



Advancing Newborn Health: The Saving Newborn Lives Initiative



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On the cover: A mother practises Kangaroo Mother Care at Bwaila Hospital in Malawi.

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Executive Summary

Before the Bill & Melinda Gates Foundation's award to Save the Children for the Saving Newborn Lives initiative (SNL) in 2000, newborn health was virtually absent from the global health agenda. SNL developed programmes, research, advocacy strategies and partnerships to highlight and address this previously neglected issue – four million newborns dying each year - and demonstrated that low-cost, community-based interventions could significantly reduce newborn mortality.

Targeted research, focused on overcoming the key barriers to improved newborn survival and implemented through multiple partners, advanced the state of the art and demonstrated effective interventions and strategies that could be taken to scale, particularly in community settings where most newborns die. Studies documented that community health workers could be effectively trained not only to provide preventive and promotive care, but also to identify and manage life-threatening complications, including the three major causes of newborn death: infection, birth asphyxia and preterm birth. Early postnatal visits, during the first hours and days of life, were found to be critical to saving newborn lives.

Leadership and advocacy helped catalyse global and national commitment, resources, and action to strengthen newborn health as an integral component of maternal and child health programmes. Publications such as *State of the World's Newborns* and the *Lancet* series on neonatal health strengthened support for evidence-based newborn care. Establishing partnerships, including forming the Healthy Newborn Partnership and creating linkages with maternal and child health constituencies, facilitated information sharing, coordination and consensus building. Country and regional analyses and strategic plans, developed in collaboration with governments and other stakeholders, provided the basis for the integration of newborn care into health policies and implementation programmes.

The challenge now is to apply lessons learned and reach the millions of newborns still at risk. Successful scale-up in settings where mortality is high and infrastructure is weak calls for the introduction and expansion of evidence-based family and community newborn care while integrating and strengthening newborn care in the formal health system. These efforts need to be accompanied by routine and reliable monitoring of coverage, cost and impact.

Introduction

The invisible newborn

Until the twenty-first century, newborn health was virtually absent from policies, programmes and research in developing countries. Almost one-half of all births occurred at home, often without skilled assistance, postnatal services were scarce, and traditional practices such as delayed breastfeeding contributed to high newborn mortality rates. In these contexts, with 99 percent of the four million annual newborn deaths occurring in developing countries, mothers and newborns frequently went without life-saving care, and newborn deaths remained relatively invisible and neglected.^{1 2 3}

Addressing newborn mortality also proved to be a challenge on other fronts. Since the magnitude and dimensions of the problem were not widely recognised, neonatal mortality reduction was not included as a priority for development assistance. Furthermore, given the models of newborn care at that time, solutions were commonly perceived as complex and costly. Finally, neonatal health fell between two well established global and country level programmes – maternal and child health – and was not embraced by either the safe motherhood or child survival initiatives.⁴ Despite the high burden of neonatal deaths in developing countries, newborns lacked attention in both global and country agendas.

Recognising the need to address the gap

At the turn of the century, research documented that while under-five mortality had decreased significantly over the preceding three decades, newborn mortality remained virtually unchanged. In fact, the proportion of under-five deaths that occurred in the first month of life had reached nearly 40 percent.^{3 5} Further studies would show that a majority of these newborns were dying from three major causes: birth asphyxia, infection, and complications from preterm birth, and that one-half of these newborns died the day they were born. The global community began to recognise that Millennium Development Goal (MDG) 4 – to reduce the under-five child mortality rate by two-thirds by 2015 – would not be reached unless neonatal mortality was substantially reduced.

Despite the perceived complexity and high cost of reducing newborn mortality, historical data from the developed countries demonstrated significant declines in neonatal mortality well before advanced care technology and facilities became available. These reductions in mortality were associated with increased use of basic services and practices, including antenatal care coverage, improved care in childbirth, breastfeeding, and neonatal infection management associated with the availability of antibiotics. Furthermore, the experiences of some developing countries like Sri Lanka demonstrated significant improvement in neonatal health by investing in similar strategies, the majority being key maternal health interventions. Maternal health advocates recognised that many newborn interventions would improve the survival of both mother and baby, since the highest risk of death for mothers and newborns alike occurs during and immediately after delivery. The world started to take notice – newborn death represented an alarming percentage of under-five deaths, and newborn health was a critical link bridging maternal and child health. Reducing neonatal mortality was emerging as a priority for achieving maternal and child health goals.

Demonstration of cost-effective strategies

The impetus to act intensified when the Society for Education, Action, and Research in Community Health (SEARCH) published a landmark study in 1999 demonstrating the reduction of neonatal mortality by more than 60 percent using village women trained to provide home-based neonatal care in a remote area of central India.⁶ The package of interventions included antenatal education and care during and after delivery, assistance when the newborn showed signs of birth asphyxia, providing antibiotics for suspected neonatal sepsis and identifying high risk neonates (essentially premature and low birthweight babies) for more frequent follow-up. This study and others illustrated the potential to avert up to 70 percent of neonatal deaths through the use of surprisingly simple and affordable measures such as ensuring clean delivery, treating infections with antibiotics, promoting early and exclusive breastfeeding, and keeping newborn babies warm.^{6 7} This evidence base, some of it supported by Save the Children, provided the momentum to initiate a more concerted effort to address the problems of the newborn.

Launch of Saving Newborn Lives initiative

Within this context and with the support of the Bill & Melinda Gates Foundation, Save the Children USA initiated the Saving Newborn Lives (SNL) programme to improve neonatal health and survival. The initiative was launched in June 2000 at a workshop that brought together key newborn health experts and partners to develop a consensus on a strategic framework for advancing newborn health. From the start, SNL has focused efforts on informing policy makers and programme managers *why* it is essential to improve newborn health, *what* can be done affordably and in a sustainable manner to improve newborn health, and *how* to integrate newborn care into existing health care programmes.

