

# Advancing the state of the world's newborns

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Despite declines in global mortality rates in infants and children under five years of age in recent decades, neonatal mortality has remained relatively static. Consequently, approximately two-thirds of deaths in infants and over one-third of deaths in under-five-year-olds now occur in the first 28 days of life (i.e., the neonatal period). There are an estimated four million neonatal deaths per year, with a further four million babies dying during the last trimester of pregnancy. The risk of dying in the first month of life is 10–15-fold higher than the risk during the post-neonatal period of infancy (2–12 months) and approximately 30-fold greater than during young childhood (13–60 months). The first week of life is a particularly high-risk period when more than two-thirds of neonatal deaths occur. In order to sustain gains in child survival and achieve Millennium Development Goals, as highlighted during the UN Special Session Summit for Children, held in New York in May 2002, a new focus is needed on improving neonatal health, particularly outcomes in the late fetal and neonatal periods.

A disparity of up to 30-fold exists between the countries with the highest and lowest neonatal mortality rates (NMRs), the highest rates being in sub-Saharan Africa. Although the regional average NMR is lower in Asia, this area accounts for over 60% of the estimated global total. Strategies for advancing neonatal health must prioritize these regions with the worst neonatal health outcomes.

Globally, most births and neonatal deaths take place in the home, often outside the formal health care system. The useful model of delays in access to maternal care, involving elements of recognition, decision-making, transport to care and receiving quality care, is also valuable in understanding the underlying causes of fetal and neonatal deaths. Nevertheless, little is known about traditional household practices in the intrapartum and postnatal periods, illness recognition, and the sociocultural and logistic factors that affect care-seeking by families for their newborn infants.

## Causes and determinants of neonatal mortality

Neonatal deaths are largely the result of infections (32%), birth asphyxia and injuries (29%), and complications of prematurity (24%), according to 2001 estimates by WHO. The health of the mother during pregnancy, delivery and the postpartum period is intimately linked with the health of her newborn, emphasizing the need to integrate maternal and neonatal health care strategies. Low birth weight (LBW), an indicator associated with the social status of women, has profound implications for neonatal health and survival and is an underlying factor in 40–80% or more of neonatal deaths. This is of particular importance in South-East Asia where LBW rates are the highest, reaching nearly one-third.

A substantial proportion of fetal and neonatal morbidity and mortality in developing countries could be prevented through wider implementation of proven, affordable interventions during pregnancy, delivery and the early postpartum and neonatal periods. In order to move into action, policy-makers, programme managers and other stakeholders must embrace neonatal health as essential for future improvements in child survival, but also as a means to improve maternal health. This involves a recognition that neonatal health care is affordable and that routine life-saving interventions do not necessarily require highly technical hospital units or specialists. Neonatal mortality can be reduced even when socioeconomic development is lacking. Indeed, improved neonatal and infant survival may encourage development and demographic transition as, historically, fertility rates fall as infant mortality is reduced.

## Conceptual framework for maternal and neonatal care

In order to achieve effective, affordable and sustainable reductions in fetal and neonatal mortality, neonatal health programmes must be placed within a broader context of improving maternal and child health, integrated within safe motherhood and child survival programmes. This is the current policy of WHO and UNICEF through the Integrated Management of Pregnancy and Childbirth (IMPAC) and the Integrated Management of Childhood Illness (IMCI) for neonates more than one week old. The new Partnership for Safe Motherhood and Newborn Health will also bring together many agencies and organizations to improve outcomes for women and neonates.

Save the Children Federation–US has developed a conceptual framework for household and community neonatal and maternal care that focuses attention on five pathways: (a) routine maternal and neonatal care and services of good quality; (b) response to maternal danger signs; (c) response to the non-breathing newborn; (d) care for the low-birth-weight infant; and (e) response to neonatal danger signs, particularly those signalling infection. The framework emphasizes that the health of the mother and the newborn are inextricably linked; thus, intervention strategies must encompass the health of the mother and antenatal, intrapartum and immediate and routine postpartum maternal and newborn care, so as to improve perinatal and neonatal health outcomes. Ultimately, in order for gains in neonatal health to be realized, mothers must be empowered and equipped to recognize, seek and obtain appropriate care for themselves and their babies. Similarly, health care providers at all levels must be better educated on essential newborn care, and closer links between the home, health centre and regional hospital must be forged.

