NEWBORN HEALTH INTERVENTIONS IN SENEGAL
THE EARLY IMPLEMENTATION PHASE
Abstract: This document describes the implementation and initial results (improved process and program outcome indicators) of a package of essential newborn care in an early implementation site at Kebemer district, Senegal. The program relied on a holistic strategy targeting both the facility and community with links between the two and involving key partners at the national and regional level. The approach was found to aid in achieving results at the local site and also in garnering consensus for proceeding to scale.

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The picture on the cover was painted by the Senegalese artist Draamé, and reproduced from the cover of the communication tools developed for the newborn health intervention in Kebemer District, Senegal.

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<td>ANC</td>
<td>Antenatal Care</td>
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<tr>
<td>CBC</td>
<td>Communication for behavior change</td>
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<tr>
<td>CHV</td>
<td>Community health volunteer</td>
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<tr>
<td>CHW</td>
<td>Community health worker</td>
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<tr>
<td>ESIS</td>
<td>Enquête Sénégalaise sur les Indicateurs de Sante</td>
</tr>
<tr>
<td>GPF</td>
<td>Groupement Féminin (Women’s Groups)</td>
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<tr>
<td>ICP</td>
<td>Infirmière Chef de Poste (Chief nurse at the health post)</td>
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<tr>
<td>IPT</td>
<td>Intermittent preventive therapy</td>
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<td>ITN</td>
<td>Insecticide treated nets</td>
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<tr>
<td>LQAS</td>
<td>Lot Quality Assurance Sampling</td>
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<td>M&amp;E</td>
<td>Monitoring and evaluation</td>
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<td>MOH</td>
<td>Ministry of Health</td>
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<tr>
<td>NGO</td>
<td>Non-governmental organization</td>
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<tr>
<td>PIC</td>
<td>Pacquet Intégré de Conseils (Integrated Counseling Cards)</td>
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<tr>
<td>SEARCH</td>
<td>Society for Education and Research in Child Health</td>
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<tr>
<td>PDIS</td>
<td>Programme de Développement Intégré de la Santé</td>
</tr>
<tr>
<td>SIG</td>
<td>Système d’Information pour des Fins de Gestion</td>
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<tr>
<td>TBA</td>
<td>Traditional birth attendant</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations International Children’s Fund</td>
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<td>USAID</td>
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NEWBORN HEALTH INTERVENTIONS IN SENEGAL
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Background

Senegal has achieved an impressive reduction in child mortality over the past 15 years. Under-five mortality rates have been reduced from nearly 200 deaths per 1,000 live births in 1980 to 139 deaths per 1,000 live births in 1995, a reduction of 30% (Figure 1). Children in Senegal have better chances of survival as a result of increased immunization coverage, prevention of and improved treatment for common childhood illnesses such as diarrhea and pneumonia, and other interventions that primarily benefit older infants and children. During the same period, neonatal mortality rates fell to a far lesser extent, from 44 to 37 deaths per 1,000 live births, a 14% decline. Moreover, during this period, the proportion of all under-five deaths that occur during the first month of life has risen and now stands at 27%. In other words, one of every four deaths among children under five years of age occurs during the first month of life. In Enquêtem Sénégalaise sur les Indicateurs de Sante (ESIS) 1999, the infant and neonatal mortality rates were recorded as 64/1000 live births and 31/1000 live births, respectively. In Enquête Sénégalaise sur les Indicateurs de Sante (ESIS) 1999, the infant and neonatal mortality rates were recorded as 64/1000 live births and 31/1000 live births, respectively.

Figure 1. Under five, infant and neonatal mortality rates in Senegal, 1980 to 1995

The Intervention - Components, Objectives, and Strategies

The Components and Objectives

The newborn health intervention, the first of its kind in Senegal, was developed at an early implementation site and monitored closely for the potential to be scaled up nationally if proven successful. The primary goal of the program was to assess the effectiveness of a package of essential newborn care (see Appendix1) in bringing about measurable improvements in specific services and practices at the population
level prior to, during, and immediately following delivery. The package was adapted from a more comprehensive list of components.3

Behavioral measures were chosen as the primary outcome indicators because the short duration of planning, developing tools, and implementation (approximately two years between March 2002 and July 2004) did not permit measurement of neonatal mortality rates.

The key objectives of the interventions and strategies are noted in Table 1.

**Table 1. Key Objectives and Strategies**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Strategies</th>
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<tr>
<td>Increased availability and improved quality of essential newborn care services</td>
<td>Build and sustain capacity at the facility level by developing an ongoing program of training and supervision</td>
</tr>
<tr>
<td>Improved household health and care-seeking behaviors in relation to essential newborn care.</td>
<td>Develop a program of communication on essential newborn care based on interpersonal communication through facility and community health workers and the mass media. Key messages are noted in Appendix 2.</td>
</tr>
<tr>
<td>Increased community capacity to respond to the needs of mothers and newborns.</td>
<td>Mobilize community groups to take action in support of newborn health.</td>
</tr>
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</table>

*Note:* Activities to achieve the above strategies included advocacy, collaboration and consensus building with partners, training/capacity building, supportive supervision, communication, social mobilization and monitoring and evaluation described below.

**Intervention Sites**

The intervention was implemented at the district and subdistrict levels in six health zones of Kebemer district in the Louga region. These six health zones (Kebemer commune, Ndande, Thiolom Fall, Ngourane, Gueoul, and Diokoul) included 262 villages with an estimated population of 67,000. Under the regional hospital are health centers (centres de santé). More peripherally, in the health zones are the health posts (postes de santé), each staffed by a nurse, usually male, (Infirmière Chef de Poste, or ICP) or a midwife and at least two matrones (see below). Some of the health posts also have an auxiliary nurse (infirmière brévité). Nurses and midwives undergo a basic training course of three years each. The course for auxiliary nurses lasts for two years. Under health posts there are several health/birthing huts (cases de santé), which are frequently considered part of the community, as they are staffed only by matrones and have no qualified facility-level health worker. The community matrones are in charge of all maternal and child health care, including prenatal and postnatal care at deliveries.

**Advocacy**

Advocacy was a key strategy required at all stages of the initiation and implementation of the interventions. At initiation, the main emphasis was to focus attention on the burden of newborn deaths and the feasibility of programs to deal with the key causes. Subsequently, however, advocacy had to be more targeted, bringing in the technical components suitable for local situations, facilitating choices of content and extent of inputs and coverage. Since the program, concepts, and strategies were new, they tended to rapidly lose
visibility without continuous nurturing and to be replaced by more familiar components. Advocacy was
directed not only at the concerned sections of the Ministry of Health (MOH) and local U.S. Agency for
International Development (USAID) mission, but also at various other organizations/ non-governmental
organizations (NGOs) that were or could be potential partners and that could take the agenda ahead.

Networking within and across regions was supported. For example, a study tour was funded for Senegal
MOH authorities to participate in the Regional Southeast Asian Consultation in April 2002 on improving
newborn health, where members, including MOH representatives, from nine South and Southeast Asian
countries exchanged information, experiences, and tools. In addition, they visited the Society for Education
and Research in Child Health (SEARCH) successful, community-/home-based newborn care in
Ghadchirolli, Maharashtra, India.4

Advocacy efforts had to be sustained and, in some instances, were very time-consuming. However, the
interest and commitment developed by the MOH in Senegal provided a strong impetus for initiating
interventions for newborn health.

The pediatric, obstetric, and nursing/midwifery faculty of the University of Dakar were also targeted for
continued advocacy and technical inputs. Their potential role in taking the newborn health agenda ahead
and in promoting inclusion of essential newborn care in preservice education were acknowledged early.
They were involved in all the capacity-building and supervision strategies.