Overview of the Saving Newborn Lives Initiative

A synthesis of the SNL strategy, key activities, accomplishments, and an analysis of the challenges and lessons learned during the first six years of the initiative are presented in the following pages. By documenting the efforts of Save the Children and its partners, the synthesis attempts to contribute to an understanding of what progress has been made and identify the challenges and opportunities ahead for ensuring that newborns across the world survive and get a healthy start in life.

Strategic framework

Since 2000, SNL has aimed to bring attention to the magnitude and dimensions of newborn mortality, develop the evidence for effective interventions and create links with both maternal and child health constituencies, emphasising integration of neonatal programmes into existing structures and opportunities.

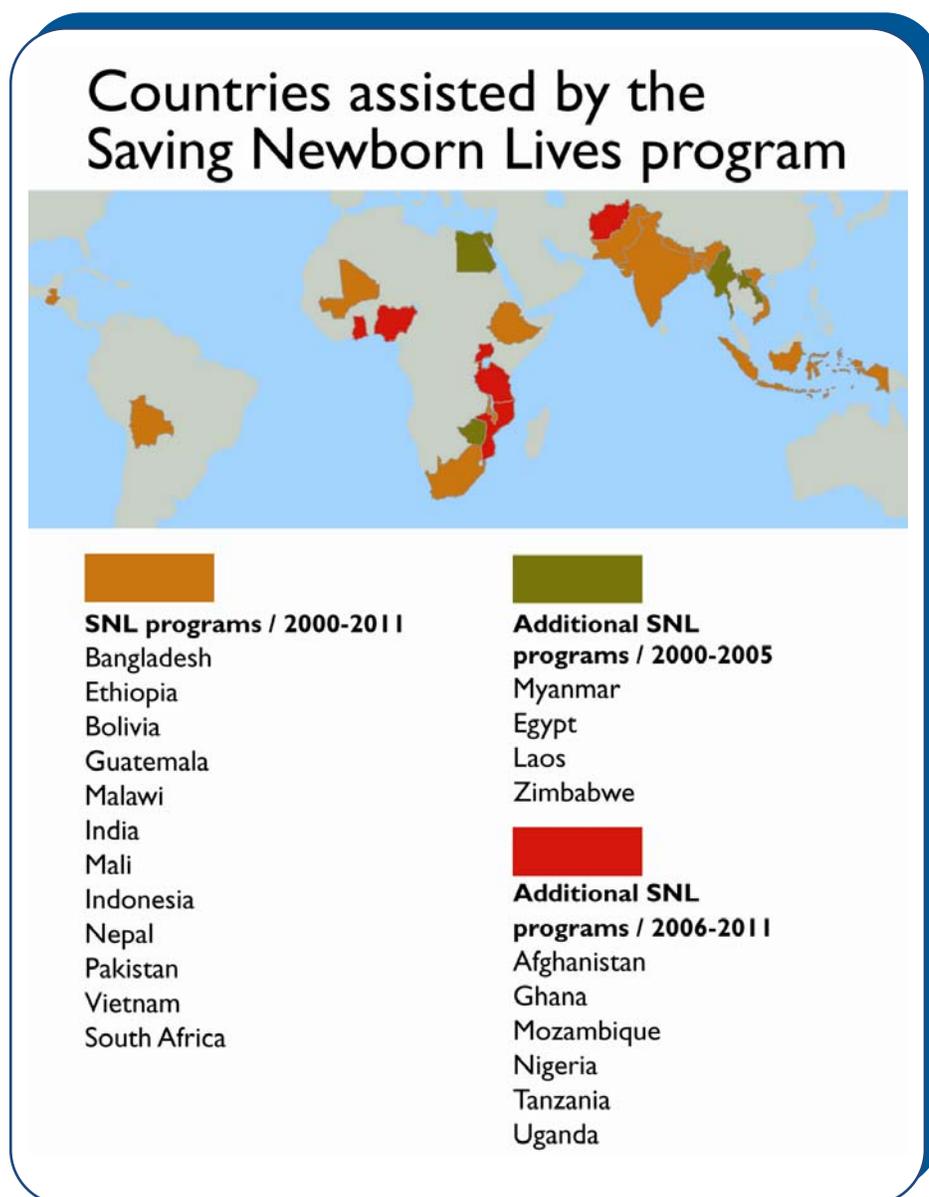
Following the development of a conceptual framework for newborn care that addressed the major causes of newborn mortality, SNL identified five objectives: (1) strengthening and expanding proven newborn care practices, (2) adapting and refining promising model programmes, (3) advancing the state of the art, (4) mobilising commitment and resources and (5) establishing strategic partnerships.⁸

Participating countries

Research, advocacy and programme support was initiated in 12 countries, where nearly half of the world's neonatal deaths occurred. Countries were selected using criteria such as magnitude and severity of need, potential for achieving national impact, and presence of a well established Save the Children country office or, in the case of India, links with strong local organisations working in maternal, newborn and child health. Research studies were also conducted in four additional countries. In 2006, following a second grant from the Gates Foundation, SNL added programmes in six more countries, specifically targeting Africa (see Figure 1).

In each country, SNL has collaborated with government, NGOs and other stakeholders to analyse the state of newborn health, disseminate and discuss the findings and recommendations, develop consensus on a strategic plan, establish the local leadership team, advisory groups and partnership networks, and initiate programme action as well as a monitoring and evaluation plan. A global headquarters team, based in Washington, DC, provides technical and management leadership, oversight, and support and links with other global partners.

Figure 1



Strengthening and expanding proven newborn care practices

Despite significant knowledge gaps about effective and feasible ways to reduce newborn mortality in developing country settings, several existing evidence-based interventions showed potential. SNL identified four primary activity areas for strengthening and expanding proven newborn care practices: newborn care training for health workers to improve basic services; introduction of skin-to-skin Kangaroo Mother Care (KMC) as a means to improve the thermal regulation of newborn babies; behavioural change communication (BCC) approaches to promote healthful maternal and newborn practices; and community mobilisation for maternal tetanus immunisation.

