

Decrease Death Rate of Neonates

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Neglected diseases still kill and disable too many, but no age group has in this regard received less attention than newborns. A newborn or neonate is a human from age 0 to 28 days. Worldwide, their contribution to death and disease is overwhelming and unequalled by any condition, while at the same time, its prevention and treatments are simple, relatively cheap, and efficient.

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1. Definition of Live-Birth

In 1950, mainly for public health and statistical purposes, the WHO defined the term “live birth” as any human wholly extracted from the mother, whatever the gestational age, showing any sign of life, such as voluntary movement, heartbeat, or pulsation of the umbilical cord, for however brief a time ^[1]. The WHO recommends a declaration of birth, dead or alive, from 22 weeks post-menstrual age. Although this definition appears clear in theory, in clinical practice, cultural, environmental, and emotional factors and ignorance lead to uncertainty even in high-income countries, let alone where no skilled birth attendant is available. For instance, many low- and middle-income countries (LMIC) lack precise post-menstrual age information and skilled birth attendant. Even high-income countries are not spared from these limitations to a certain extent.

2. Human Rights of the Newborn

The bases for neonatal rights were laid in 1948 when the Universal Declaration of Human Rights proclaimed the inalienable rights to which everyone is entitled as a human being ^[2]; everyone including every newborn. Much later, the Convention on the Rights of the Child (CRC), adopted by the United Nations General Assembly in 1989, ensured that children’s health became a human rights issue ^[3]. According to Article 24 of the CRC, all children have a right to the highest attainable standard of health and health care, and the member states have an obligation to reduce child mortality.

The United Nation’s Committee on the Rights of the Child has issued several resolutions specifying newborns as part of the child’s right to health. For example, General Comment No. 15 reinforced the legal obligations of states to reduce child mortality and “urged particular attention to neonatal mortality, which constitutes an increasing proportion of under-5 mortality” ^[4]. Other fundamental documents supporting newborn rights include the Parma Charter on the Rights of the Newborn (2011), which provides a list of rights related to the promotion and protection of newborn health ^[5], and the Abu Dhabi Declaration for Women and Children (2015), which calls for a more strategic focus on reproductive, maternal, newborn, child, and adolescent (RMNCA) health in humanitarian and fragile settings ^[6].

These international documents of law recognize that newborns have fundamental rights and freedoms, including the rights to survival, health, development, legal identity from birth, protection from harm, violence, and neglect, and a caring, loving, and nurturing environment everywhere, even in humanitarian and fragile settings. Yet, despite this international legal framework being in existence since several decades now, when it comes to weighing up the choices based on moral, emotional, religious, and financial investment for life-and-death decisions, adult and child life is still globally higher valued than newborn life ^[7].

3. Measures

Neonatal mortality has been high for so long that it has become a routine. The leading causes and associations of neonatal mortality have been identified: birth-related complications and asphyxia; complications of low birth weight and prematurity, notably hypothermia; and infection. However, these are tightly interlinked, and many neonates will die from mixed conditions. Furthermore, in LMIC undoubtedly even much more, considerable morbidity is poorly identified and quantified, and information on outcome and long-term consequences remain scarce. Therefore, possibly the most critical

ingredient for global improvement of neonatal survival would be increased visibility and consideration for human rights and respectful care.

To tackle the burden of neonatal diseases, cost-effective interventions need urgent implementation. In addition, interlinked pathologies require intervention bundles based on specific and detailed data to identify regional bottlenecks and needs. The foundations for improvement lie in better data, deepening the knowledge on morbidities that lead up to the three main causes of death as well as the development of tools and strategies adapted to the local context. Without this knowledge, most improvement strategies will lack the substance for precise, cost-effective, targeted intervention and follow-up.

3.1. Perinatal Care—Prevention of Asphyxia

Coordinated perinatal quality obstetric and neonatology expertise is needed to reduce perinatal hypoxia and involves antenatal care, skilled intrapartum care, and monitoring fetal wellbeing during delivery. Improving antenatal and intrapartum care has been clearly shown to reduce the fresh stillbirth rate and increase neonatal survival.

Intrapartum care needs uninterrupted continuity with postnatal care by skilled professionals in neonatal resuscitation, thermal control, as well as evaluation and identification of at-risk patients in need of additional follow-up. Systematic immediate evaluation of the newly born neonate by the APGAR score is simple to adopt and provides much more than standardized data to understand early adaptation, it prompts a very early initiation of neonatal monitoring, within the first Golden Minute of life, the essential period when postnatal resuscitation is highly effective. Unfortunately, proven clinical scoring tools, such as the Apgar and Sarnat scores, are often given little appreciation in LMIC for fear of repressive judgment on obstetric performance, where constructive support from healthcare administrations and training may actually lead to their virtuous use in a quality improvement cycle.