Collaboration and Consensus Building with Partners

It is noteworthy that the intervention was designed, developed, and implemented in consensus with a
National Committee on Newborn Health constituted specifically for this initiative. The Division of
Reproductive Health of the Ministry of Health chaired the committee, whose membership was drawn from
academia, donors such as USAID, organizations such as the United Nations International Children’s Fund
(UNICEF) and the World Health Organization, and the NGO sector, as well as different divisions of the
MOH with responsibility for maternal and child health. Smaller subgroups (working committees) were
involved in more specific activities, such as the Working Group for Training, which included medical and
nursing/midwifery faculty of the University of Dakar for developing training tools and participating in the
capacity-building process. Thus, while the intervention was focused at the peripheral and the local
government levels, by working through the National Committee on Newborn Health and linking closely
with the MOH at the central level, it was also aimed at influencing the national level. This collaborative
and consensus-oriented approach promoted and sustained interest in subsequent expansion and advocated
for improvements in preservice education relevant to newborn health.

Capacity Building/Training at Facility and Community Levels

The best available evidence indicated that approximately 50% of deliveries in the Kebemer district took
place at a health facility.2 The program strategy therefore strongly emphasized newborn care practices both
at home and in the facility and strengthening the links between the two. Capacity-building efforts were
initially envisioned for facility health workers such as doctors, nurses, and midwives. However, early
assessments made clear that many of the health posts were staffed by male nurses. Few health posts had
qualified female midwives. Each post also had a category of worker known as the “matrone”. Matrones
were typically women who had been selected from the community based primarily on their educational
level and given some training in maternal and child health, including care at delivery. At health centers and
health posts, training of these matrones was carried out over a period of six months. Both the literacy level
and competence were lower in the matrones at the health huts (cases de santé) than those working at the
health centers and posts, and their initial training was only three months. Increased competency in matrones
at the level of health centers and posts was also supported to some extent by their being involved in more
deliveries and possibly learning from the nurses and midwives working at the same facility. Although
matrones had had some training earlier and received additional training as a part of the intervention, as they
had not undergone a formal course or obtained a degree or certification, they cannot be considered skilled
birth attendants. In practice, however, they conducted a significant number of facility deliveries. After
some discussion, the Ministry of Health made the important decision to include them in the capacity-
building program (training and supervision) for facility health workers.

A training needs assessment was carried out and guided the development of the training program. Tools,
including a technical manual, trainers’ guide, guide for training community health workers, and aide
membres, were developed with the support of a core group of national-level trainers, including medical
and nursing faculty from the University of Dakar.

The training program was implemented with the support of a regional team of trainers that included some
members of the national core team and some staff from the Regional Hospital of Louga. Selected members
from the core and regional teams were involved in training at all levels to minimize the negative effects of
the cascade training system. The training sites, including the regional hospital, health center, and one
health post, were prepared ahead of time for the course; preparation included supplying basic equipment.
Courses lasted six to seven days for nurses and midwives, six to eight days for matrones, two to three days
for relais (community health volunteers), and five days for traditional birth attendants (TBAs). For facility-
level workers, training consisted of classroom sessions, clinical training, and interactive sessions, including
simulation on models, demonstrations, role plays, and observation/participation in activities in the labor
room and maternity ward. A mannequin on which ventilation with an infant ventilatory bag could be
monitored with movement of the chest wall was used in the training. Originally, plans were made for a 10-
day course with longer exposure at the regional hospital for practical training in the delivery room.
However, this was not feasible, as a number of capacity-building programs were also being carried out in
other technical areas and the health workers could not be away from their duties for such a long period.
Courses were organized in batches to ensure that the trainee numbers were small enough to allow hands-on
experience during the clinical sessions. Topics included the key preventive aspects of essential newborn
care, identification of problems with emphasis on birth asphyxia and sepsis, resuscitation, treatment of
minor infections, and referral for danger signs with institution of initial care.

At the community level, the workers targeted included the matrones at the health huts, community health
volunteers known as relais and traditional birth attendants.

The numbers of individuals involved in the training programs are noted in Table 2.

| Table 2. Trainers and Health Workers Included in the Training Program |
|-----------------------------|----------------|------------------|
| **Category**                | **Numbers**   | **Chronological**|
| **Trainers**                |               | **information**  |
| National Core Training Team | 6             | November &      |
| Regional Training Team      | 7             | December 2002   |
| **Health Workers**          |               |                  |
| Regional hospital technical staff | 22   | February & March 2003 |
| Nurses and midwives at the intervention site | 23   | March 2003 |
| Matrones at the health center and health posts | 19   | April 2003 |
| Matrones at the health huts | 46            | May 2003        |
| Traditional birth attendants | 82            | May and June 2003 |
| Community health volunteers (relais) | 137    | 2003            |
Equipment

Equipment for basic newborn care was provided at each of the intervention sites. It included, among others, infant ventilatory bags for resuscitation, locally manufactured “warming tables” with lightbulbs, suction machines (foot operated at all sites and an additional electrical one at the health center), suction tubes, and delivery kits. Although in the communication strategy, mothers were asked to set aside clean new blades as a part of birth preparedness for home births (see below), the use of sterile items for cord care at birth was promoted at the facility level.

Supervision

At the facility level, a key component of the intervention was careful, regular supervision. Job descriptions with expected tasks of all the health workers and tools, consisting of objective checklists with predefined tasks, were developed in December 2003 in each of the priority areas noted below. These checklists were developed with extensive input from National Committee members as well as district health management staff.

- Maternity environment
  - Equipment and supplies (including the availability, functioning and proper maintenance)
  - Hygiene (cleanliness, waste disposal, and medical instrument sterilization)
  - Record keeping

- Provider performance
  - Antenatal visit/care
  - Delivery preparation
  - Immediate care of the newborn
  - Postnatal visit/care before facility discharge
  - Low birth weight newborn
  - Sick newborn

Monthly supervisory visits utilizing the checklists were structured to allow for completion of the assessment in the morning and a feedback session that focused on shortfalls in performance and steps to improve practices in the afternoon. Simulations were used as needed to improve specific skills. The local Health Committee (Comité de Santé), which included some of the key community members, was invited to join parts of the feedback sessions. Each visit generated a specific set of recommendations for program improvement.

At the community level, monthly meetings were organized for relais and matrones from the health huts to reinforce and improve skills through demonstrations and role plays and to collect and review data. Tasks for some of the community workers such as relais were primarily related to counseling mothers on various topics using counseling cards. Selected basic aspects of care at delivery were also included for matrones at the health huts and the TBAs. In the follow-up, the traditional birth attendants performed more poorly than the other community workers, and due to the limited time left in the contractual period, priority in supervision was given to community matrones and relais.

Communication Strategies

The key objective was to raise awareness of the importance of newborn health in members of the family and community, including family decision makers and the gatekeepers of the use of services, such as husbands and mothers-in-law. The messages promoted are noted in Appendix 2. The communication strategy relied on multiple channels to reach the women and their families. Activities were implemented both at the facility and community level and included interpersonal communication primarily utilizing qualified health workers, matrones, and relais through individual counseling, and at the community level through home visits and group meetings (“causeries”).
In addition, messages were broadcast through the mass media. Programs were broadcast from mobile buses that toured the intervention sites over a six-month period. Radio broadcasts featured a prerecorded cassette series interspersed with music by local request. Each program was accompanied by a discussion on health topics between a professional radio program “host” and a local health provider, the local chief nurse, local relais and matrones, or guest speakers from community leader and visitors from Dakar. Programs received a large number of music requests, suggesting that they were popular among local audiences. This popularity was confirmed by a series of community interviews with breast-feeding women, women’s group members, and village and religious leaders. In addition, the radio broadcasts based on the integrated communication program/tools (Pacquet Intégré de Conseils, or PIC), which started in April–May 2004, included a number of messages related to essential newborn care. These messages were also broadcast by Radio Kebemer. Cinebus broadcasts using videos took place at different villages, usually late in the evenings to ensure maximum audience participation. Programs were designed to promote general child survival messages, with one of the programs featuring a soap opera about a pregnant woman who develops complications. Cinebus transmissions were always popular, often attracting crowds of 200 to 300 people or more.