Training in evidence-based newborn care and introduction of Kangaroo Mother Care

A number of tools were developed, tested and disseminated to promote the integration of newborn care into pre-service and in-service training programmes, including the *Care of the Newborn Reference Manual*, an education and training guide designed for use in low-resource settings.⁹ The manual was adopted by national Ministries of Health in eight countries and used to train public and private sector health providers. In Pakistan, for example, SNL assisted the Ministry of Health in training over 3000 health care providers in maternal and newborn care, and postgraduate institutes and nursing schools adopted the training package.

KMC training manuals were also adapted for use in key SNL-assisted countries. SNL organised orientation and training for staff of four major hospitals in India as well as in Malawi to expand this cost-effective package for managing preterm and low birthweight babies in health facilities. In Malawi, Zomba Central Hospital was developed as a regional KMC training center, leading to the establishment of KMC wards in seven more hospitals with SNL assistance.¹⁰ In 2005, the Government issued national KMC guidelines, and KMC is now incorporated in pre-service training. Lessons learned from the scale-up process are informing continuing expansion of KMC in Malawi, as well as the introduction and expansion of KMC in others countries such as Tanzania and Ghana (see Figure 2).

Figure 2

Lessons Learned from Scaling up Kangaroo Mother Care in Malawi

(Excerpt from *Retrospective Evaluation of Kangaroo Mother Care in Malawian Hospitals*)

The scale-up process should be integrated into the health care system and other programmes and packages and should not be driven vertically.

- Leadership should be by the Ministry of Health and local officials and not by NGOs, expatriates and outside consultants.
- Implementation should be according to a locally adapted and owned model, starting with whatever resources are available.
- Babies should not be discharged directly from tertiary care to home, but should move through a continuum of care. KMC starts with messages in antenatal care. It is practised in obstetric care with skin-to-skin contact and breastfeeding immediately after birth and continued in neonatal care with intermittent and continuous KMC, ultimately linking to postnatal care for referral and follow-up.
- Off-site training that takes health workers out of the system for five or more days at a time is not practical, but short, off-site training for selected leaders followed by on-site facilitations by a central trainer who devolves responsibility to local supervisors may be more effective.
- Continuous monitoring of quality through on-site facilitation, supervision and moral support is essential.

Source: Bergh, A., van Rooyen, E., Lawn, J., Zimba, J., Ligowe, R., Chiundu, G. (2007) *Retrospective Evaluation of Kangaroo Mother Care in Malawian Hospitals*. (Malawi: Save the Children and South Africa: MRC and University of Pretoria).

Behaviour change communication and community mobilisation

Improving newborn care required community health promotion and empowering families, since the majority of births in SNL-assisted countries occur at home.

SNL developed a guide, *Qualitative Research to Improve Newborn Care Practices*,¹¹ and conducted formative research in each country as the basis for consultation with government and development of BCC strategies and materials. These BCC materials have been endorsed and adapted for ongoing use by national governments in several countries, resulting in notable improvements in key newborn care practices. In Pakistan, for example, a BCC and community mobilisation strategy contributed to reducing neonatal tetanus mortality. Results of formative research showed that a door-to-door campaign using female vaccinators combined with support from fathers, husbands, and community leaders were important for a successful immunisation campaign.¹² Using social mobilisation and BCC strategies to

generate demand among at-risk women, Save the Children partnered with the government of Pakistan, UNICEF, WHO, and Japan International Cooperation Agency to help implement the maternal and neonatal tetanus elimination campaign. As a result, 12 million women were successfully vaccinated against tetanus, leading to a 50 percent drop in tetanus-related newborn deaths.¹³ Using guidelines developed from the Pakistan experience, a similar approach brought positive results partnering with the governments of Mali and Ethiopia.¹⁴

Documenting changes in practice

Evaluations conducted in six SNL-assisted countries documented substantial improvements in household and care-seeking practices in the project areas after an implementation period of 18 months or less. In these countries, SNL trained existing community health workers to provide basic newborn care in the home and promote healthy household practices. For example, immediate breastfeeding within one hour of birth increased in all programme areas, as did the percentage of babies born at home who received a postnatal care visit within three days. The latter more than doubled in five countries. In Bangladesh, for example, immediate breastfeeding rose from 39 to 76 percent and postnatal care rose from 2 to 32 percent in programme areas. In addition, the percentage of mothers whose births were attended by a skilled provider increased in five of the six countries.^{15 16}

Adapting and refining promising model programmes

Strengthening and expanding coverage of proven, evidence-based newborn care interventions could improve the health and survival of millions of newborns. Yet understanding if and how model programmes could succeed in diverse settings and at scale was important for encouraging widespread implementation of both proven and new interventions (see Figure 3).

Figure 3

Building the Evidence for Community-Based Newborn Health				
Model in India	Replication in India	Replication in Bangladesh	Preventive care alone in India	Government model in Pakistan
1. SEARCH 1993-1998 India Home-based newborn care (HBNC) in Gadchiroli District 60% NMR reduction	2. Ankur 2001-2005 India HBNC replicated in 7 rural, urban and tribal districts 51% NMR reduction	3. Projahnmo 2001-2006 Bangladesh HBNC replicated in Sylhet District 34% NMR reduction	4. Shivgarh 2003-2006 India HBNC with community mobilisation and BCC only 54% NMR reduction	5. Hala 2003-2005 Pakistan HBNC through existing CHW system (preventive care with referral) 28% reduction in pilot areas

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SEARCH and the Ankur Project

The landmark SEARCH study in India demonstrated that home-based newborn care could dramatically reduce newborn mortality in a low-resource, high-mortality setting. Yet, while the results were impressive, it was not clear that this model programme could work as effectively in other settings or be taken to scale. In order to test its replicability, SNL supported a replication of the SEARCH model by seven NGOs in rural, urban and tribal

settings in Maharashtra State. Findings from this project (called Ankur) showed a dramatic 51 percent reduction in neonatal mortality between the baseline and third year of intervention, almost equivalent to the 62 percent reduction seen in the original SEARCH study.¹⁷ Findings from SEARCH and the Ankur Project are informing the design of a training curriculum for a new cadre of community health workers that the national government expects to deploy throughout rural India.

