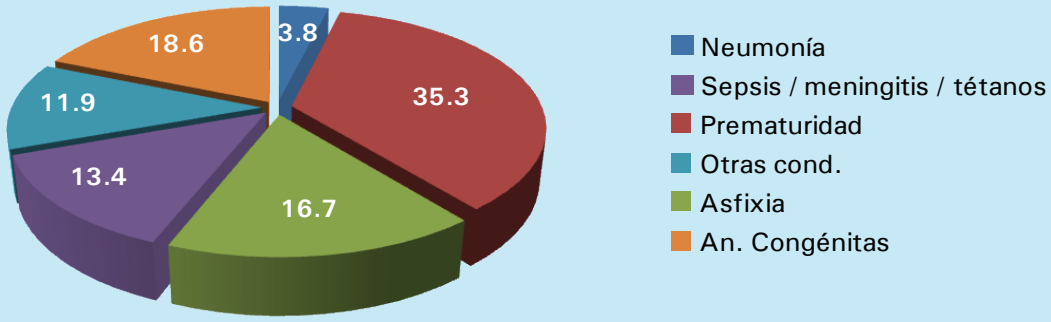
More than three quarters of premature babies can be saved if they are lavished with simple, effective and barely onerous care – for example, administering prenatal steroid injections to pregnant women who run a risk of premature delivery, applying the "Kangaroo Mother" technique and administering antibiotics to treat infections in the newborn – without having to turn to intensive neonatal care[2].

In Nicaragua, according to 2010 data recorded by the World Health Organization, the rate of premature births was 9.3% and for 2014, it was 8.8%[3]. No data were recorded on premature births in the Nicaraguan Demography and Health Survey (ENDESA) 2011/2012 report. That report does mention that the national neonatal mortality rate dropped from 16 per 1,000 live births to 8 per 1,000 live births[4]. In the rural areas, however, this rate was 10 per 1,000 live births for reasons related to timely access to quality services.

The Millennium Development Goals (MDG) report for 2014 recognizes that Neonatal Mortality throughout the world dropped by a third in the period 1990 – 2012 (from 33 to 21 deaths per 1,000 live births)[5]. The majority of neonatal deaths are caused by complications of premature births (35%), complications during labor and the birth per se (24%), and septicemia (15%).

1. WHO. Nacimientos prematuros. Descriptive Note No. 363 November 2013.
2. http://www.who.int/mediacentre/factsheets/fs363/es/
3. WHO/PAHO. Health Basics Indicators 2010 y 2014
4. Demography and Health Survey, DHS 2011/2012. Nicaragua
5. http://www.un.org/es/millenniumgoals/pdf/mdg-report-2014-spanish.pdf

