

Conclusions and Next Steps

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This meeting was the first of its kind in which researchers in neonatal health from around the world gathered to discuss the global state of newborn health, results of recent research, priority interventions and gaps in knowledge, and perhaps most significantly, how to coordinate their research efforts to maximize sharing of information in a synergistic manner to most effectively advance perinatal and neonatal care in developing countries.

Major factors influencing research priorities are summarized in Table 6.

It is clear that a substantial proportion of perinatal and neonatal morbidity and mortality in developing countries could be prevented through wider implementation of interventions already shown to be effective and affordable. Examples of such proven interventions include maternal tetanus toxoid immunization; skilled health care at delivery; clean delivery practices; immediate, exclusive breast-feeding; keeping the baby warm and postnatal contact. However, in order for many policy makers, program managers, and other stakeholders to embrace newborn health as a priority and implement interventions for the newborn on a broader scale, they must be shown that improving newborn health care is essential to ensure that the gains realized in child survival over the past few decades continue into the future. They must also understand that many life-saving interventions do not require highly technical hospital units or specialists; that newborn care is affordable; that newborn mortality can be reduced even in the poorest of countries; and that newborn survival is central to fueling demographic shifts from high fertility and mortality to low fertility and mortality.^{83,84} In many cases, however, further research is needed to devise, adapt, and evaluate sustainable solutions, particularly at the community level.

In order for neonatal health care activities to be effective, acceptable, affordable, and sustainable, they must be researched and implemented within a broader context of improving maternal and child health, and be integrated within existing safe motherhood and child-survival programs; new vertical programs are not the answer. For example, the Integrated Management of Pregnancy and Childbirth (IMPAC) package, and the Integrated Management of Childhood Illness strategy are two integrated activities that will save newborn lives, particularly when applied at the community level.⁸⁴ Much of neonatal mortality will be

prevented by improving maternal health and capability, but such gains will require long-term community development, including improvements in education and health, beginning in childhood, along with enhancement of women's status in the home and community.²

Neonatal survival interventions must encompass home-based care, where the majority of neonatal births and deaths occur; and take into account local sociocultural-behavioral determinants of newborn health and disease. Links with front-line health workers in the community, and with referral facilities must be established. Mothers must be empowered and equipped to recognize, seek, and obtain appropriate care for themselves and their newborn. Similarly, health care providers at the front line must be trained in essential newborn care and in indications for referral. In addition, supervision of community health workers must be provided to ensure quality of care.

In order for research to ultimately impact newborn health and survival in the community, researchers must communicate from the outset with the governmental officials, stakeholders, and program managers that are responsible for prioritizing scarce resources and translating research findings into effective health care programs.

Table 6 Factors Influencing Research Priorities in Newborn Health in Developing Countries

- 1) The neonate is highly vulnerable relative to older infants and children, especially during the early neonatal period.
- 2) Most newborn deaths are due to preventable causes.
- 3) Most births and newborn deaths occur at home.
- 4) Low birth weight neonates are especially vulnerable to death and disease, as well as long-term adverse sequelae.
- 5) Neonatal mortality rates are highest in low-income regions of Africa (western and eastern) and Asia (southcentral).
- 6) Continued success in advancing infant and child survival is dependent on improving newborn health and survival at the community level.
- 7) The health of the mother has profound effects on the health of the newborn, emphasizing the need to synergize newborn and maternal health care programs.
- 8) Little data on the magnitude and the causes of perinatal and neonatal mortality are available to guide resource allocation.
- 9) Little is known about newborn care and care seeking for illness in the community.
- 10) Successful translation of research findings into programs that save newborn lives requires communication between researchers, program managers, and policy makers from the outset of the research.
- 11) Researchers must partner with and mobilize communities to participate in research and programs as they are introduced.

Table 7 Principles for Intervention Research to Have an Optimal Impact in Developing Countries

The intervention to be tested

- 1) Has potential for major impact on principal determinants of perinatal and neonatal morbidity and mortality.
- 2) Is based on relevant local formative research.
- 3) Addresses a critical information gap.
- 4) Is feasible and affordable in the local setting.
- 5) Is feasible and affordable for adaptation and scaling up in a future programmatic context.
- 6) Is population/culturally appropriate.
- 7) Has support from policy makers, stakeholders, and program managers within the country and community in which the research will be conducted.
- 8) Has potential to influence policy.

Thus, steps necessary to scale up interventions in a timely, affordable, and effective way must be taken into account in study design. Likewise, when considering where to invest in research, funding agencies should adopt criteria that ensure these principles have been considered in the study's conception and design (Table 7). Perhaps most important of all, to ensure that research and programs are relevant and acceptable to communities, community participation in and ownership of these activities to improve newborn health must be forged from the outset.

With these considerations in mind, the following broad activities were considered of high priority to advance newborn health and survival.

GENERATING EPIDEMIOLOGICAL DATA AND SUPPORTING PROGRAM MONITORING

Lack of accurate global, regional and country-specific data on the magnitude and causes of perinatal and neonatal morbidity and mortality is limiting advocacy and program planning in newborn health. Strengthening of information systems, including birth and death registration, and dissemination of information on local levels of newborn morbidity and mortality, and their determinants are needed to guide resource allocation and program and research priorities. Moreover, as programs incorporate newborn care their impact must be monitored and accurate data fed back to those involved in health policy and program decision making to enable them to more effectively use scarce resources. Integral to documenting and monitoring newborn health status is the need for improved verbal autopsy instruments to enable more accurate determination of causes of perinatal and neonatal deaths in the community, and to assess the contribution of sociocultural and logistical factors.

UNDERSTANDING HOUSEHOLD PRACTICES AND THEIR DETERMINANTS

Formative research is needed to better understand local beliefs and practices and the reasons behind them, so that effective behavior change strategies can be developed and evaluated. Care-seeking behavior for newborns is particularly critical in determining their health, and identifying and overcoming barriers to and delays in seeking care forms a foundation for intervention strategies for the neonate. Moreover, recent research has highlighted the essential role of community participation in and ownership of health research and programming in determining their effectiveness.⁵⁴

DEVELOPING APPROACHES TO IMPROVE DELIVERY OF CARE

We need to understand how to better provide what we already know works. Although many interventions are known to improve newborn health and survival, community-based effectiveness trials of promising models of packages of life-saving preventive and curative newborn care are lacking. The components of intervention packages, the health workers capable of providing the needed services, and the health care infrastructure (e.g., training, supervision, equipment, facilities) needed to support the interventions must be determined based on assessments of local needs and resources, and demonstrated at the community level.

RESEARCH TO ADVANCE THE STATE OF THE ART

Although we know a great deal already about how to care for newborns, further research is needed to identify new, sustainable, cost-effective, culturally sensitive interventions that are embraced within communities. Research priorities will vary depending on local needs, and the research activities initiated must be shaped by local will and resources. In general, however, research is especially needed within the community in sub-Saharan Africa and south Asia. Particularly promising areas of investigation include but are not limited to detection and management of maternal reproductive and urinary tract infections; breast-feeding promotion and maternal and/or newborn nutritional supplementation with micronutrients; prevention of mother-to-child HIV transmission; and prevention, recognition and management of infections, birth asphyxia, and hypothermia, particularly in low birth weight infants. Further research is specifically needed to identify new, simplified and innovative interventions for some of the difficult problems such as preventing and managing birth asphyxia and meconium aspiration in the community when referral is not possible.