Projahnmo

To assess the replicability of the SEARCH home-based newborn care model in a much larger population (500 000) in a Bangladeshi setting, Save the Children and the United States Agency for International Development (USAID) co-funded a community-based, cluster randomised, controlled trial called Projahnmo in rural Sylhet District, conducted by the Johns Hopkins University (JHU) and the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) in collaboration with government and several local institutions. Key elements of the home-care package included two antenatal visits and postnatal home visits on days 1, 3 and 7 by female community health volunteers as well as referral for sick babies, government health system strengthening, and treatment at home in instances of referral failure. Neonatal mortality was reduced by 34 percent among those receiving home-care compared to those receiving existing care.¹⁸ Lessons learned from this study are now being used by the Government of Bangladesh with assistance from donors such as USAID to scale up home-based newborn care services and are shaping USAID's newborn health programming in Nigeria, Rwanda and Malawi.¹⁹

Shivgarh

A further understanding of the relative effectiveness of alternative intervention packages and delivery strategies became the next challenge. In the remote district of Shivgarh, Uttar Pradesh, India, the King George Medical University and local partners collaborated with Johns Hopkins University to conduct implementation research to evaluate a package of behaviour change and community mobilisation interventions to improve newborn care practices, with a special focus on addressing the problem of hypothermia in the newborn. Unlike the other implementation research supported by SNL, interventions focused on key

behaviours and did not include antibiotics or other medical care. The intervention utilised community workers and community members to promote birth preparedness, clean delivery, hygienic umbilical cord care, skin-to-skin care, breastfeeding and keeping the baby warm. Skin-to-skin care of the newborn was almost universally accepted, initiation of breastfeeding on the first day increased from 21 to 75 percent, and results showed a dramatic 54 percent reduction in neonatal mortality in the intervention area compared to those receiving no intervention.^{20 21 22} This strategy has been successfully integrated into the child survival programme of Uttar Pradesh and is currently being scaled up to a population of over 30 million. The study in Shivgarh, as well as a study in Makwanpur, Nepal involving women's community groups, demonstrated the potential impact of preventive care on neonatal mortality.²³

Hala

In Pakistan, SNL supported an effort to test the effectiveness of a newborn care package within the existing system involving the two main providers of primary care in the country: lady health workers (LHWs) and traditional birth attendants. In the rural district of Hala, in Sindh, Pakistan, the Community-based Perinatal and Newborn Care Intervention Trial was initiated by Aga Khan University in partnership with Save the Children, WHO, and the government. This effectiveness trial tested a newly designed LHW newborn health training package including home visits, training for traditional birth attendants, community mobilisation and group education sessions. In contrast to the SEARCH and Projahnmo studies, neither injectable antibiotics nor resuscitation equipment were provided at community level, but training was strengthened at primary and secondary care facilities. In the intervention area, newborn mortality fell by 28 percent and the proportion of deliveries conducted by skilled attendants at public sector facilities increased from 18 to 30 percent.²⁴ The Hala evidence is providing the impetus for the government and other partners to increase newborn health care within the nationwide LHW programme.

Advancing the state of the art

Save the Children and WHO collaborated in a workshop in Nepal in 2001 to review existing neonatal research in developing countries and prioritise outstanding issues.²⁵ A systematic review of the evidence on the efficacy and effectiveness of interventions to reduce perinatal and neonatal mortality followed and identified significant knowledge gaps regarding prevention of newborn mortality in low-resource settings.^{26 27 28} In addition, a comprehensive global review and synthesis of available information on stillbirths was conducted which provided the first country-specific estimates of numbers and rates and identified opportunities for improving policies and interventions to reduce stillbirths. Other reviews were undertaken to expand the global evidence base for specific topics such as birth asphyxia.^{29 30} Programme experience and research also revealed important implementation questions regarding the optimal timing, frequency, content and delivery mode of postnatal care. These reviews established the current state of the art and informed the design of the research studies which followed, some of which are described below.

Infection prevention and management

Infection is the leading cause of neonatal mortality, responsible for 36 percent of newborn deaths. The SEARCH and Projahnmo studies demonstrated that community-based models which included infection management could be highly effective, as described earlier. However, there was little experience or evidence to show how to introduce and scale up community-based management of newborn infections within government systems.

In Nepal, SNL supported the Morang Innovative Neonatal Intervention (MINI) study, conducted by John Snow, Inc., to test whether neonatal infections could be diagnosed and managed through a national cadre of community health volunteers and government community health workers already managing pneumonia in older infants and children. While the study was not designed to measure the impact of infection management on newborn mortality, preliminary findings indicated that high coverage of a timely and complete course of antibiotics for serious newborn infection could be delivered by Nepal's existing health system. This study informed a decision by the Ministry of Health to include community

management of newborn infection as part of a 10-district replication of a community-based newborn care package.³¹

In Bangladesh, application of sunflower seed oil to the skin of very preterm, hospitalised newborns was shown to augment skin barrier function, resulting in a 41 percent reduction in blood-culture proven neonatal sepsis and a 26 percent reduction in neonatal mortality.^{32 33} Studies have yet to be conducted to test the effect of this intervention in community settings.

Birth asphyxia prevention and management

Birth asphyxia causes 23 percent of neonatal deaths globally and treatment has generally been available only in facilities. SNL's global review of the state of the art related to the prevention and management of birth asphyxia at community level documented critical gaps in our knowledge of birth asphyxia, including evidence needed regarding how best to intervene, as well as the long-term implications of improved birth asphyxia management. In Indonesia, SNL supported implementation research to help close this knowledge gap and demonstrated the feasibility and impact of training community midwives to recognise and manage babies who do not breathe at birth using a simple resuscitation device (see Figure 4).