Main causes in neonatal deaths in LAC

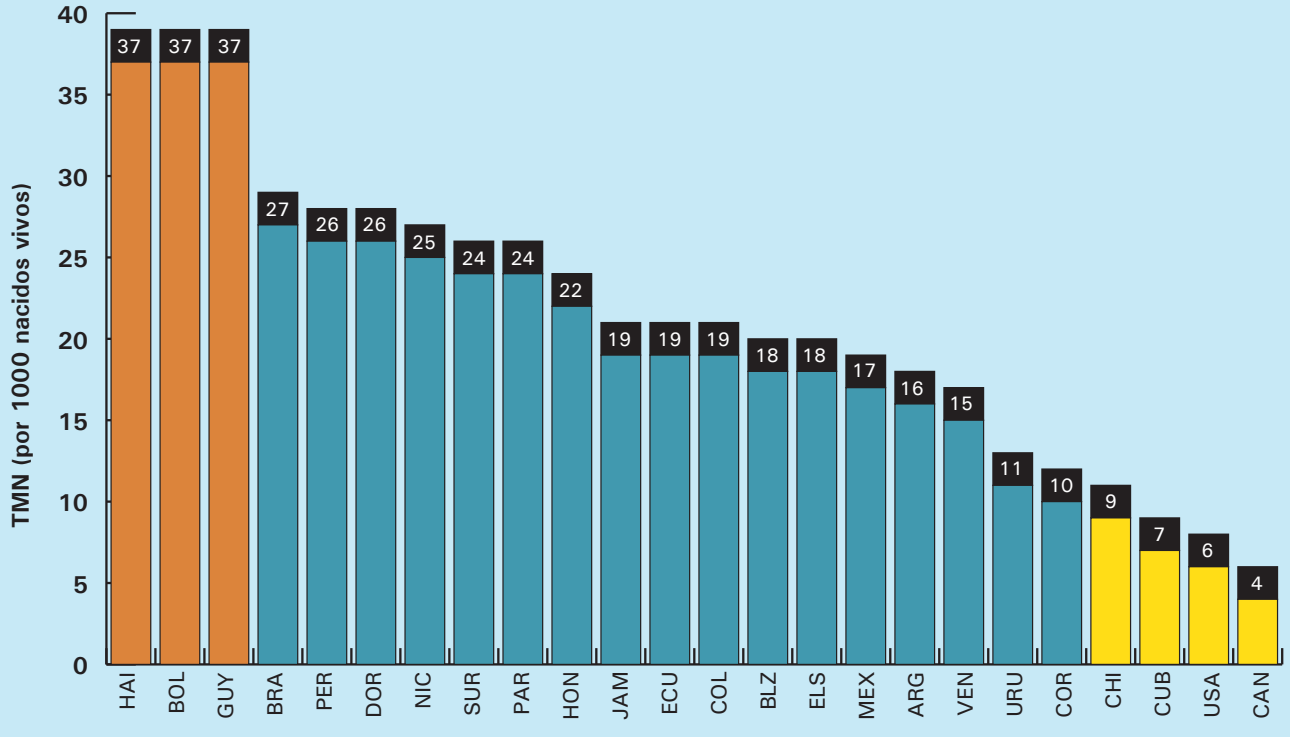


Child Health Epidemiology Reference Group of WHO and UNICEF (CHERG) (2012). Global, regional and national causes of child mortality: an updated systematic analysis for 2010.

Source: Dr. Pablo Durán. Centro Latinoamericano de Perinatología -Salud de la Mujer y Reproductiva CLAP/SMR.

Each region of the world is experiencing an increase in the proportion of deaths of minors under 5 years old due to deaths that occur in the neonatal period.

Neonatal mortality variation in LAC



Source: Levels and trends in Child Mortality Report 2012 (UNICEF, WHO, World Bank, UN). Bertha Pooley, Goldy Mazia. Alianza Neonatal para Latinoamérica y el Caribe. ALAPE.

In Nicaragua, even when the data show important health achievements, neonatal mortality is 25 per 1,000 live births, considered intermediately high for Latin America. No disaggregated data exist in the ENDESA by department, rural or urban origin or ethnic groups with respect to the causes of neonatal mortality. From a clinical perspective, the causes continue to be asphyxia, prematurity/low weight, sepsis and congenital malformations.

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During the 1980s there was a pilot experience in the application of KMC in Nicaragua's Bertha Calderon Hospital (HBC), which was not documented. Starting in 2010 the Ministry of Health, with the support of USAID, trained a neonatologist, a nurse and a psychologist from Bertha Calderon Hospital at the Kangaroo Foundation of Bogota, Colombia, and at their return they began implementing the method in that women's hospital. In 2013, PAHO and UNICEF started training doctors and nurses from the pediatric services of the hospitals of three departments and at the same time supported the purchase of basic supply to implement the method in those same hospital units.