Social mobilization

Religious and village leaders and community groups such as women’s groups with women of different ages, including grandmothers, were targeted through social mobilization efforts. Individual mothers and families were reached through both the communication and social mobilization strategies. Strategies were based on the results of qualitative research that was carried out early at the intervention site looking into the community practices and perceptions relevant to newborn health and health care services.

Monitoring and Evaluation

The essential newborn care program in Kebemer included activities to monitor progress in implementation and to evaluate the effectiveness of the program. The monitoring and evaluation activities were guided by an overall framework noted in Figure 2.
The monitoring and evaluation (M&E) framework was based on a program implementation model that seeks to link programmatic inputs, processes, and outputs with population-level outcomes and impacts. The monitoring and evaluation effort focused on two types of activities:

- program monitoring conducted for purposes of internal program management that was carried out in both facilities and communities, and
- program evaluation for the purpose of demonstrating program effect that was carried out through two rounds of household survey.

Data sources are described below.

Registers. Two registers routinely maintained in the health centers and health posts provided important information for the program: the delivery register and the postpartum visit register. Initial reviews of these
registers indicated that modifications were required to monitor the essential newborn care program. The main indicator groups used to monitor the program in health facilities included information related to the number of births, type of assistant at delivery, low birth weight, stillbirths (macerated and fresh), newborn deaths, newborn postnatal consultations, and referrals. The health worker assisting in the delivery was asked to note his/her initials next to the record of the birth in the register. A BASICS II consultant reviewed register information each month. These regular visits facilitated discussions with facility staff to identify problems in register maintenance and to improve the recording of information. An Excel spreadsheet was created to track indicators over time and to present data for management purposes.

For community workers such as matrones and relais, a notebook was kept in the health huts with the key information on births, stillbirths, deaths, and referrals using pictorial/graphic depictions for these less literate workers. All community volunteers were also provided printed record forms with graphics in order to maintain data relevant to their interpersonal communication activities, such as numbers of group sessions or “causeries,” individual counseling sessions, and home visits. These records were collected and reviewed at the monthly meetings with the matrones and relais.

Posttraining follow-up and supervision. Provider performance was also monitored through the use of periodic posttraining follow-up and supervisory visits. Besides pre- and posttests that were part of the training, a repeat evaluation was carried out in August 2003 of all the health workers. Although supervisory checklists were developed in December 2003, they could be applied more effectively in February 2004 after all the equipment was in place and after local orientation had occurred. The training and supervisory teams monitored provider performance at both facility and community levels. Observations of actual tasks, where feasible, case scenarios, simulations and role plays were used to assess performance on standardized checklists. Checklists including sets of predefined tasks for each of the priority areas noted below were prepared and monitored. Data recorded on the supervisory checklists were compiled in an Excel spreadsheet. For each site, a composite score was created for each of the items noted above.

Evaluation of all facility-based workers was conducted at the baseline evaluation visit in August 2003. Their subsequent progress was monitored during the monthly supervisory visits that were carried out to strengthen the performance and to improve the management of essential newborn care services and that were guided by service norms and standards.

Since the number of community health workers (matrones from the health huts and relais) was much larger, their progress was assessed using surveys (August 2003 and April 2004) and compared to predetermined performance benchmarks. Surveys of community-based workers used Lot Quality Assurance Sampling (LQAS) in which two random samples of 19 relais and 19 matrones were selected for evaluation. The number of community workers able to perform each task on the checklist was used to estimate the probability that at least 80% of all relais (137 in total) and 80% of all matrones (46 in total) were able to perform the task.

Household surveys. The effectiveness of the intervention was determined through increased use of essential newborn care practices among women who had recently delivered. These data were gathered through household surveys carried out in the intervention areas in July 2003 and again in July 2004. Respondents were women who had delivered a baby in the 90 days prior to the survey interview. In each round, 428 women were interviewed in the intervention area in Kebemer District. Data were also collected in the neighboring district of Darou Mousty, which was intended to serve as a nonintervention comparison. In this paper, only results from Kebemer district are presented. Data on trends from both districts will appear in “Evaluation du PSPNN au Niveau de la Communauté--Rapport Final” (forthcoming). Respondents were identified by first locating and interviewing all women who delivered within one of the facilities participating in the intervention. In the respondents’ villages, knowledgeable persons such as village leaders, matrones, and relais were asked about other women living in that village or in nearby villages who had recently given birth. These villages were visited in turn, and additional mothers were identified and interviewed. While this method does not represent a completely random means of selection, the exact same method was used in both survey rounds. Using this method, between 60% and 70% of all expected deliveries in the intervention area in the three-month period May through July (2003 and 2004) were found and interviewed. Questionnaires covered topics such as respondent characteristics, exposure to newborn
care messages, knowledge of newborn care practices, place and type of assistance at delivery, practices related to temperature maintenance, cord care, breast-feeding, newborn illnesses, birth preparedness, postnatal visits to the home, and knowledge of danger signs.

Observations and Results

Results Related to Services at the Facility Level

Most of the early results presented in this paper were achieved after an initial implementation period of approximately 12 to 15 months. At the time of the initial training of the health workers (March and April 2003), it was recognized that capacity building would be constrained by the difficulty of taking workers away from their normal duties for the length of time required for suitable competency-based training. Identifying the means to both achieve and maintain the required skills also presented challenges. These challenges were compounded by the fact that skills and equipment for newborn care were inadequate at the regional hospital where the training was organized. The latter problem was addressed to some extent by additional inputs to prepare the site for training, as noted above. Maintaining skills was difficult at times, especially in the smaller health posts that were not dealing with adequate numbers of problem cases. Hence, close supportive supervision was an important component of the intervention.

In August 2003, a posttraining follow-up activity (described in the M&E section above) identified deficiencies in health worker practices. Figures 3 and 4 show that significant improvement in health worker performance occurred only after February 2004. This corresponded with the required equipment being in place and with the utilization of the objective and specific supervisory checklists. By June 2004, skilled attendants (primarily nurses, and midwives) had improved their ability, for example, in caring for sick newborns from 68% to 91%, in postnatal consultation skills from 62% to 87%, and in newborn resuscitation skills from 56% to 83. The matrones working at the district health center and health posts similarly improved their performance, for example, in the areas of birth preparedness, delivery care, and evaluating the newborn at the postnatal visit. The supervisory tools with clearly defined tasks not only were helpful for conducting supportive supervision, but also served as job aids/aide memoire for continued self-learning when given to the facility health workers.
Figure 3. Training follow-up and supervision
Performance of qualified facility health workers - nurses and midwives (knowledge and skills)

From Feb 2004 onward checklists and feedback were used

* indicates % of tasks correctly carried out

Figure 4. Training follow-up and supervision
Post/Center Matrons (knowledge and skills)

From Feb 2004 onward checklists and feedback were used

* indicates % of tasks correctly carried out
Advocacy and increased interest in the intervention among the health facility staff resulted in changes in the organization of services and clarification of procedures for newborn care. In the delivery room, a “newborn corner” was set up with the warming table and all of the necessary equipment for care at birth. Lists of items to be kept ready for each delivery and flowcharts guiding the appropriate protocol for resuscitation and care of the low birth weight infant were developed and displayed on the wall. In addition, a system known as the “circuit du nouveau-né” was developed at each site to indicate exactly where a baby brought to the facility needed to go for care, including examination, immunization, and advice. Sick babies and all those coming in the first postnatal week were seen on a priority basis.