In Mali, SNL initiated a study with the Center for Research and Documentation on Child Survival (CREDOS), a Ministry of Health research organisation, to test community-based management of birth asphyxia. The results of this study are providing the evidence and tools for community-based prevention and management of birth asphyxia to be integrated into maternal and child health programmes nationwide.

Figure 4

Addressing Birth Asphyxia in Indonesia

In 2003 in Cirebon, Indonesia, some 45 percent of newborn deaths were caused by birth asphyxia, almost all occurring at home and in the absence of anyone skilled in resuscitation. To address this problem, Save the Children, the Program for Appropriate Technology in Health (PATH) and the Ministry of Health designed a training course for bidans (community midwives) that included improved antenatal and delivery care as well as a special focus on mastering the use of resuscitation devices.

In a pilot study, 40 bidans were trained in the intervention package. Not only did the study demonstrate a 47 percent reduction in birth asphyxia related deaths, but also that knowledge and resuscitation skills of the bidans were adequately maintained at three, six and nine months after training. Based on the results of the pilot study, the bidan training package has been adapted and implemented in a number of districts in Indonesia. It is being further developed and tested for incorporation into the national bidan program.

Source: Ariawan, I., Agustini, M., Seamans, Y., Tsu, V., Litch, J. and Kosim, M. (2007) *Managing Birth Asphyxia in Home Based Deliveries: The Impact of Village Midwives' Training and Supervision on Newborn Resuscitation in Cirebon, Indonesia*. Presentation at "Scaling Up High-Impact FP/MNCH Best Practices: Achieving Millennium Development Goals in Asia and the Near East," September 2-8, 2007, USAID, Bangkok, Thailand.

Care for small babies

Complications of preterm birth directly account for 27 percent of neonatal deaths globally. Although only 14 percent of newborns are estimated to be low birthweight, (LBW), the condition is a contributing factor in 60-80 percent of newborn deaths, and in some countries in South Asia, more than one quarter of babies are born with low birthweight.^{3 34} LBW contributes to neonatal mortality by increasing the baby's risk and susceptibility to a number of life-threatening conditions such as hypothermia. Prevention and management of hypothermia is therefore critical to improve survival of LBW newborns. While KMC is an evidence-based practice of mothers' providing skin-to-skin contact for LBW babies in hospitals, the effectiveness and feasibility of this care in community settings was not known. To increase global understanding of how to prevent and manage hypothermia in low-resource and community settings, SNL supported studies in India and Bangladesh.

The study in Shivgarh, India, described in the previous section, emphasised preventive interventions such as skin-to-skin care for hypothermia management, and the mortality impact was significant. Based on the high prevalence of hypothermia and lack of resources to combat it, skin-to-skin care should be considered for all babies, as recommended by a recent gathering of experts.^{35 36} A study specifically designed to assess the impact of community-based KMC on newborn mortality was conducted in partnership with BRAC and the Population Council in Sylhet, Bangladesh. The study aimed to provide community KMC to all babies, and not strictly to LBW babies only, and the main outcome was no effect. However, a sub-group analysis estimated a significant mortality decrease among babies weighing less than 2kg.³⁷ Thus, while the earlier SEARCH and Projahnmo studies demonstrated that community-based sepsis management had a particularly strong impact on the survival of LBW babies, the studies in Shivgarh and Bangladesh showed the potential for community-based KMC to also have impact.

Early postnatal care

These and other recent studies provide evidence that effective preventive and curative care during the early postnatal period saves newborn lives, and that previous guidelines recommending postnatal care visits at six hours, six days and six weeks after birth needed to be revised.³⁸ The mounting body of evidence demonstrated that the majority of newborn deaths were occurring during the first two days following birth and that early intervention was needed to promote and support behaviours such as warming and breastfeeding, as well as to detect, treat and/or refer complications early. For example, an analysis of data from the Projahnmo study suggested that a first visit within two days of birth was associated with a substantial decrease in newborn mortality, as compared to no visit.³⁹ Other recent research, which estimated that up to 22 percent of newborn deaths could be prevented if breastfeeding begins within the first hour, has also led to a new emphasis on promotion of immediate as well as exclusive breastfeeding.⁴⁰ As noted earlier, in SNL-assisted studies such as Projahnmo, early postnatal care, combined with antenatal counseling, led to significantly improved breastfeeding practices.⁴¹

New tools and technologies

Some of the reviews and studies have led to the development of new technologies, tools, and guidelines. For example, a multi-centre study of clinical signs in seriously ill newborns, undertaken by multiple partners and supported by SNL, WHO and USAID, identified a simple set of clinical signs that could be used in an algorithm for non-physician clinic workers to identify newborns with severe illness.⁴² This finding has led to a revised Integrated Management of Childhood Illness (IMCI) algorithm. Save the Children also worked with WHO, JHU, Aga Khan University and other partners to develop an improved neonatal verbal autopsy tool to capture and categorise underlying causes of neonatal deaths in the community, and it is now being used in a number of research studies. To assess causes of death at facility level, Save the Children collaborated with WHO to refine and expand the use of the Perinatal and Maternal Death Audit tool. SNL subsequently funded an expert from South Africa to help adapt and introduce the tool into nine hospitals in Bangladesh. With support leveraged from WHO, the government is now scaling up use of the perinatal and maternal death audits in additional hospitals.

A number of new technologies were developed, including a simplified handheld scale for non-literate users to facilitate the accurate identification and management of low birthweight and very low birthweight newborns.^{43 44} In addition, simplified gentamicin dosing regimens aimed for use in UNIJECT syringes were developed to facilitate practical, cost-effective delivery of antibiotics for neonates with sepsis.⁴⁵

Figure 5

National and Regional Strategies

In collaboration with governments and other partners, SNL conducted situation analyses in nine countries to assess the status of maternal and newborn health as well as existing health services and practices. These analyses formed the basis for developing consensus on strategic plans for improving newborn care.