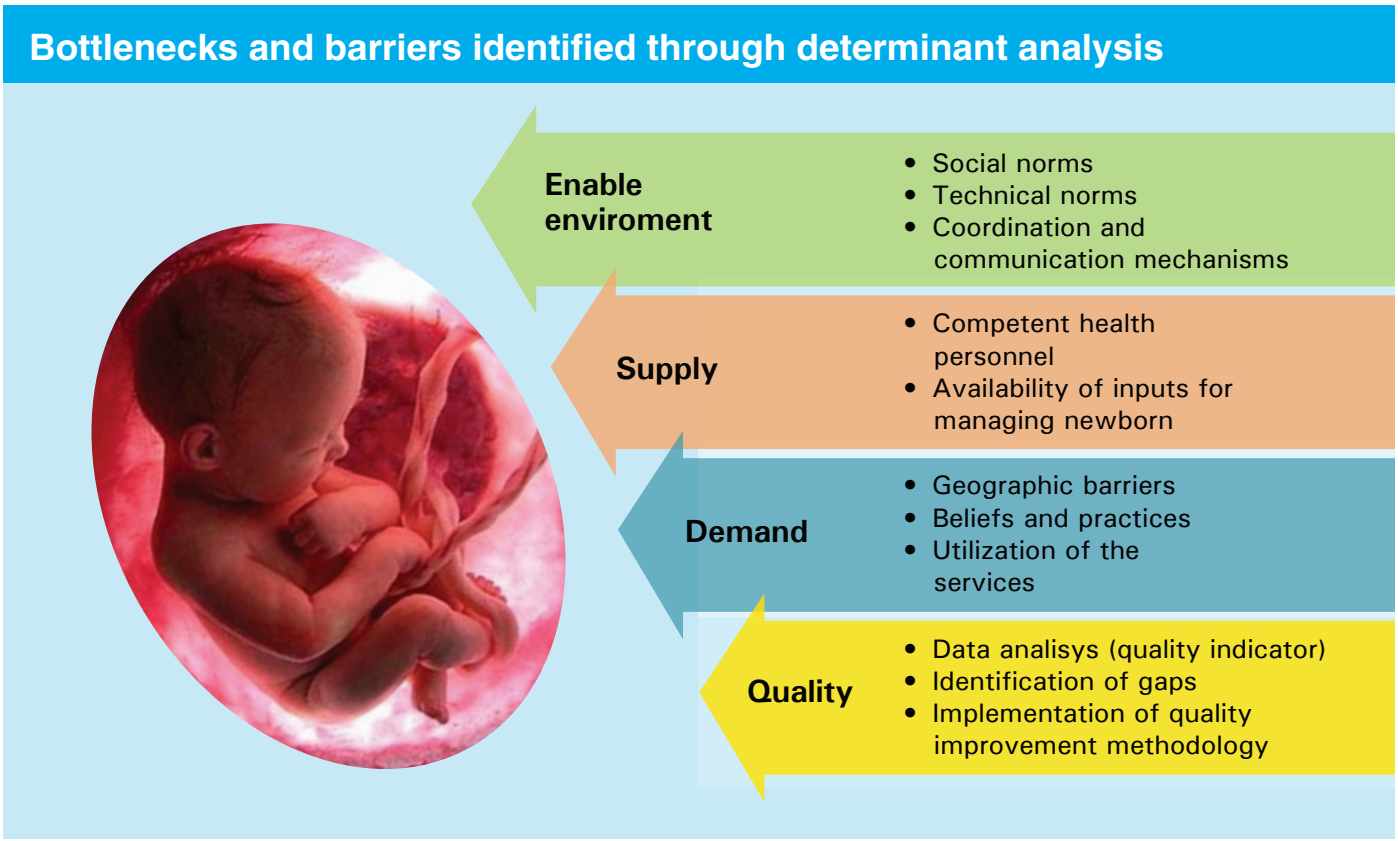
In 2014 the MoH with support from UNICEF developed a training program for pediatricians and nurses from four departmental hospitals to improve the quality of newborn care. At late 2014, the participants did an analysis applying the Monitoring of Results for Equity System (MoRES) based on an analysis of the determinants that affect the effective implementation of the Mother Kangaroo strategy and become bottlenecks and barriers to mothers and their premature newborns having access to the strategy.

These determinants focus on the quality of the cares supply in both the institutional sphere (clinical) and the setting in which it occurs, including the conditions in the families themselves that are a product of the community self-image around the death of a newborn or small child, mainly in the most remote areas and those with the poorest population. Based on the application of MoRES, the data are analyzed disaggregated by health unit, prioritizing solutions to solve bottlenecks in the SILAIS with populations of greatest disadvantages adjusted to the needs of each geographic area.

Bottlenecks identified through determinant analysis

The course participants presented the analysis of mortality and its determinants to the management team and agreed to implement an improvement plan. The following figure shows the identified determinants:

Figure No. 1: Determinants affecting the effectivity of the Mother Kangaroo strategy.



Source: UNICEF, Nicaragua

A quality team was formed in each hospital, made up of the medical and nursing chiefs of the pediatric and GYN-OBS wards, the hospital's medical deputy director and the person in charge of comprehensive mother and child care (AIMN).

The identified bottlenecks pertain to four areas: enable enviroment, supply of services, demand and quality of the care. In addition, facilitating factors were identified in each area analyzed to support the removal of the bottlenecks, which are shown in the following table:

Table No. 1: Humanization of the attention to premature or low birth rate newborns with the Mother Kangaroo method.

