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Why and how to invest in neonatal health

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Summary The proportion of neonatal deaths in children has significantly increased, comprising at present almost 40% of all the nearly 11 million deaths of children under the age of five. In order to further reduce child mortality, substantial prompt attention to and reductions in neonatal mortality and morbidity are necessary. The reasons for insufficient investment in neonatal care are mostly based on incorrect assumptions about the importance, cost, and difficulty of tackling the issue. Further research is needed on the cost-effectiveness of neonatal interventions, but there is sufficient knowledge and evidence on the range, effect and cost-effectiveness of interventions to support significant increase in investments and broader programmatic implementation of available approaches. The continuum of care that follows the life-cycle is part of a high impact program delivery, supported by enabling environment, encompassing strong political commitment and strengthened comprehensive health system, from community level to clinical services. The international community needs to increase its funding and extend programs in close coordination with national health programs that are translated into partnerships at national and international level.

Current situation and trends in neonatal morbidity and mortality worldwide

Neonatal mortality represents almost 40%[1] of all the nearly 11 million deaths of children under the age of 5 years.[2] This amounts to 4 million babies globally dying within 30 days of birth (neonatal period).[1,3] Recent estimates suggest that 34 out of every 1000 babies born in developing countries die before they reach 1 month of life.[1] The conditions causing neonatal deaths can also result in severe and lifelong disability in babies who survive. Even if evidence is limited, it is estimated that each year over a million children who survive birth asphyxia develop problems such as cerebral palsy, learning difficulties and other disabilities.[4]

In the 2000 United Nations Millennium Summit the international community committed to reducing the child, newborn and maternal mortality as part of the Millennium Development Goals (MDGs). The fourth goal (MDG4) sets to reduce deaths of children under age 5 by 66% by 2015.[2] Even if there has been a significant decline in mortality of the under fives in developing countries, the reduction has been mainly in deaths after the first month, whereas neonatal mortality, especially for the first week of life, has remained relatively static (Fig. 1). As a result, the proportion of child deaths in the neonatal period has significantly increased, and it is evident that the child mortality rate

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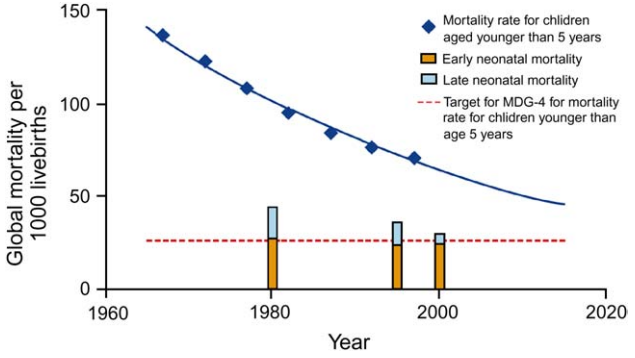

Figure 1 Meeting MDG-4: trends in child mortality among those younger than age 5 years and in first 28 days of life, 1965—2015.[3] Permission to reproduce the figure received from Elsevier and WHO.

will not reduce further without substantial attention to and reductions in neonatal mortality.[3]

The majority of the neonatal deaths occur during the first week of life.[5] In addition to the 4 million neonatal deaths yearly, stillbirths (dying in utero during the last 3 months of pregnancy) cause another 3—4 million deaths in children under the age of 5.[4,6] This means that millions of deaths—all stillbirths and almost two-thirds of neonatal deaths—occur within a very short period, from 22 weeks of gestation to 7 days after birth (the perinatal period). Perinatal causes also include many of the neonatal deaths occurring after the first week.[5] According to current estimates, intra-partum-related neonatal deaths cover 23% of global total neonatal deaths, and intra-partum stillbirths comprise 26% of global stillbirths.[7] Yet, the majority of women in developing countries with the highest neonatal mortality deliver without a skilled attendant, and even fewer have access to emergency obstetric and neonatal care.[3,4]

There is a vast variation in neonatal mortality between low-income and high-income countries.[1] Poverty is an underlying cause of many neonatal deaths, and of the 4 million deaths, only 1% of deaths occur in 39 high-income countries. Even within countries, there is disparity in stillbirths and neonatal deaths between the richest and poorest 20% of the population (Fig. 2). This is true even in the most developed countries.[3]

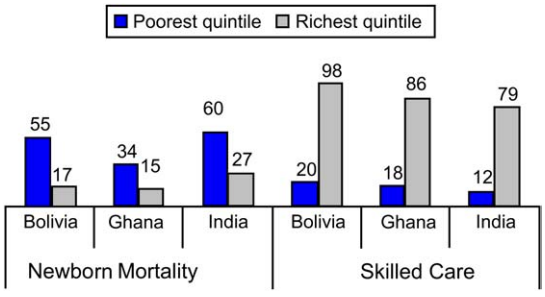

Figure 2 Neonatal mortality rates and access (%) to skilled care at delivery. Examples of disparity between the richest and poorest quintile of population.[8] Permission to reproduce the figure received from Elsevier and WHO.

The reduction of infant and child mortality has advanced more slowly in poor countries.[2] Some regions of the world have made great progress in reducing NMRs, but the inequity between rich and poor countries continues to increase, with faster reductions in rich countries. The communities with the most neonatal deaths often have least information on the deaths and the least access to cost-effective interventions to prevent and treat them. In addition, the research and trials of interventions focus primarily on the 1% of deaths in rich countries.[3]

With regards to geographic distribution, the epidemiological trends show that the situation with regards to neonatal deaths is the most alarming in Africa and Asia (Fig. 3).[4] The countries with the highest rates of neonatal mortality are mostly in sub-Saharan Africa, and there has been no measurable fall in the regional average NMR during the last decade.[2,3] Conversely, some estimates indicate a raise in the NMR in the continent. Due to their large populations, the countries with the largest absolute numbers of neonatal deaths are mainly in South Asia.[4] India alone contributes a quarter of worldwide neonatal deaths, and has only seen a reduction of 11% during the last decade. In general, many countries in Southeast Asia have seen a reduction in neonatal deaths, including Indonesia with 50% reduction, but in the majority of countries in South-Central Asia only limited advances have been made resulting to overall limited progress.[3]

Regarding the main causes of stillbirth and neonatal mortality and morbidity (Box 1, Fig. 4) it is astounding that the rates are still as staggeringly high as they are. Effective measures for reducing neonatal deaths are well known, and there is a broad consensus on a set of proven interventions. A substantial proportion of neonatal morbidity and mortality in developing countries could be prevented through appropriate adaptations and applications of relatively simple interventions.

Why have we not invested in neonatal health?

Even with the available knowledge and technology, neonatal health is not part of national and international agendas and not enough has been invested in neonatal care because of widespread under-reporting of stillbirths and neonatal deaths. Policymakers do not have adequate information that would make the problem visible to them.[1,9] This is partly due to the fact that most of the countries with high rates of neonatal deaths also have the lowest rates of vital registration of births and deaths. Moreover, neonatal health indicators are often not included in Safe Motherhood or Child Survival program evaluations, nor have they been among the outcomes of interest of global agencies and initiatives. Thus, current estimates, although startlingly high, may still underestimate the true burden.[10]

The paucity of available information and evidence for impact of interventions on neonatal mortality contributes to the problem. Cost-effectiveness data are scarce or totally absent.[10,11]

Partly as a consequence of lack of adequate information, it is also still widely believed that the advances in obstetric and neonatal care can only be reached through costly and technologically sophisticated methods (e.g.,