Supervisory visits also systematically assessed measures adopted for general hygiene and prevention of infection, and availability and functionality of the equipment for the baby in the delivery room. For example, in the area of infection prevention, through supervision, using checklists to evaluate a composite of 15 specific tasks/items, application of the required practices in the health facilities rose from 60% to 96% by June 2004 (Figure 5). Similarly, as measured by a composite of specific predefined tasks and items, facility management of various materials and medications required for newborn care improved from 57% to universal compliance of 100%.

Supervisory visits were structured so that the findings were shared with the health workers and selected items with the local health committee Comité de Santé, which included representatives from the community. This form of feedback was found to be useful and not only resulted in improvement of services but also motivated community members to take an active role in improving conditions at the health facility (see below under results of establishing/strengthening links between facility and community).

Data from the household surveys showed that the proportion of deliveries that occurred in facilities rose significantly from May through July 2003 to the same period during 2004. In 2003, 47% of deliveries occurred at home and a similar number at the district health center and health posts. A much smaller number (6%) of deliveries occurred at the health huts (cases de santé). By 2004, these proportions shifted significantly, with 63% of all births among the surveyed population occurring in the health center or health post, compared with only 25% at home and 11% at the health huts (Figure 6).

Key messages of the intervention (see Appendix 2), delivered through both interpersonal means and mass media campaigns, included advice for women to (a) deliver at a health facility, (b) identify the place of
delivery in advance, and (c) decide on the place of delivery with a qualified person. Although the data analysis carried out to date has not attempted to specifically link the place of delivery with these elements of the intervention, it seems plausible that the intervention messages contributed to the increased reliance on health structures for delivery. Moreover, the improvements noted in the hygiene and quality of care at the facility may well have been an additional factor in increased utilization of services.

Figure 6. Place of Delivery
Kebemer 2003 and 2004

Data from multiple sources demonstrate that the majority of deliveries within the health facilities (district health center and health posts) are conducted by matrones. Data gathered from the registers maintained in the facilities show that from July 2003 to July 2004, 73% of deliveries on average were assisted by the matrone, with the remaining 27% assisted by a skilled attendant (mostly nurse or midwife). In the household survey, 87% of respondents who gave birth in the health center or health post mentioned the matrone as the primary person assisting their delivery and could even identify the individual by name. These results emphasize the important role of the matrone in efforts to improve newborn care in Senegal.

Within the health facility, one set of key practices for essential newborn care addresses maintenance of body temperature immediately after delivery. Data from the household surveys of reports by mothers delivering at a facility showed improvements related to two elements of temperature maintenance: wiping the baby dry and wrapping the baby with his/her head covered. The proportion of women who reported these steps rose significantly from 2003 to 2004 (Figure 7). In 2004, 92% of women who delivered in facilities reported that their baby was wiped dry with a dry cloth immediately after delivery, compared with 82% in 2003. In 2003, 65% of respondents reported that their infant was wrapped with a cloth after delivery, with the head covered. By 2004, this proportion rose to 89%. Two other aspects of temperature maintenance as reported by the mothers in the household survey were unchanged, namely, placing the baby in skin-to-skin contact with the mother and delaying the first bath at least six hours.
Another finding was the increase in postnatal consultations at the health facilities during the first and second weeks (Figure 8). Prior to the intervention, mothers who visited the facility were mostly coming after 30 to 40 days, and records were not always maintained. An interesting finding was that during the intervention, some of the health workers started keeping the mothers at the facility longer, into day two, feeling that they would not return for an early postnatal visit. During this phase, the number of postnatal visits in the first week actually dropped. However, when this practice was discontinued for mothers who had no specific reasons for an extended stay, the postnatal visits in the first week again picked up.
Although there is agreement that the mother and baby should be seen early in the first week, there is no clear evidence reported as to which is the best day for the visit, even from the SEARCH study with frequent follow-up visits.\(^4\) Questions that arose during the early implementation period in Senegal included the following: Should mothers who come to the facility for delivery be kept until the next day? If yes, what are the implications for cost, overcrowding, and potential risk of infection? When both the mother and baby are normal and have no problems, should they be coming back within one or two days for the early postnatal visit? Common sense suggests that mothers living near the facility may be able to come for the early visit and those far away may be served by a home visit from the community worker. The answer also depends on the competency of the community health worker and the ability of the mothers to recognize key problems. At the very least, a careful examination of the mother and baby before discharge and proper counseling are extremely important.

Results of Capacity Building of Community Health Workers

Matrones from health huts and relais were called in for monthly meetings for supportive supervision, updating skills through role plays and demonstrations, and collecting and reviewing data. Checklists were also developed identifying sets of tasks for each required activity. With this support, there was improvement in the skills in carrying out the required tasks. For example, a total of 30 tasks were defined as relevant to the examination at the postnatal visit. The number of tasks that were correctly carried out, as assessed by the LQAS method, increased in at least 80% of the matrones and relais, as shown in Figure 9.

![Figure 9. LQAS Results](image)

Results Related to Communication Strategies

Data from the household surveys indicate that the communication strategy was successful. The survey asked women if they were counseled or heard messages on key elements of essential newborn care, namely, temperature maintenance, breast-feeding, cord care, birth preparedness, and danger signs. As seen in Figure 10, the proportion of women who said that they were counseled or heard messages for each of the elements increased significantly from 2003 to 2004. Levels of exposure to messages about temperature maintenance and breast-feeding were relatively high in 2003 (70% and 73%, respectively) but rose further during the 12 months of program implementation to 83% and 90%, respectively. In the initial survey,
exposure to messages related to cord care and birth planning were relatively low. Fifty four percent of women said that they were counseled or had heard messages related to cord care, while 47% were exposed to messages on birth preparedness. During the 2004 household survey, these figures rose to 83% and 85%, respectively.

If respondents were counseled or heard messages on at least one of the program elements, they were asked the source of information. As shown in Figure 11, among facility- and community-level providers, the matrone was the leading source of information. In the 2003 household survey, 46% of respondents cited the matrone as a source of information. That figure rose to 58% after one year of implementation. Nurses and midwives were cited by 34% of respondents as a source of information in 2004, which was slightly lower than in 2003. This finding is consistent with observations at the facilities during supervisory visits. It was found that nurses and midwives were not able to devote adequate time to counseling, in part because of their responsibility to provide services for clinic patients. As a result of this finding, at each facility, a specific health worker, very often a matrone, was designated as the “communicator” and was made responsible for ensuring that mothers were counseled about key necessary behaviors using counseling cards. Counseling was often done after the mother and baby had visited the nurse for examination and care.

The TBAs as a source of information dropped from 13% in 2003 to 9% in 2004. In addition, deliveries assisted by TBAs decreased somewhat during the intervention period (see below). As noted above, in this phase, priority was given to supervision of matrones and relais.

Mass media, especially radio transmissions, remained an important source of information, with 35% of the mothers citing this source in 2004 (32% in 2003). During early 2004, a radio campaign was launched that focused on improved maternal and child health practices, including messages related to antenatal care, including birth preparedness, and newborn care. It seems safe to assume that even if the overall proportion of women citing the radio as a source did not increase, they were exposed to a newly developed set of messages that focused much more specifically on essential newborn practices.

The community health volunteers (relais) have increasingly become a source of information on essential newborn care. In 2003, only 16% of women interviewed cited the relais as a source of information on care.
By 2004, this figure rose to 35%. The findings reflect the program decision to actively follow up and provide supportive supervision to the relais by organizing monthly sessions to reinforce their counseling and communication skills.