Areas	Determinants	Facilitating factors
Enable environment	Lack of regulations for application of the Mother Kangaroo method. The coordination mechanisms among local levels for implementation of the Mother Kangaroo method are not determined.	There is a family and community health model (MOSAFC). There are maternal centers near the health unit. Decision exists by the authorities to reduce neonatal mortality.
Supply	The personnel are not trained in the Mother Kangaroo technique. There are no inputs or needed equipment.	Experiences exist in the country that could be disseminated among the health units.
Demand	The population does not have enough information on the Mother Kangaroo technique. The technique is implemented only in national referral hospitals.	High coverage of institutional birth (88% ENDESA 2011-2012)
Quality	There is no monitoring of implementation of the Mother Kangaroo technique	Health personnel experience in measuring care quality indicators for maternal and infant health.

Source: UNICEF, Nicaragua

1. Enabling environment

Ministery of Health (MoH), has a Health Model focused on community participation, which facilitates the continuity of care and access to health services because community leaders become in agents of change of behavior and negative practices in the family and community surroundings. Despite the model's strong community network, there are no coordination mechanisms that would ensure follow-up to the children's care by pediatricians or other clinical specialists due to potential disabilities.

Starting in 2014, with advocacy by UNICEF, MoH defined neonatal mortality as a priority problem, but it lacked a structured strategy for implementing the Mother Kangaroo method based on which the health personnel could be trained and it could be taken to a national level. With technical assistance by UNICEF, MoH drafted a National Norm: Kangaroo Family with a hospital approach and another approach to be implemented in health centers and posts health with extension to the community. In these prioritized SILAIS (Local System for Intregrated Health Attention), 70% of the personnel who provide direct attention to premature or low birthweight (BPN) newborns have been trained.

2. Supply

The lack of personnel trained in quality standards of care of newborns and the high turnover of personnel become important bottlenecks. To that is added the lack of supplies and organization of spaces in the neonatology wards for implementing the method.

Table No. 2: Standards for humanizing attention to premature and low birth weight newborns with the Kangaroo Family method.

Standard	Indicator	Variables	Definition	Verification	Periodicity	Sample	Value
All neonatology health personnel and those of other services linked to attention to newborns are trained in the Kangaroo Family strategy	Percentage of the neonatology personnel trained in the Kangaroo Mother method	**Numerator:** Neonatology personnel trained in the Kangaroo Mother methodology **Denominator:** Total neonatology personnel **Formula:** Numerator x 100 divided by the denominator	Personnel who receive training and pass the learning evaluation test on the Kangaroo Mother method	Learning evaluation test	Monthly	10 observations	100%
All pre-term and/ or low birth weight newborns who meet the selection criteria are attended with the Kangaroo Mother method	Percentage of pre-term and/ or low birth weight newborns who meet the selection criteria and were attended by the Kangaroo Mother method	**Numerator:** Number of pre-term and/or low birth weight newborns attended with the KM method Denominator: All pre-term and/or low birth weight newborns Formula: Numerator x 100 divided by the denominator	**Low birth weight:** all newborns under 2,500 grams (1,499 grams inclusive) **Pre-term:** all newborns under 37 full weeks (fewer than 259 days of gestation) **Selection criteria:** a newborn may be attended with the Kangaroo Mother method when the following criteria are met: • Newborn under 37 weeks • Newborn under 2,000 grams in a stable clinical condition. • Newborn hemodynamically stable • Newborn without ventilator support It is considered adequate when the mothers report that: • They can stay with their newborn 24 hours a day and take turns with the father or any other relative to support the care of their baby while the mother is fed, eats or rests. • The personnel provide them educational activities about the Kangaroo Mother twice a week. • They sign the informed consent form, authorizing entrance into the method. • Every day the ward's responsible base doctors report the baby's clinical condition to the parents. • They learn the technique for carrying the baby. • They have been trained in breastfeeding and feeding with extracted milk. • They learn about care, precautions and the baby's alarm signs at home. • They have been trained in physical relaxation exercises with the baby in kangaroo position. • They have been trained in stimulating and massaging the baby when it is in skin-to-skin contact.	Interview with the mothers File of the newborn	Quarterly	10 mothers interviewed All premature and/or low weight newborns that meet the KMM criteria	100%

Source: UNICEF, Nicaragua

Despite having local data, personal of SILAIS or hospital did not used them to analyze trends and identify critical areas for improvement. No instruments were available for analyzing or following up on the quality of attention to premature or low birthweight newborns, so UNICEF contracted technical assistance for training hospital personnel in interpreting the standards and designing measurement instruments. This has facilatated the implementation of the norm and became a practical instrument for monthly monitoring. These indicators are monitored monthly according to the Table No. 2.