Neonatal resuscitation within the first minute is simple and effective in 99% of cases. Its indication is based on two single, easily identifiable parameters, breathing and heart rate. In the 10% of neonates that need some form of it, resuscitation interventions are very standardized, following simple steps that are easy to learn and remember by the acronym T-ABC—thermal control, airways, breathing, and circulation. Basic neonatal resuscitation training requires only a couple of hours of instruction and hands-on training. It is accessible even to healthcare staff with low general education without expensive equipment. It needs an implementation program, with the training of local instructors, staff training and regular refresh.

3.2. Thermal Control

Within neonatal resuscitation and throughout neonatal life, thermal stability has been shown to significantly reduce mortality. To maintain thermal balance, it is essential to detect cold stress early, before hypothermia occurs, as it leads to exhaustion of oxygen and glucose even before hampering thermosensitive metabolic processes. Understanding the seriousness of cold stress with a hand-touch evaluation of the extremities can guide low-cost interventions to prevent hypothermia, such as avoiding bathing, rapid drying, skin-to-skin care, and clothing and wrapping. More specifically, for LBW and premature neonates, adapted and robust technical devices will have to be made available for LMIC, including training and maintenance. Updated thermal guidelines stressing the prevention of cold stress, the use of cost-effective technical equipment for those at highest risk and, most importantly, education on thermal care of the newborn are priorities.

3.3. Tackling Prematurity

As prematurity prevention has remained unsuccessful so far, it is necessary to apprehend its specificities and prevent complications. Care for the preterm neonate is also multi-disciplinary, starts antenatally with corticosteroids for lung maturation, continues perinatally with safe birth management and requires immediate, anticipated support at birth. Neonatal resuscitation is even more critical than in full-term neonates but remains straightforward, although highly dependent on airways and breathing management that needs smooth extension into supportive care practices. Simple and effective thermal care strategies, such as kangaroo care, also minimize the first cause of death in prematurity, RDS. Hypoxia due to respiratory disease can be avoided in many cases with relatively inexpensive equipment, notably, with blended oxygen and continuous positive airway pressure (CPAP).

Nutrition is vital and should not be delayed but feeding management of the preterm is technical and needs specific training. Breastmilk protects against necrotizing enterocolitis and starvation and needs to start early in preterm neonates too.

Some essential cost-effective technical solutions and strategies are needed, too. Essential, robust, and low-cost equipment must become available globally, such as incubators, phototherapy and adapted CPAP devices [8][9]. The

expertise to run and repair these devices is clearly essential and should combine with an appropriate quality control cycle based on reliable data. For a cost-effective support, preterms, therefore, need to be taken care of in reference centers.

3.4. Infections

Whether in high- or low-competency centers, neonatal sepsis is highly prevalent in low-income settings and is a leading cause of neonatal mortality, with likely life-long, though still unquantified, disabilities. Education, safe delivery practice, and access to quality care are priorities in the fight against neonatal sepsis. In addition, access to diagnostic tools and microbiological documentation, and the availability of second- and third-line antibiotics is needed. However, without implementing infection control and antibiotic stewardship programs, neonatal mortality and morbidity will continue to soar. Resistances will continue to increase the burden of death and disability globally, making this target of importance for low- and high-income countries alike.

3.5. Broader Structural Interventions

It cannot be stressed enough that reliable data is paramount to identify specific bottlenecks and to follow-up corrective interventions. Such data need to include quality of care and user experience parameters. If epidemiological data remains of low quality, un-standardized, and poorly reported, the frightening reality will remain underestimated and poorly understood.

Training healthcare professionals is essential. Retaining and supporting trained staff requires a safe and sustainable work environment with essential functional equipment and an acceptable ratio between patients and healthcare professionals. These conditions are more easily gathered in high-competence centers.

As long as high-risk deliveries occur away from these high-competence centers, a significant part of delivered neonates will need an urgent and safe referral. Neonatal transport is known to worsen the outcome significantly. Today, in LMIC, high-level centers are insufficient in numbers and often neither equipped nor staffed better than lower-level centers. Specific transport equipment and teams are rarely available, further worsening the patient condition during referral, and finally, overwhelming referral centers with dying patients. The resulting high mortality rates undermine the population's trust, closing a circle of system failures. Regionalization of high-competence centers is essential and requires firstly excellence in low-risk situations, not at least for reputation and education purposes, before expanding expertise into high-risk care. If reference centers only receive desperate cases, their reputation will remain undermined.

Rights and Respect for Every Newborn

Although neonates are the future of all societies, it is saddening to realize that their lives remain considered of lesser value. These considerations may originate from the traditional high mortality at birth and inherent desire to avoid investment into such high risk, but also from a legal construct dividing a physiologic continuum into binary rights split by birth. Lower value often comes with lower respect. Neonatal life may well, in the first place, suffer from under-recognition, under-consideration, and lack of respect. Integration of newborn rights into laws and regulations remain an insufficiently met obligation of governments ^[10], as do clinical protocols and guidelines for delivering respectful and dignified care to newborns. Respectful care is paramount for patient trust. To meet SDG 3.2, the world will need to transform newborn care by acknowledging their legal rights.

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