Regional strategies were also developed to increase awareness about the burden of newborn mortality, generate support for improving newborn survival, and recommend actions for strengthening programmes and policies.

In Asia, Save the Children collaborated with WHO and other partners in a consultation and report on “Improving Neonatal Health in South-East Asia Region.” This document and the country-specific analyses contributed to program development and support in many of the high mortality countries in Asia.

SNL spearheaded the development of a strategic document for Africa entitled *Opportunities for Africa’s Newborns: Practical data, policy and programmatic support for newborn care in Africa*. Published by the Partnership for Maternal, Newborn & Child Health and launched at the 2006 Pan-African Congress, the book provided new data, case studies of countries making progress, and information on effective

Mobilising commitment and resources

Mobilising commitment and resources at national, regional and global levels is critical for scaling up newborn health programmes to ensure widespread and lasting impact on newborn survival. Newborn health assessments and strategies, leadership in global and national forums, improved data on costs and cost-effectiveness and increasing access to information and tools strengthened support for evidence-based newborn care (see Figure 5). Save the Children’s comprehensive *State of the World’s Newborns* report in 2001, peer review journal articles and a policy series published with the Population Reference Bureau helped place newborn health on the global agenda.^{46 47}

^{48 49 50 51 52 53 54} Building partnerships with governments and other organisations, including forming and leading an inter-agency Healthy Newborn Partnership early on, facilitated information sharing, coordination and consensus building.

Lancet series

Following the 2003 *Lancet* series on child survival, SNL staff and partners worked with *Lancet* editors to publish a series on neonatal survival. SNL led a *Lancet* Neonatal Survival Steering Team that coordinated the synthesis of evidence, built consensus around conclusions and drafted papers on the state of the art on newborn health.^{2 3 4 5 55 56} The 2005 *Lancet* series on neonatal health, as well as subsequent articles

Continued on page 23

in the *Lancet* and other peer-reviewed journals, contributed significantly to increased awareness of the magnitude of newborn mortality and the effective approaches available to address it, and helped stimulate commitment and adoption of evidence-based interventions and strategies by governments and assistance agencies.⁵⁷

Costing newborn care

To effectively mobilise resources behind increasing commitment, policy makers and planners need reliable information on the cost of adding newborn health to national health systems. SNL participated with partners in modeling the costs of reaching 90 percent coverage in the 51 highest mortality countries with the 16 interventions recommended in the *Lancet*. It was estimated that US\$2.23-4.37 billion would avert 38-68 percent of neonatal deaths, at an extra cost per death averted of US\$1100-3900 which compared very favorably with other highly cost-effective health intervention packages. The cost analysis particularly strengthened the investment case for postnatal family and community care, which were found to have relatively high impact (10-27 percent) at relatively low cost (US\$0.38-0.75 billion).⁵⁸ SNL developed costing and cost-effectiveness guidelines which have provided a standardised framework for SNL programmes and projects.

Figure 5 (continued from page 22)

policy dialogue and action. Notable for its expansive authorship--including representatives from 14 different international agencies--the book increased the focus of Africa's leading policymakers and health specialists on newborn health and provided recommendations for further action.

A similar approach followed in Latin America through the preparation of the strategic document *Reducing Neonatal Mortality and Morbidity in Latin America and the Caribbean* (LAC). SNL played a pivotal role in developing the LAC strategy by recruiting members of an Inter-Agency Working Group composed of leading health and governmental institutions including PAHO, UNICEF and USAID. In 2007, Ministers of Health in the 14 LAC countries represented on the Working Group endorsed the strategy, committing improved programming for maternal, newborn and child health.

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Financing newborn care

While it is not possible to reliably quantify the increase in financial resources specifically for newborn health, total aid for maternal, newborn and child health (MNCH) rose from \$2.1 billion in 2003 to \$3.5 billion in 2006, and per capita aid to the 68 countries most in need nearly doubled for MNCH.⁵⁹ Donors such as UNICEF, the World Bank and the development agencies of the United States, Norway, United Kingdom, and Canada have added newborn health interventions in numerous countries as part of their broader health support. In 2004 USAID launched a global programme, ACCESS, providing \$75 million for maternal and newborn health. The Gates Foundation has also broadened its support for newborn health, including a \$24 million grant to the Program for Appropriate Technology in Health (PATH) for strengthening newborn health in India through NGOs (Sure Start). Other donors are increasingly willing to co-fund newborn health research. National governments and local governments have incorporated newborn health in their MNCH plans and budgets. However, even with this increase in funding, the total amount of aid for MNCH-related activities is far below the \$10 billion that experts estimate is needed annually.⁶⁰

Global and national policies

Many development organisations such as WHO, UNICEF, and USAID have repositioned MCH as MNCH, have hired new staff to work on newborn health, and are calling for increased efforts to strengthen and expand newborn interventions. The 2005 World Health Report, in which MCH was expanded to MNCH to explicitly include the newborn, reflected the important paradigm shift, as did the MDG Task Force report, the launch of the global Partnership for Maternal Newborn and Child Health (PMNCH), the 2005 Delhi Declaration, the *Countdown to 2015* Reports and UNICEF's *State of the World's Children* reports. At the national level, newborn health has been added to health policies and programmes in numerous countries in Africa, Asia, and Latin America. Examples of improvements in policies, plans and programmes in several SNL-assisted countries are summarised in Figure 6.

Figure 6

**Improvements in Newborn Health Priorities, Policies and Programmes
In SNL-Assisted Countries (2000-2006)**

	Bangladesh	Nepal	Pakistan	India	Indonesia	Vietnam	Malawi	Mali	Ethiopia	Bolivia	Global
Newborn Policies, Programmes and Guidelines Established	✓	✓	✓				✓	✓		✓	✓
Planning & Strategy Documents Developed		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Newborn Indicators Included in Key Surveys & Systems	✓	✓					✓		✓		✓
Finances Allocated to Newborn Health	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Technical Groups Established & Mobilised	✓	✓	✓	✓			✓		✓	✓	✓
Newborn Care Included in IMCI Strategies			✓	✓		✓	✓			✓	✓

Source: SNL Annual Reports and Correspondence

Figure 7

The Healthy Newborn Partnership: Generating Global Commitment for Newborn Health

In 2000, Save the Children formed the Healthy Newborn Partnership (HNP) with Johns Hopkins University, USAID, UNICEF, the World Bank and the World Health Organization. By 2005, the HNP had grown to include 42 organisations, governments and professional associations.