3. Continuity

According to the last ENDESA (2011/2012) the national coverage of institutional births is 76%, but in those SILAIS it is 63%. Access to delivery attention by qualified personnel has improved with the implementation of strategies such as Humanizing Birth, Cultural Adjustment of Birth, Birth Plan and the expanding of the number of maternal houses. Despite these advances, erroneous concepts and practices linked to intra-hospital attention to births still persist.

One of the main barriers is that community leaders, despite being trained, need to have more adequate material for promoting and supporting families of a premature or low birthweight newborn to assure timely care in the community. In addition, a series of educational materials and communication campaigns need to be conducted to eliminate the concept in both the health personnel and the community itself that a newborn in these conditions has little probability of survival or that very little can be done for them. Community leaders currently provide support to assure that the mothers or families take the newborns to the corresponding appointments.

4. Quality

UNICEF has hired technical assistance to draft the "Mother Kangaroo Method: Kangaroo Family" national norm in which the coordination methods, inputs and needed equipment are defined, as are as the process for implementing the method both in hospital units and in the primary attention level health units (health centers), mainly in those that function as primary hospitals and deal with births.

A quality team was created in each hospital that is in charge of doing the quality analysis, guaranteeing linkage between the two attention levels (hospitals and health centers) and training the health personnel. The analysis of the quality of care starts with reviewing the clinical file and observation; based on the findings they prepare a work plan called "plan for continual improvement of the quality of neonatal care." As example of monitoring is the following table:

Table No. 3 Survey in health services. Jan - Dec 2016 - Las Minas, Siuna

	Clave: Rojo (0-69.99), Amarillo (70-85.99), Verde (86-100).	Jan	Feb	Mar	Apr	May	Jun	Jul	TOTAL
1-Num	No. of pregnants women who registered and interpreted the 13 regulated activities in prenatal cares	5	6	9	7	1	6	13	47
1-Den	Total Prenatals Cares monitored	20	20	20	20	20	20	20	140
1-Ind	Percentage of pregnant women for whom their HCPB was filled out in their APN and the 13 regulated activities were recorded and interpreted.	25	30	45	35	5	30	65	34
2-Num	No. of vaginal or Caesarean postpartum women who left with an artificial birth control method (surgical sterilization, IUD, condoms and 3-month injectables).	15	17	20	20	15	0	0	87
2-Den	Total vaginal or Caesarean postpartum women who left with an artificial birth control method	19	20	20	20	20	20	20	139
2-Ind	% of vaginal or Caesarean postpartum women who left with an artificial birth control method	79	85	100	100	75	0	0	63
3-Num	No. of women of reproductive age (15-49 years) who received their first prenatal attention by qualified personnel before 12 weeks of gestation	19	20	18	20	18	20	19	134
3-Den	Total APNs monitored	20	20	20	20	20	20	20	140
3-Ind	% of women of reproductive age (15-49 years) who received their first prenatal attention by qualified personnel before 12 weeks of gestation	95	100	90	100	90	100	95	96
4-Num	Women with obstetric complications: Users with postpartum hemorrhage who received treatment according to protocol	7	0	1	1	4	4	3	20
4-Den	Total users with postpartum hemorrhage	7	0	1	1	4	4	3	20
4-Ind	% of women with obstetric complications: users with postpartum hemorrhage who received treatment according to MINSA protocol	100	N/A	100	100	100	100	100	100
5-Num	Women with obstetric complications: users with Gestational Hypertension Syndrome: Pre-eclampsia and eclampsia who received treatment according to protocol	10	6	5	4	2	5	3	35
5-Den	Total users with GHS: Pre-eclampsia and eclampsia	10	6	5	4	2	5	3	35
5-Ind	% of women with obstetric complications: users with Gestational Hypertension Syndrome: Pre-eclampsia and eclampsia who received treatment according to MoH protocol	100	100	100	100	100	100	100	100
6-Num	Women with obstetric complications: users with puerperal sepsis who received treatment according to protocol	0	0	0	0	0	0	2	2
6-Den	Total users with Puerperal Sepsis	0	0	0	0	0	0	2	2
6-Ind	% of women with obstetric complications: user with puerperal sepsis who received treatment according to MINSA protocol	N/A	N/A	N/A	N/A	N/A	N/A	100	100
7-Num	No. of women who have just given birth (vaginal/Caesarean) to whom Active Management of the Third Stage of Labor (AMTSL) was done, according to protocol	20	20	20	20	20	20	20	140
7-Den	Total births (vaginal/Caesarean)	20	20	20	20	20	20	20	140
7-Ind	% of women who have just given birth (vaginal/Caesarean) to whom Active Management of the Third Period of the Birth (ATMSL) was done to reduce postpartum hemorrhage, according to MINSA protocol	100	100	100	100	100	100	100	100
8-Num	No. of pregnant women in labor with birthogram filled out and correctly interpreted, according to protocol	19	19	19	20	19	17	20	133
8-Den	Total pregnant women in labor	20	20	20	20	20	20	20	140
8-Ind	% of pregnant women in labor with birthogram filled out and correctly interpreted according to MINSA protocol	95	95	95	100	95	85	100	95
9-Num	No. of users with post-miscarriage attention who received treatment according to protocol	15	2	9	7	6	10	3	52
9-Den	Total users with post-miscarriage attention	15	2	9	7	6	10	3	52
9-Ind	Percentage of users with post-miscarriage attention who received treatment according to MINSA protocol	100	100	100	100	100	100	100	100
10-Num	No. of women of reproductive age (15-49 years) who received postnatal attention by qualified personnel within 10 days following the birth	20	20	20	20	20	20	20	140
10-Den	Total women who received postnatal attention by qualified personnel within 10 days following the birth	20	20	20	20	20	20	20	140
10-Ind	% of women of reproductive age (15-49 years) who received postnatal attention by qualified personnel within 10 days following the birth	100	100	100	100	100	100	100	100
11-Num	No. of neonates with complications: Severe asphyxia, handled according to the norm	1	1	0	0	0	0	0	2
11-Den	Total cases of newborns who presented severe asphyxia reviewed in the period	1	1	0	0	0	0	0	2
11-Ind	% of newborns who during birth presented severe asphyxia and were attended according to the norm	100	100	N/A	N/A	N/A	N/A	N/A	100
12-Num	No. of neonates with complications: Sepsis, handled according to the norm	1	3	0	1	0	0	0	5
12-Den	Total cases of newborns who presented sepsis reviewed in the period	1	3	0	1	0	0	1	6
12-Ind	% of newborns diagnosed with sepsis who were attended according to the norm	100	100	N/A	100	N/A	N/A	0	83
13-Num	No. of neonates with complications: Prematurity, handled according to the norm	0	0	0	3	0	3	2	8
13-Den	Total cases of newborns who presented prematurity reviewed in the period	0	0	0	3	0	3	4	10
13-Ind	% of newborns diagnosed with prematurity who were attended according to the norm	N/A	N/A	N/A	100	N/A	100	50	80
14-Num	No. of neonates with complications: Low weight, handled according to the norm	0	0	0	3	3	2	2	10
14-Den	Total cases of newborns who presented low birth weight reviewed in the period	0	0	0	3	3	2	3	11
14-Ind	% of newborns diagnosed with low birth weight who were attended according to the norm	N/A	N/A	N/A	100	100	100	67	91
15-Num	No. of newborns who received quality neonatal attention at birth at a health unit, according to the established attention protocol	20	20	20	20	20	18	20	138
15-Den	Total cases of newborns reviewed in the period	20	20	20	20	20	20	20	140
15-Ind	% of newborns who received quality neonatal attention at birth at a health unit, according to the attention protocol	100	100	100	100	100	90	100	99
16-Num	Communities with ASSBCs that met their goals and received seed capital in accord with the established guidelines in the operational regulation								0
16-Den	Total communities that received seed capital and innovation fund								0
16-Ind	% of communities that met more than 80% of the established goal in accord with the methodology defined in the ASSBCs	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Source: Hospital: "Carlos Centeno", Siuna. MoH, Nicaragua

Achievements

Sharpened focus on equity: Based on the analysis of concerns, the team identified the clinical determinants in the quality of both the supply and the conditioned demand in families themselves as a product of the community vision regarding the death of a newborn or small child, mainly in the most remote areas and with a poorer population.