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## Closing the gap in neonatal survival

To advance neonatal health and survival globally, the greatest need is to devise better ways to deliver proven interventions as a package in a cost-effective, sustainable manner. Investment is needed in programmes and research that respond to priority needs and provide practical and sustainable solutions that will benefit the poor (see Table 1). In order to bridge the gap between research and implementation, it is imperative that researchers communicate closely from the outset with government officials, stakeholders, programme managers and others who will be responsible for managing scarce resources and translating research findings into effective health care programmes.

Identifying and overcoming delays in receiving quality care is fundamental to intervention strategies for the neonate. Formative research is required to understand local beliefs and practices, particularly in the home, so that effective behaviour-change strategies and implementation plans can be developed that take account of the perceived needs of users as well as the resources necessary for the care providers.

Although many interventions are known to improve neonatal health and survival, there is a lack of community-based effectiveness trials of promising packages of maternal and neonatal care. There is a particular gap in health care delivery during the immediate postpartum period when most neonatal and maternal deaths occur. Some small-scale successes exist, but it is necessary to illustrate how effective interventions can be provided on a large scale. Thus, the components of the intervention packages, the health workers capable of providing the needed services, and the health care infrastructure (e.g. training, supervision, equipment and facilities) necessary to support the interventions must be based on local neonatal health problems and capacity and must have the full support of the local community.

The current lack of data on the magnitude and causes of fetal and neonatal morbidity and mortality is a limiting factor in advocacy and programmatic planning for neonatal health. Thus, strengthening of locally owned information systems, including the recording of births and deaths, and application of information to decision-making at all levels are required to guide resource allocation. As programmes incorporate neonatal care, the impact on fetal and neonatal mortality and rates of low birth weight must be monitored to enable policy-makers and programme planners to use existing resources more effectively. Validated instruments (for example, verbal autopsy) are needed to ascertain causes of fetal and neonatal deaths more accurately in the community and to assess the contribution of sociocultural and health system factors.

Although we already know a great deal about how to care for neonates, further research is required, particularly regarding the prevention, recognition and management of birth asphyxia and serious neonatal infections in the community and the development and evaluation of packages of care for the low-birth-weight baby at the community level.

## Conclusions

With wider recognition of the importance of neonatal health globally, and the increasing prioritization of resources to focus on the inequities in health care for mothers and their newborns, unprecedented potential to improve neonatal as well as maternal health and survival now exists. In order to achieve lasting and measurable gains, however, four key ingredients are needed: (a) serious political commitment to maternal and neonatal health and survival by political leaders and decision-makers; (b) strong focus on the neonate, integrated into the

Table 1. Factors influencing priorities in newborn health

Factor	Priority in programme action
Information about maternal and neonatal health	Improved coverage and quality of information regarding magnitude and causes of maternal, fetal and neonatal deaths, especially at the community level
Prevalent causes of death	Infections, birth asphyxia, complications of prematurity and low birth weight
Time of intervention	The first week, and especially the first 24 hours of life, when most neonatal deaths occur (delivery and early postpartum care)
Place of intervention	Africa (highest NMRs) and South-East Asia (highest number of neonatal deaths)
Place in the health care delivery system	The home and community, where most deaths occur
Delays in accessing quality care	Promotion of improved understanding of reasons for delays, recognition of danger signs, more rapid decision-making and transportation, and provision of high-quality, affordable, acceptable medical care for mother and baby
Choice of interventions	Focus on: (a) interventions of benefit to both mother and baby (e.g. tetanus toxoid immunization, targeted maternal nutritional supplementation, treatment of maternal infections, skilled health care at delivery, postpartum visitation) and (b) interventions targeted towards prevention and management of major risk factors for causes of neonatal deaths
Process of implementation	Participatory communication between communities, programme managers, researchers and policy-makers; locally owned programmes

framework of existing safe motherhood and child survival strategies, and with close dialogue among researchers, programme managers, policy-makers and donors; (c) realistic and efficient allocation of resources for maternal and neonatal health, with stress on community-based care and enhancing the capacities of mothers to care for their newborns; and (d) effective implementation with clearly defined supervision, monitoring and evaluation mechanisms. In this context, programmes will emphasize proven preventive and curative measures such as maternal tetanus toxoid immunization, skilled health care at delivery, early and exclusive breastfeeding, hygiene, warmth, and care-seeking for danger signs, within the local cultural constructs and health care delivery systems. Meanwhile, research will define better ways of doing what has already been proved to work and advance the state-of-the-art in preventive and curative neonatal care through greater understanding of local customs and practice, removing barriers to care-seeking and introducing innovative preventive and curative interventions that are effective, affordable and sustainable within the local community. ■

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