The partnership's objectives were to raise awareness about the problem of neonatal mortality, mobilise support for newborn health and facilitate inter-agency communication and coordination. To achieve its objectives, HNP members held annual meetings among national governments, assistance agencies and research institutions and coordinated specific activities through ongoing working groups.

The HNP advocated for newborn health in international forums, such as conducting a high-level briefing at the 2002 United Nations General Assembly Special Session for Children, as well as meetings of the first ladies of West Africa and the Economic Community of West African States. HNP meetings held in Bangladesh and Ethiopia helped stimulate the governments to set neonatal mortality reduction targets and incorporate training curricula into national guidelines. The HNP also provided a forum for sharing research and program experience and reaching global consensus on causes, strategies, interventions and indicators as well as the need for greater emphasis on early postnatal care for both mother and baby.

In 2005, the HNP joined existing maternal and child health partnerships to form the Partnership for Maternal, Newborn & Child Health (PMNCH), now composed of over 200 members committed to the continuum of care for mothers, newborns and children.

Source: Lawn, J., Sines, E., Bell, R. (2004) *The Healthy Newborn Partnership: Improving Newborn Survival and Health through Partnership, Policy and Action* (Washington, D.C.: Population Reference Bureau and Save the Children).

Establishing strategic partnerships

Given the magnitude of the problem and challenges to address it, global and country-level partnerships are essential to mobilising commitment and achieving impact at scale. SNL shaped and participated in newborn health coalitions and actively collaborated with donors and international organisations. SNL staff participated in a number of international forums such as the Countdown to 2015 planning and working groups. SNL also leads the Child Health Epidemiology Reference Group (CHERG) neonatal group as it advances planning for new epidemiological work for estimating the global burden of disease.

Inter-agency partnerships

One of the first steps of the SNL initiative was to spearhead the establishment of a multi-organisation Healthy Newborn Partnership in 2000 (see Figure 7). As part of the effort to institutionalise newborn health within the maternal and child health context and support a continuum of care strategy, Save the Children joined with WHO and UNICEF in 2005 to create a unified PMNCH. Save the Children is a member of the PMNCH Board of Directors.

Bridging the gap between maternal and newborn health

Save the Children was one of the early proponents of the continuum of care strategy, which has two inter-related dimensions. One is to promote coordinated care from adolescence through pregnancy, delivery, the immediate postnatal period, and childhood, with particular attention to childbirth and the early neonatal period when the risk is highest. It emphasises that safe childbirth is critical to the health of both women and newborns, and that a healthy start in life is an essential foundation for future development. Equally important is the second dimension, which emphasises the need for links between households, first-level health services and referral facilities – critical links that are often lacking.^{61 62} The SNL programme has given priority to creating and disseminating the evidence on the impact of interventions at household and community level, where most newborns die.^{63 64}

Partnering with health care professionals

Save the Children works closely with professional associations, which are critical to furthering the acceptance and expansion of newborn health programmes. SNL has participated actively in the global triennial conferences of Midwifery, Obstetrics and Gynecology, and Pediatrics, and presented seminars at the Pediatric Academic Society meetings and collaborated with the International Pediatric Association to launch an international newborn health initiative in Africa in 2005. Partnerships have been developed with national professional associations, including, for example, the National Neonatal Forum of India. With SNL support, the Forum coordinated the preparation and launch of the seminal publication *State of India's Newborns*, with the participation of the Prime Minister and major donors.⁶⁵

Challenges

SNL has faced various challenges, including limited local capacity, research study delays, competition for resources with other health issues, and the need for global and national coordination and consensus building.

Challenges to scale-up

SNL faced the challenge of how to scale up proven interventions quickly, efficiently and successfully with catalytic inputs in some of the most under-resourced health systems in the world. Progress was made in a number of countries, such as India, Nepal, Pakistan and Bangladesh. Obstacles, particularly in Africa, included health worker shortages, limited research capacity, weak government systems, and high administrative costs. Implementation progress was slower than anticipated and necessitated intensive technical assistance and monitoring. In addition,

- In a number of countries, resistance from the medical establishment or other policy makers slowed down the acceptance of the delegation of certain responsibilities, such as community health workers' provision of injectable antibiotics to manage neonatal sepsis.
- A more subtle challenge is the perception on the part of some development partners that technology, often in the form of a “magic bullet,” must be the answer to a problem. There is always a role for technology, if appropriate, but the push for portable incubators and the use of the “thermospot” (to detect hypothermia) are examples that technology may not always be the answer, particularly where resources and infrastructure are limited.
- An important influence on newborn outcomes is the health and nutritional status of the mother, an area that has so far been beyond the mandate of SNL.
- Political conflict and unstable governments present a challenge to programme implementation and scale-up, although even in such situations, some programmes such as SNL in Nepal have been able to be sustained and expanded to the national level.

- Finally, while identified as key components for ensuring sustained positive impact in the lives of newborns, working in partnership and building commitment and consensus affected the pace of the programme at both the national and global levels. Coordinating with the timelines, priorities, and agendas of partners and governments required SNL to be flexible while adhering to its original mandate and timeframe.

Research study delays

Initiation of major global research studies posed a separate set of challenges. After careful development of the research priorities and criteria for selection, it took time to solicit and review the proposals for funding the studies. Once approved, delays in initiation were many, ranging from slowness of government approval to difficult field logistics and staffing problems. Some studies needed more time than expected in order to accrue adequate sample size and reach ‘maturation’ of the intervention package.