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Improvements in planning and monitoring, and reduction of bottlenecks: Given the improvement in collecting and disaggregating MINSA data with the technical assistance of UNICEF and partners such as PAHO, the focus is now on actions for the most marginalized, linking this issue in the communities for the first time, eliminating the myth that attention to premature and/or low-weight babies requires very costly technologies and can only be done in hospital units.

Monitoring systems related to reduction of neonatal mortality using "Kangaroo Family" have been strengthened and bottlenecks have been reduced in three SILAIS. In these SILAIS, this has resulted in involving community networks that are now operating with more effective follow-up to low weight and prematurity. Overall, demand for services has increased due to improved service delivery and the MoH is now mobilizing partners to ensure adequate supplies to meet this surge in demand.

Main challenges and limitations

The application of MoRES requires intense collective efforts, the need for systematic training, and capacity-building on the analysis and use of data. MoH also recognizes the need to continue capacity building in the areas of data analysis and interpretation, as staff turnover is very high at all government levels. Data triangulation is particularly a challenge. It can also be difficult to ensure adequate time for analysis and availability of health personnel to implement actions to remove local bottlenecks. Lack of funding for implementation, including continued capacity development of SILAIS personnel, is another serious constraint.

Lessons learned

Engagement, leadership and partnerships

The Government's active engagement and leadership are essential. In Nicaragua, progress can be made more rapidly with the engagement of local managers who can push the process forward at the central level. It is important to identify a central-level government 'leader' who is committed to the issue or is required by his/her mandate to address the issue, in order to support the process locally and ensure the incorporation of findings into the national plans. In Nicaragua, this was the person in charge of Comprehensive Attention to Children. Engagement of other key partners – in this case PAHO/WHO – was also extremely important.

Adaptation, flexibility and building on existing systems

In recent years, UNICEF's focus in Nicaragua has shifted from service delivery to advocacy and technical assistance. Applying MoRES in this context involved adaptation and flexibility in identifying entry points in the government planning cycle, leveraging a minimal amount of financial resources, coordinating with other partners – in this case, PAHO/WHO – with respect to focusing on the most disadvantaged, and tapping into the Government's high-priority policy areas.

Establishing proof of concept

The rebranding of MoRES as "restoring rights" in support of the National Human Development Plan was crucial to the Government taking up both it and the "Continual Improvement Plans." It was essential to integrating analysis of the determinants and related capacity-building into existing planning and management processes. It is also important that local management teams identify advantages and limitations of existing systems and propose improvements to facilitate monitoring of bottlenecks.

Results

Based on the removal of bottlenecks, premature mortality was reduced by 30% in Siuna and 50% in Bilwi and Madriz between 2014 and 2016. Of the premature births, 78% had low birthweight and 22% had very low birth weight. An important cause of death is associated congenital malformations, mainly in the Madriz hospital, which reaches 35%.

In the supply area, the main bottlenecks were the lack of clinical standards manuals, supplies, physical space and trained human resources. In the demand area, the bottlenecks were inadequate cultural beliefs and practices related to premature children; for example, 16% of mothers with premature newborns in Bilwi left the hospital. Lack of access to health facilities due to distance or transportation costs are other important barriers.

Implementation of the MoRES approach proved to be a useful management tool in the three hospitals, facilitating the sustainability of the intervention.

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Implementation of the KMC strategy has continued in 2016, including documentation of good practices, exchange of experiences and support by community health workers and community leaders to mothers once they were back home.

Recommendations and next steps

- Raise the scale of the Kangaroo Family method using the MoRES approach, which implies enhancing the capacity of government counterparts on data analysis and use of data for planning and programming. It is an ongoing process that will continue.

- Given that 98% of the population has mobile phones, there is significant potential for counselling and support for both the demand side and supply side in monitoring, shared knowledge, lessons learned or consulting, although this is hampered by poor network coverage in remote areas of northern Nicaragua and in the most remote communities of the Caribbean Coast.

- Create a network of hospitals connected in an information technology platform that facilitates continued attention to premature or low birthweight newborns, the exchange of experiences and learning sessions.

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- Connect parents of children with disability to the care and support network through the "All Are with You" Program and promote their organizing for peer support.

- Elaborate communication and behavioral change messages to the health personnel to remove the erroneous perception that a premature or low birthweight baby will die, which also includes information to the population about the Kangaroo Mother method.

- Train community leaders in the Kangaroo Family method indicating expected actions as part of the family and community support network.

- Analyze the situation and factors associated with congenital malformations.

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