Increased exposure to these messages, whether through interpersonal communication or mass media, seems to have resulted in significantly increased levels of knowledge of essential newborn care practices. Table 3 presents data on women’s level of knowledge on specific means of enacting essential newborn care practices. For each element of essential newborn care (birth preparedness, temperature maintenance, cord care, breast-feeding, and recognition of danger signs in the sick newborn), there were statistically significant increases between the two rounds of household surveys. These findings suggest not only that more women were being counseled (exposed to the messages) but that the counseling was effectively provided, as significantly more women could **spontaneously** cite the correct practices.
**Table 3: Improvements in Knowledge of Essential Newborn Care Elements among Women Who Had Recently Delivered (Intervention Area in Kebemer District)**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>July 2003</th>
<th>July 2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of women who were counseled or who had heard messages on birth preparedness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Among women exposed to these messages, the percentage who knew the following specific steps to prepare for delivery (birth preparedness):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Identify the place of delivery in advance with a nurse or midwife</td>
<td>21.6</td>
<td>34.3†</td>
</tr>
<tr>
<td>• Acquire a new, clean blade</td>
<td>39.2</td>
<td>90.3†</td>
</tr>
<tr>
<td>• Acquire other materials for clean delivery: soap, cords ties, or clean linens</td>
<td>67.8</td>
<td>98.3†</td>
</tr>
<tr>
<td>• Identify a source of funding or put aside money in case of emergency in the mother or baby</td>
<td>23.1</td>
<td>76.2†</td>
</tr>
<tr>
<td>• Identify transport in case of need to go to the facility</td>
<td>7.5</td>
<td>30.1†</td>
</tr>
<tr>
<td>Percentage of women who were counseled or who had heard messages on temperature maintenance for newborns:</td>
<td>69.6</td>
<td>82.7†</td>
</tr>
<tr>
<td>Among women exposed to these messages, the percentage who knew the following specific steps to maintain baby’s temperature:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Wipe the baby dry immediately after delivery</td>
<td>19.6</td>
<td>48.3†</td>
</tr>
<tr>
<td>• Wrap the baby in a clean, dry cloth</td>
<td>75.2</td>
<td>90.7†</td>
</tr>
<tr>
<td>• Cover the baby’s head</td>
<td>38.6</td>
<td>79.4†</td>
</tr>
<tr>
<td>• Put baby in skin-to-skin contact with mother</td>
<td>22.1</td>
<td>63.8†</td>
</tr>
<tr>
<td>• Verify baby is warm by touching hands and feet</td>
<td>10.1</td>
<td>42.9†</td>
</tr>
<tr>
<td>• Delay first bath by at least six hours</td>
<td>11.1</td>
<td>37.9†</td>
</tr>
<tr>
<td>Percentage of women who were counseled or who had heard messages on cord care for the newborn:</td>
<td>54.4</td>
<td>82.7†</td>
</tr>
<tr>
<td>Among women exposed to these messages, the percentage who knew the following specific means of caring for the newborn’s cord:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cut the cord with new, clean blade</td>
<td>25.7</td>
<td>54.8†</td>
</tr>
<tr>
<td>• Keep cord clean and dry</td>
<td>55.4</td>
<td>83.1†</td>
</tr>
<tr>
<td>• Do not put unclean substances such as argile (clay) on cord</td>
<td>42.9</td>
<td>90.4†</td>
</tr>
<tr>
<td>Percentage of women who were counseled or who had heard messages on breast-feeding:</td>
<td>72.7</td>
<td>90.4†</td>
</tr>
<tr>
<td>Among women exposed to these messages, the percentage who knew the following specific breast-feeding practices:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Newborns should be exclusively breast-fed</td>
<td>67.2</td>
<td>90.2†</td>
</tr>
<tr>
<td>• Do not give other foods/liquids during the first three days (prelacteal feeds)</td>
<td>39.2</td>
<td>73.1†</td>
</tr>
<tr>
<td>• Breast-feed on demand during day and night</td>
<td>49.2</td>
<td>70.5†</td>
</tr>
<tr>
<td>• Put baby to the breast during the first hour after delivery</td>
<td>16.1</td>
<td>34.9†</td>
</tr>
<tr>
<td>Percentage of women who know at least three newborn danger signs that require immediate care-seeking:</td>
<td>18.4</td>
<td>58.4†</td>
</tr>
</tbody>
</table>

Notes: Women selected and interviewed were those who had delivered a baby in the 0 to 90 days prior to the survey. Knowledge is defined as women who (a) said that they had been counseled/heard message (such as those on birth preparedness, temperature maintenance, cord care, breast-feeding, or the sick newborn) and (b) could spontaneously cite specific means to protect the newborn. † Statistically significant change between surveys, with *p* < 0.05 based on *χ²* test.
Results of Establishing/Strengthening Links between the Facility and Community

The points below illustrate the benefits that were realized through improved links between the facilities and communities:

- As a result of dialogue between facility workers and key community persons in groups such as the Health Committee Comité de Santé and women’s groups (“Groupement Feminén”), provider performance and hygiene and maintenance of the delivery room, including provision of some supplies, improved. Community groups were also motivated to donate items to prevent infection, such as a supply of disinfectants, soaps, new blades, and dustbins with plastic bags, at some of the health huts. In one facility, the community supported the hiring of a person to clean as a cleaner was not available in that particular site.

- As a result of increased rapport between the facility workers and community volunteers such as relais, facility providers advised mothers upon discharge to seek early family contact with the relais near their homes. This not only motivated the relais to provide appropriate counseling but also promoted early postnatal visits.

- As a result of stronger links and advocacy, women’s groups took a greater interest in the services available at their health posts. In three sites, they insisted that matrones be available for deliveries during emergency/nonregular hours.

Results at the Community Level

Changes at the community level were measured using both qualitative (structured group discussions and interviews) and quantitative (household survey results) studies.

As described above, the proportion of births that occurred in the home fell sharply in the intervention area from May through July 2003 (47%) to May through July 2004 (25%). The proportion of these community based deliveries assisted by matrones increased from 29% in 2003 to 39% in 2004 \( (p < .05 \text{ based on } \chi^2 \text{ test}) \). During the intervention period, the proportion of home deliveries assisted by a traditional birth attendant appears to have declined (43% versus 38%), but the difference is not significant.

Evaluation of social mobilization activities was carried out through structured group discussions in May 2004. Discussions took place with two types of groups:

- village leaders (14 individuals), religious leaders (14), and members of women’s groups (14) who were engaged throughout the intervention in mobilizing their communities to promote improved newborn care; and

- pregnant and breast-feeding women (14 in each group).

Individuals were chosen on the basis of accessibility and exposure to the intervention. In order to promote increased participation, focus groups were limited to six to seven individuals at a time. Question guides for the group discussions were developed in French and then translated and applied in local languages.

One objective of the group discussions was to assess the acceptability of the messages conveyed through the intervention. Barring a few exceptions, most of the messages were found to be quite acceptable. One message that resulted in considerable discussion was avoiding prelacteal feeds, such as the use of a solution of selected herbs provided by the religious leaders (“l’eau benite,” also known as toxantal). The other message was relevant to exclusive breast-feeding. Older members of the groups felt that a young infant should be given water, while younger women were quite willing to breast-feed exclusively.