Lessons learned for future efforts

Lessons learned from SNL evaluations and reviews defining what is possible and critical for success have proven useful for informing the design of the continuing SNL project, and may be helpful to other similar programmes.

Policy and programme impact

SNL has found that initiating policy and programme change at the country-level is possible in a relatively short timeframe by engaging key stakeholders as partners from the outset. SNL used first-ever situation analyses to generate interest and commitment to newborn health and to build a coalition of committed partners. In addition, in countries where local champions in government and/or civil society were identified and supported, more rapid and sustainable change occurred. Similarly, recruiting highly capable SNL programme managers, with strong leadership skills as well as experience and linkages with governments, donors, and research institutions in their own countries, has led to successful advocacy and action.

Promoting the integration of newborn health into existing programmes -- rather than vertical newborn care -- facilitated stakeholder acceptance, early adoption, and institutionalisation of newborn care in country policies, programmes and practices. Finally, situation analyses, participatory strategic planning, and creating and linking evidence to programme design and monitoring and evaluation of outcomes has contributed to influencing policy and programme change.

Training

Effective training programmes share a number of characteristics that have maximised uptake and adoption in the programme countries.

Involving key experts early in the process to achieve consensus on content and technical accuracy as well as using global materials to strengthen or update existing country programmes and curricula have been important. The latter proved most successful when materials were adapted and field tested locally to account for the level, knowledge, and skills of providers to be trained, scope of practice and realities of work situations and available resources, and prior training. At the same time, providing early stakeholder orientation to the

training materials and promoting their incorporation into pre-service training curricula and application to existing programmes, such as IMCI, proved essential for sustainability and scale-up.

In addition to the process of material development, hands-on as well as didactic training and periodic follow-up training helped trainees achieve and maintain knowledge and skills. Phased, on-the-job training facilitated the learning process, saving time and minimally disrupting existing services. To ensure programme impact, training needs to be accompanied by simultaneously assessing and addressing the other components of successful programme implementation, including assurance of adequate funding and supplies, equipment and facilities; sufficient supportive supervision; and well-planned monitoring and evaluation.

Behaviour change communication (BCC)

Targeted behavior change strategies can be effective in improving newborn care practices, such as clean delivery practices, drying and warming, breastfeeding and appropriate care-seeking, in a majority of programme countries. Key factors identified as important for successful BCC strategies included:

- Rigorous *formative research and monitoring* that give programmes the information needed to develop effective BCC strategies, monitor progress, and make adjustments as necessary to maximise impact.
- A *limited set of priority messages* that are simple, adapted for the local context, achievable and repeated frequently.
- *Mobilisation of partners and communities* in problem identification, planning and use of data for decision making and action.
- The use of *multiple communication channels* ranging from interpersonal communication to various media, and engaging opinion leaders such as grandmothers, village leaders and national policy makers to reinforce critical messages and facilitate their acceptance by the target population.
- *Cultural sensitivity and negotiation with target audiences*, explaining why a practice or behaviour is important, relating this to local contexts and beliefs, and when

appropriate, reinforcing existing beneficial practices, resulting in more ready acceptance of behaviour change.

Development of effective newborn health indicators

To plan and implement neonatal health care strategies and programmes effectively, accurate information about newborn health must be available. Until recently, however, there were virtually no specific indicators of neonatal health or health care that were universally accepted and used, except, to some extent, the neonatal mortality rate. To implement and evaluate newborn health interventions and strategies effectively, SNL found it necessary to

- Generate reliable information on the causes of death of newborns and contributing socio-cultural, logistic and health care factors through verbal autopsy and perinatal death audits.
- Collaborate with partners to develop a core set of newborn health indicators to measure effectiveness. This involved achieving consensus among experts and programme implementers that resulted in a practical and measurable set of indicators covering antenatal care, delivery, and postnatal care.
- Test selected indicators to improve the reliability of information on mothers' knowledge, recall of care and behaviour change.
- Promote the incorporation of newborn care indicators in routine tracking and monitoring systems and surveys, such as the USAID-funded Demographic and Health Surveys (DHS), UNICEF's Multi Indicator Cluster Surveys (MICS), and the Countdown to 2015 for Maternal, Newborn and Child Survival. Between 2003-2006, newborn intervention questions were added to five DHS surveys in Asia.⁶⁶

Looking forward: The unfinished newborn health agenda

The SNL initiative has made significant progress towards achieving the objectives of its first phase. Newborn health is a higher priority on the global health agenda, and coverage and quality of newborn health care has improved in SNL-assisted country programmes. The programme has advanced the epidemiology on the number, causes and timing of neonatal deaths, effective technical interventions, BCC approaches, training and implementation strategies, and measurement indicators, and mobilised increased commitment and support for scaling up newborn health in MCH programmes. In most SNL-assisted countries, newborn health is now an integral component of national health strategies and operational plans and is being strengthened and expanded in partnership with governments and assistance agencies.

Yet for millions of infants born each year, much more needs to be done to improve their chances of survival and provide them a healthy start in life. There is also an unfinished agenda related to stillbirths and the need for approaches to address newborn mortality among the growing urban poor. Building on what has been learned, capitalising on the momentum generated, and collaborating with partners, Save the Children continues its efforts to reduce newborn mortality around the world.

With the second grant from the Bill & Melinda Gates Foundation, Save the Children is continuing to develop and validate new and improved community-based newborn health interventions and approaches. While the first six years focused primarily on South Asia, more attention is now directed to the high mortality countries in sub-Saharan Africa where progress has been slower. Relatively small efficacy trials have led to larger effectiveness trials and operations research to test delivery of scalable, integrated packages, especially those that fill the postnatal care gap. Most studies not only measure access to newborn care services and utilisation of newborn care practices, but also include a costing component, human resource tracking, and other health system process measures. Researchers are increasingly from local institutions with more need for capacity strengthening and technical assistance, partnerships are broader given growing support for newborn health, and more emphasis is being placed on integrating newborn health into large-scale, national health systems.

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