Some of the other results of the focus groups are noted in Table 4.
Table 4. Qualitative Results of Social Mobilization Activities

<table>
<thead>
<tr>
<th>Positive activities carried out by religious and village leaders and women’s groups</th>
<th>Constraints and areas for improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Most promoted participation of families at health education sessions known as causeries or group counseling sessions with relais.</td>
<td>Although most religious leaders indicated that they would incorporate health messages into sermons, this was not carried out in practice. Their stated preference was to have a health worker provide information at their sermons.</td>
</tr>
<tr>
<td>Some participated in presenting talks or promoting newborn health on radio transmissions</td>
<td>Some village leaders were not so active, indicating that they felt that the promotion through mass media and interpersonal communication by community health workers (relais and matrones) was adequate and that they did not need to do anything more. Some stated that they felt that the radio transmissions were critical in reaching the populace.</td>
</tr>
<tr>
<td>Some village leaders promoted use of the health facilities.</td>
<td>The household survey also indicated that mothers received health messages to a greater extent from the interpersonal communication strategies involving relais and matrones and through mass media than through the leaders and women’s groups.</td>
</tr>
<tr>
<td>Some women’s groups discussed health messages during informal meetings at various homes</td>
<td>In general, groups intended to serve as conveyers of messages acted at a relatively low level and were less engaged in these activities during the early phase of the intervention. While the messages on essential newborn care were, for the most part, acceptable, these groups either did not understand the role expected of them or were unable/unwilling to comply. These results suggest that community groups can be more effectively engaged by negotiating selected tasks for individual groups.</td>
</tr>
<tr>
<td>Some women’s groups promoted and established the “Caisse de Solidarité” or collecting money for emergencies</td>
<td></td>
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</table>

Focus group discussions with pregnant women and breast-feeding mothers pointed to improved perceptions of the health facility, in contrast to views that were noted in the formative research prior to the intervention. Impressions included the following:

- increased cleanliness and the presence of more equipment in the delivery room,
- prescription of the intermittent preventive therapy for malaria in the antenatal period,
- availability of bed nets in the postnatal room,
- increased courtesy and assistance provided by the health worker and the availability of a matrone during emergency hours in some of the centers,
- improved counseling provided during prenatal visits, after the delivery, and during postnatal visits, and
- examination of the newborn baby after delivery and before discharge from the facility.

Results from the focus group discussions were complemented by the household survey findings. In this brief paper, select data from the household survey are used to highlight the effectiveness of the program. The program elements to be addressed here include steps that women took to prepare for delivery among all women surveyed, attendance at delivery for women who delivered at home, temperature maintenance practices for home deliveries, and breast-feeding practices for all women surveyed.

Women were asked a series of questions about the measures that they took to prepare for their delivery. The questions closely paralleled the key programmatic messages. It was found that each behavior associated with birth preparedness increased significantly between the survey in 2003 and the survey in 2004 (Figure 12). Women were more likely to identify the place of delivery in advance and more likely to decide on the place of delivery through discussion with a doctor, nurse, or midwife. They were also more likely to keep a clean, new blade to cut the cord and to acquire funds and identify the necessary transport in case of an emergency in the mother or the baby. Two of these practices, while increasing over time,
remained at relatively low levels, namely, deciding on the place of delivery with a qualified person and identifying transport in case of emergency. These practices would seem to be the two over which women as individuals have the least control. In addition, given the role of the matrone in assistance at birth at the level of the health posts and huts, an individual woman may not have had an opportunity to discuss the place of delivery with a qualified person. Identifying transport in case of emergency may well be a role more suitable for the family or the community rather than an individual woman.

Overall, these results are very encouraging and appear to be closely related to the increased levels of exposure to counseling and knowledge reported above.

* Indicates significant difference between 2003 and 2004 with p< .05 based on χ² test

Figure 12: Women who took specific steps to prepare for birth

Most of the practices related to temperature maintenance improved for home deliveries (Figure 13). While the proportion of babies placed in direct skin-to-skin contact remained quite low (14%), it improved over the 2003 survey findings (3%). Based on qualitative research conducted prior to the intervention, this practice appears to be one of the most difficult to change, as the mother and baby, especially the latter, are considered unclean after delivery and in need of immediate bathing. The proportion of women who reported that the first bath was delayed for six hours rose from 20% to 53% between the two survey rounds. This change seems remarkable, as qualitative research results also implied that a preference for immediate bathing of the baby would be difficult to change.
Two of the breast-feeding practices promoted through the intervention increased significantly between rounds of the survey (Figure 14). The proportion of infants put to the breast within the first hour of life rose from 60% in 2003 to 78% in 2004. Another notable improvement was a reduction in giving other foods or fluids during the first three days of life. During the 2003 survey, 39% of respondents said that they had not given their infant foods or fluids other than breast milk during the first three days of life. After one year of implementation, 71% said they gave no foods or fluids other than breast milk (prelacteal feeds) during the first three days.
Summary of Household Survey Findings

These data, drawn from multiple sources, point to substantial and significant improvements in knowledge and practices both within health facilities and the community at large. In general, it can be concluded that proportionally more women:

- were exposed to messages concerning essential newborn care;
- were far more knowledgeable about specific steps to improve newborn care, including temperature maintenance, cord care, birth preparedness, breast-feeding, and danger signs in the newborn that required immediate care-seeking;
- actively planned for the delivery, including:
  - arranging for materials for cord care,
  - preparing for emergencies by setting aside money and identifying transport, and
  - identifying the place of delivery.
- delivered at health facility, with the most notable increase occurring at the health posts;

Note:- Of women delivering at the facilities, 87% of those interviewed in the household survey in 2004 reported that they were assisted by a matrone; the remaining 13% indicated that they had been assisted by doctors, nurses, or midwives, mostly the latter two. The women were able to identify by name the person who had assisted them at the delivery.

- Increasingly followed practices relevant to components of basic preventive newborn care, including:
  - keeping the baby warm, including drying the baby immediately after delivery and wrapping the baby well, and covering the head. Despite strongly held beliefs about the need to cleanse the baby, the proportion of infants for whom the first bath was delayed increased from 20% to 53% (among home deliveries). The practice of skin-to-skin contact also increased, but the proportion carrying out this practice was far less than the other temperature maintenance practices. More women were also taking steps to verify that their babies were appropriately warm.
  - Initiating breast-feeding within one hour of delivery without administering prelacteal feeds.

There was no significant increase in the postnatal visits for the baby at home for both facility and home deliveries. In 2004, 67% of home deliveries and 24% of facility births received a post-partum visit at home, most commonly by the community matrones. The corresponding figures for 2003 were 64% and 21%, respectively. It may be noted, that in the program, the main message to the mothers was to go to the facility for the post partum visit which, as noted under the results related to services at the facility level, increased significantly.

Discussion

Constraints Identified

Constraints were identified in two areas that not only delayed initiation of activities but also had to be contended with during implementation.

- Constraints in the Existing Health Systems and Provision of Care
  - Inadequate competence of health workers in the field of newborn health. Even during training, health workers tended to pick up familiar areas such as breast-feeding more easily, but needed far more input for other topics such as identification of danger signs and resuscitation in the newborn.
• Absence of basic equipment, drugs, and supplies. Some of the sizes and strengths appropriate for the newborn infant were not available in the country and had to be imported, an important issue to be considered when scaling up is being planned.
• Lack of regularly conducted supervision.
• Poor maintenance and local review of records/data.
• Existence of a large number of other public health initiatives and activities that hindered health workers’ availability for adequate periods of training and supervision.

❖ Other Constraints Noted during Implementation of the Intervention
• Program activities were delayed considerably due to (a) the amount of time required for advocacy and consensus building about the basic parameters of the intervention, followed by (b) development of basic program materials (training materials and other tools).
• Although the actual components were simple and mostly evidence-based, there were no established standard methods of implementation for this new intervention. Continued advocacy, technical inputs, and consensus building were required at all stages.
• Lack of appropriate grounding in newborn health in the preservice education of doctors, nurses, and midwives necessitated in-service training that was costly and time-consuming and drew health workers away from their regular work. With regard to the skills of health workers at the peripheral centers, as the care and competence at the regional hospital that was used for training were inadequate, acquiring the necessary competence posed challenges. In addition, at some of the peripheral health posts relatively few mothers and babies were brought with problems, making it difficult for health workers to maintain their skills.

Key Lessons Learned

❖ The close and continued collaboration and consensus building with the key partners (National Committee on Newborn Health), even when time-consuming, was fundamental in implementing the interventions. It also permitted leveraging of resources and sustained an interest and motivation for subsequent expansion and improvement in preservice education. It was perhaps the single most important reason for the universal willingness, dedication, and keenness to take the interventions for improving newborn health to scale in a relatively short time (see the following section).
❖ A dual approach targeting the facility and the community and establishing/strengthening the links between the two to provide a continuum of services was found to be extremely useful in the intervention site in Senegal. Merely targeting the facility would not necessarily have increased utilization of the services. In addition, isolated community-based interventions, especially when they promote basic preventive care, identification of danger signs, and appropriate care-seeking at the facility without strengthening the latter, may not be helpful and may even lead to a loss of credibility with community members. Supporting both and establishing and strengthening links between the two were essential elements of the intervention. In Senegal, with its emphasis on decentralization, community groups also played important roles in improvements noted at peripheral facilities.

❖ Major issues relevant to the capacity-building process included the following:
  • Having national and regional teams of trainers not only was useful for the training at the intervention site but also targeted the process for going to scale.
  • Preparation of the training sites was essential, more so because the technical area is new.
  • Repeated supervision using objective checklists indicating clear, predefined tasks associated with each key activity was critical in improving competency. These checklists also served as job aids/aide memoire for continued self-learning and self-evaluation.
  • A supply of basic resources, including equipment, was mandatory for improving the service and sustaining capacity building of the health workers.
It was clear that most of the deliveries at the health centers and health posts were being assisted by matrones who, even when given the additional training in the intervention, were really not skilled birth attendants. This finding has several implications related to required short- and long-term actions.

- **Short Term Actions**
  - During expansion/scaling up, there is a need to continue capacity building of the matrones along with the nurses and midwives.
  - Advocacy/motivational measures are essential to ensure increased involvement of nurses and midwives at the delivery.
  - As is well recognized, and as was noted during the intervention, having two persons assisting at the delivery is useful, especially when there are problems. With suitable planning, it should be feasible even at this stage to have both the nurse/midwife and the matrone provide assistance during most deliveries.

- **Long Term Actions**
  - The country needs to increase the numbers of suitably trained nurses/midwives who can deal competently both with the mother and the baby. Even if this is a long-term vision, steps to plan and implement it need to be commenced now.
  - At present, many of the nurses, especially at the peripheral health centers and posts, are men. While some feel that the women do not mind being assisted by men at delivery, some mothers, especially in the rural areas, may disagree. A constraint in having more female midwives is ensuring that they will actually serve in the peripheral areas after qualification. Careful planning and implementation of steps are needed to ensure the availability of at least one skilled birth attendant for every delivery.

- Communication strategies are key in improving family behaviors. This study indicated that interpersonal communication through matrones and relais and use of mass media were effective
- Social mobilization strategies are also important. In this early phase, having selected tasks for specific groups appeared to be more effective (see also Appendix 3). Women’s groups were particularly useful.

**Sharing of Results and Lessons Learned with Partners and Development of Plans for Scale**

A national workshop was held on September 8 and 9, 2004, at Saly, Mbour, Senegal, to share the key results and lessons learned with all the partners and members of the National Committee on Newborn Health and representatives of other interested groups. Another objective was to develop recommendations for expansiongoing to scale with interventions to improve newborn health. The workshop was inaugurated by the Minister of Health and included presentation of the intervention and results. The workshop was followed by plenary and group discussions to plan suitable activities at the facility and community levels and policies and resources to expand and take to scale interventions to improve newborn health. The Minister of Health not only expressed his interest in improving newborn health at the inauguration of the workshop but also reiterated it at a meeting after the workshop.

Some of the major recommendations are noted below:

- Implement activities to provide basic newborn care (capacity building; supervision; and supply of basic drugs, supplies, and equipment of suitable concentrations and sizes) at all levels, including peripheral centers and regional and national hospitals.
- Integrate the package of essential newborn care into the national strategy of maternal and child health, ensuring the clear visibility of newborn health.
- Include key perinatal/neonatal indicators in the national information system (Système d’Information pour des Fins de Gestion, or SIG).
• Integrate newborn health into the country’s Integrated Program for Health (Programme de Développement Intégré de la Santé, or PDIS). Continue advocacy and other activities to further disseminate the results.
• Expand and take to scale the defined activities (see Appendix 3) into other regions with the support of partners.
• Plan and implement strategies to have at least one qualified person such as a midwife to assist in the deliveries, and look into procuring a second person to assist the birth attendant to better care for the mother and baby.
• Revise the protocols and tools, including those for of supervision in the Department of Reproductive Health, MOH, to include neonatal health.
• Implement/sustain activities at the early implementation site at Kebemer to
  - Continue activities to improve newborn health and show impact on mortality.
  - Work out the cost of implementing key activities that can be taken to scale.

Next Steps:
• Follow the recommendations with the support of a Working Group on Perinatal/Neonatal Health including relevant members of the national committee.
• Share the experiences and results in the local region and district of Kebemer.

Some Issues that Need Additional Study and Inputs

• The exact optimal timing of the early postnatal visit is still not clear, especially when only one or two visits are feasible (see discussion under results related to facility care).
• Strategies and messages for temperature maintenance posed some challenges. Although skin-to-skin contact and delaying the bath changed over the intervention period, the total numbers complying were not so high, probably because of the strong traditional belief that the baby is “unclean” at birth. There may also be issues relevant to babies of HIV-positive mothers. While at present in the country the recommendation is just to wipe the baby clean and dry, more research is required to have real evidence-based information. Another issue noted was that when mothers were asked to keep the baby “warm,” translation into some languages did not always permit differentiation between “hot” and pleasantly “warm.” Anecdotal information from the intervention site indicated that sometimes mothers tended to clothe babies excessively with woolen sweaters and cover them with blankets even on hot days, with the babies becoming rather hot. The most efficient and correct way of conveying the message of maintaining the body temperature and verifying that the baby is not too hot or cold needs to be defined in each place.
• Due to the short period and other pressing priorities, it was not possible to study properly the effect of training TBAs, as they could not be included in the supervisory strategy.
• The logistics of providing supplies, including drugs and equipment (procurement and maintenance), need to be addressed very carefully when expanding the activities.
• Maintaining and reviewing records/data locally is an activity that needs to improve further, not only at the facility but also at the health hut and community levels. Death audits also need to be dealt with.

Conclusion

A package of essential newborn care was implemented in an early implementation site through a holistic strategy targeting the facility and community with links between the two and involving key partners at the national and regional levels. The strategies not only aided in achieving results (improved process and program outcome indicators) at the local site but also in getting early consensus for proceeding to scale. Key partners in the country are also increasingly accepting the fact that newborn health has to be addressed at scale in order to achieve the 4th Millenium Development Goal of reducing under-five mortality by two-thirds by 2015.
References

# APPENDIX 1

## KEDEMER: COMPONENTS OF ESSENTIAL NEWBORN CARE

### ANTENATAL PERIOD

- At least four visits with an emphasis on goal-oriented or focused antenatal care.
- Adequate nutritious diet.
- Consumption of iodized salt by the family.
- Tetanus toxoid.
- Iron and folate.
- For malaria:
  - Mother (later with the baby) sleeps under an insecticide-treated bed net.
  - Mother takes intermittent preventive therapy.
- Birth preparedness:
  - Determining on place of delivery with the health care provider.
  - If home delivery: (a) adequate linen, washed and sun-dried—at least five pieces of cloth for the delivery (may include a plastic sheet for the mother); (b) clean new blade kept in its wrapper until the moment of use; and (c) clean cord ties. All these items should be kept in a clean container.
  - Setting aside of or arrangements to get money for going to a facility for planned delivery or for emergencies in the mother or baby.
  - Identification of the facility and transportation to be used in case of an emergency.
- Early detection of danger signs in the mother and appropriate referral to and care seeking.

### AT AND SOON AFTER DELIVERY (UP TO ABOUT SIX HOURS)

- Clean delivery practices.
- Detection of problems and emergencies in the mother and appropriate referral and care seeking.
- Basic preventive care of the baby:
  - Cleanliness and prevention of infection.
  - Temperature maintenance.
  - Eye care.
  - Cord care.
  - Early initiation of breast-feeding (at least within one hour, preferably within half an hour) without prelacteal feeds, and advice for subsequent, frequent exclusive breast-feeding on demand, day and night.
  - Resuscitation of babies who do not breathe properly at birth.
  - Extra care for the low birth weight babies.
- Detection and referral and appropriate care seeking for babies with danger signs (noted below).

### POSTNATAL PERIOD

- Consultation with mother and baby early in the first week, preferably by day three, and follow-up as required.
- Continued basic preventive newborn care, including support for exclusive breast-feeding on demand, temperature maintenance, cord care, etc. (noted above).
- Postnatal vitamin A for the mother, continued use of iron and folate, and intermittent therapy for malaria according to recommendations of the Ministry of Health.
- Detection of danger signs and appropriate referral and care seeking (priority sepsis). The first five signs had the greatest association with mortality and therefore had priority:
  - Poor sucking or not sucking.
  - Inactivity or lethargy—often denoted by families as “loose-limbed” in several languages.
  - Fever or hypothermia.
  - Respiratory distress.
  - Convulsions.
  - Vomiting and/or abdominal distension.
  - Severe umbilical infection (redness or swelling of the skin surrounding the base of the cord or a foul smell); a slight pus discharge may often be considered a minor infection that can be treated locally.
- Detection of minor problems, local treatment where necessary, and follow-up including referral, if needed, for:
  - Conjunctivitis.
  - Minor umbilical infection.
  - Pyoderma or skin infection.
  - Thrush.
APPENDIX 2

KEY NEWBORN HEALTH MESSAGES

1) Wash your hands frequently, especially
   a) After using the toilet
   b) After changing the baby’s nappy
   c) Before preparing the family meal

2) Go to antenatal care as soon as you know you are pregnant. Make sure that you
   a) Are immunized against tetanus
   b) Take iron and folic acid throughout pregnancy and for two months after delivery
   c) Take chloroquine twice a week during pregnancy and for two months after delivery (During the program, MOH protocols were changed to recommend intermittent preventive therapy (IPT) for malaria instead. The message then became “Go to antenatal clinic to get treatment against malaria,” since IPT was only distributed at health post level.)
   d) Sleep under an impregnated bed net
   e) Add iodized salt to family meals

3) Prepare for a delivery:
   a) Identify the place of delivery with your skilled birth attendant prior to delivery.
   b) Keep ready some soap, a clean blade, five cloths (washed well and dried in the sun) and clean cord ties—all kept clean in a box or container.
   c) Put aside a small amount of money in case of emergency.
   d) Identify where to go and a means of transport in case of emergency.

4) Keep the baby appropriately warm:
   a) Cover the baby, including the head with clean, dry cloth(s).
   b) Verify/monitor the baby’s temperature by checking that the tummy, hands, and feet are all warm.
   For birth attendants and families:
   c) Dry the baby with a clean cloth immediately after the birth.
   d) Place the baby close to the mother.
   e) Delay the first bath at least six hours or until the next day.

5) Practice early exclusive breast-feeding:
   a) Start breast-feeding within one hour of the birth.
   b) Practice exclusive breast-feeding.
   i) Do not give prelacteal feeds.
   ii) Do not give substances (including water) other than breast milk before six months of age.
   c) Breast-feed on demand night and day at least 10 times.

6) Keep the baby’s cord clean and dry:
   a) Use a clean new blade to cut the baby’s cord in home deliveries.
   b) Keep the cord and later the umbilicus (belly button) clean and dry. Do not use argile or other unclean substances and do not apply a bandage over the cord.

7) Take the baby to the health center:
   a) for a checkup on day three (if born at home) and immediately after the baptism (all babies).

8) Take a baby to the health facility straight away if he/she
   a) Is not sucking.
   b) Is inactive, floppy, not responsive.
   c) Has difficult breathing, is breathing fast, has lower chest retraction, or is grunting.
   d) Feels excessively cold or hot.
   e) Has redness, swelling, pus discharge or a foul smell at the base of the cord or in the belly button.
   f) The baby has convulsions.
   g) The baby vomits every feed or has abdominal distension.
   Note: Priority was given to the first four danger signs.

9) Postnatal care:
   a) Sleep with your baby under an impregnated or insecticide treated bed net (ITN).
   b) Follow the messages given above for breast-feeding, cord care, and temperature maintenance.

10) For small (low birth weight) babies:
    a) Feed your small baby more often, up to 12 times a day or night.
    b) Take even more care to keep your small baby warm and check the temperature often.
APPENDIX 3

KEY COMPONENTS AND STRATEGIES TO TAKE TO SCALE FOR IMPROVING NEWBORN HEALTH IN SENEGAL

A holistic approach is needed for scaling up in Senegal including care at facilities and the community with links between the two. In this phase priorities include the following.

🔹 Key Components and Activities

- Basic preventive care of the newborn
- Resuscitation of babies with birth asphyxia
- Identification of babies with danger signs (priority, sepsis), immediate care and referral
- Identification and management of minor infections

NOTE:
- Competence in the above areas should be attained and maintained through the following activities:
  - Ongoing advocacy at all levels
  - Competency-based training
  - Supply and maintenance of basic equipment
  - Supervision using checklists with predefined tasks (These can be used not only for supervision but as job aids/aide memoire for self-learning and evaluation
  - Monitoring and evaluation with local review of data/information to plan and implement suitable changes for improvement

The above components of essential newborn care should be available at all levels--health posts (“postes de sante”), health centers (“centres de sante”), regional hospitals, and the national hospitals--and should cover the public and private sectors. Suitable adaptations should be made for health huts (“cases de sante”). (In addition, the regional and national hospitals should have the capability to treat sick newborns.)

🔹 Strategies for Communication

These should be implemented at both the facility and community levels.
- Channels for communication include interpersonal communication and use of mass media. Advocacy should be carried out at the necessary levels to procure free or subsidized broadcast time.
- Messages disseminated should be:
  - Evidenced based.
  - Prioritized to include those messages that have been more successful in the early implementation site at Kebemer.

🔹 Additional Activities at the Community

Social mobilization of specific community groups for selected activities. (For example, women’s groups (“Groupement Femenin or GPF”) for “caisse de solidarité/mutelle” (local methods of collecting money) and for supplementing resources where needed at the health huts or posts; GPF and village leaders for transport to the facilities for delivery and emergencies; and selected religious leaders for broadcasts to support activities for newborn health such as avoidance of pre-lacteal feeds such as toxental and to promote appropriate care-seeking for danger signs.

🔹 Links between the facility and Community

Links between facilities and the community should be promoted through advocacy and active involvement with health workers, such as the chief nurses (ICPs), of health committees (‘comités de santé’) and other relevant groups in key meetings and selected activities at the facility level.