

## Neonatal mortality in the framework of the Millennium Development Goals and new post-2015 goals

The unprecedented progress in the reduction to a half of maternal and infant deaths worldwide in the past two decades has been called the greatest success in the history of human development, driven by the world health priorities of the Millennium Development Goals (MDGs).<sup>1</sup>

However, there is still an unfinished ambitious agenda: deaths within the first 28 days of life, which account for more than half of under-five deaths in most regions worldwide (44% globally), neonatal and congenital diseases, which account for almost 10% of the worldwide burden of morbidity, and disability, which is increasingly important in middle- and high-income countries.<sup>2,3</sup>

Here I will review the published tendencies, whose purpose is to end preventable newborn deaths and stillbirths, which are closely related to the reduction in maternal mortality, and report on the progress of newborn health up to 2012 (with emphasis on statistics from Argentina, which adopted the MDGs in 2000)<sup>4</sup> and, based on multinational analyses and consultation with multiple stakeholders, present new goals for 2015-2035.<sup>5</sup>

Worldwide, the average annual rate of reduction in neonatal mortality (NM) between 1990 and 2012 (2.0%; in Argentina, 3.3%) was much lower than that in under-five mortality (3.4%) and lower than that in maternal mortality (2.6%). For Argentina, the reduction in the rate of NM between 1990 and 2015 was 57.7%, which is below the two-third reduction established by the MDG. Neonatal deaths caused by perinatal conditions reduced only 10%, whereas those caused by congenital malformations increased 64%, and those from "other causes" decreased 38%.<sup>6</sup>

A little-known fact is that 2.6 million annual fetal deaths (approximately 50% during birth) remain invisible because they are left out of global monitoring mechanisms, such as the study of the global burden of disease, routinely reported by the United Nations (UN) based on vital records or routinely measured in UNICEF's Demographic and Health Surveys or Multiple Indicator Cluster Surveys.<sup>7</sup> Leaving out stillbirths, we are ignoring their effect on women and families, thus underestimating the benefits of making investments in perinatal health care.

In Argentina, the reduction observed in fetal mortality (FM) was associated with an increase in the number of preterm live births.<sup>8</sup>

Since the MDG era has come to an end, health policies after 2015 (the so-called post-2015 era) should extend their focus beyond survival to include *well-being* and *human capital*, the increasingly important *disabilities* and non-communicable chronic diseases (NCCDs), *mental health*, and the relationship between *environment* and health.

### Neonatal mortality goals for 2035

National goals were set for 2035 in relation to NM ( $\leq 10$  per 1000 live births) and FM ( $\leq 10$  per 1000 total births), in line with the under-five mortality goal of  $< 20$  per 1000 live births and the rate of maternal mortality  $< 50$  per 100 000 live births. According to the vital statistics for 2015 described by the Health Statistics and Information Department (Dirección de Estadística e Información en Salud, DEIS) of the Ministry of Health of Argentina and the Every Newborn action plan,<sup>5</sup> NM was 6.6‰; FM ( $> 1000$  g), 4.8‰; under-five mortality, 11.3‰; maternal mortality, 39/100 000; and NM as a percentage of under-five mortality, 58.4%. These results are comparable to those of Brazil, Chile, and Uruguay.

The factors driving such progress vary, but some are recurrent; changes in fertility and the gross national income are important predictors in middle-income countries. However, the analysis of health system factors is restricted by the lack of data on coverage and maternal and neonatal care. Few high-impact neonatal interventions are measured in household surveys and national registries, and some, such as neonatal resuscitation or the use of antenatal corticosteroids for preterm birth, cannot be determined.

In countries where NM is already below 10 per 1000 live births, continued progress is critical. The equity gap is substantial in many countries (in Argentina, in 2015, NM ranged between 4.5‰ and 14.5‰), so it is necessary to develop specific population action plans aimed at reducing such inequalities. It is worth noting that, as neonatal intensive care extends, countries should systematically track disability and NCCDs.<sup>5</sup>

### Summary of priorities to speed up the progress of neonatal survival towards 2035<sup>5</sup>

- Putting the emphasis on the time of birth is advantageous for women, reduces FM and NM, and also prevents disability.
- The three main causes of NM are severe infections, and childbirth and preterm birth complications.
- Focusing actions on preterm and small-for-gestational-age neonates is crucial for outcomes (> 80% of neonatal deaths, of which, two-thirds correspond to preterm infants).
- The reduction in the rate of fertility is strongly related to the decrease in the rate of NM in low- and middle-income countries. There is an urgency to address delays because newborns may die in a matter of minutes, causing FM and newborn deaths, a sensitive marker of the health system's effectiveness.

### Post Millennium Development Goals and new frontiers beyond survival<sup>5</sup>

- Disability following perinatal conditions (especially in preterm infants) is mainly observed in middle-income countries with variable neonatal intensive care quality and doubles that of high-income countries.
- The prevention of preterm and small-for-gestational age newborns, as well as their post-natal care, are decisive for the future progress in reducing deaths, disability, delayed growth, loss of human capital, and the long-term risk for NCCDs.<sup>9</sup>

### Consequences of an unhealthy birth on the human capital<sup>5</sup>

- A healthy start is fundamental for the course of human life, and birth carries the highest risk for death, disability, and potential loss of development, thus leading to major social impacts. Therefore, birth outcomes are critical to reach a great level of convergence for global health and human capital for 2035.
- Several international studies suggest a nine-fold return on investment, especially through family planning, health care quality at the time of birth, and care of small-for-gestational age and sick newborns.
- Those children born today are the workforce of tomorrow, and their health is their future wealth.

### Every newborn counts

National data systems require urgent strengthening, and tiered strategies for specific data collection platforms are necessary, especially, vital records, routine data, and institution-based health information systems, such as the Perinatal Information System of the Pan American Health Organization (PAHO)/World Health Organization (WHO), and intermittent surveys of households.

Those countries with the higher mortality rates have the lowest coverage of birth certificates. Death certificates are even less common, and mortality data, still more deficient. The chances of getting a birth or death certificate for very preterm newborns and stillbirths are even lower, including in high-income countries.<sup>10</sup>

A safe childbirth and a healthy start in life are at the center of human capital and economic progress, together with improvements in birth outcomes and also with the transformation of the risk for adult NCCDs. n

Carlos Grandi, M.D.

Subcommittee of Pediatric Research  
of the Argentine Society of Pediatrics

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## Predatory journals

Very frequently, those who are reading these lines have received persistent messages inviting them to send an article for publication in a scientific journal. Sometimes, these messages acclaim the characteristics of an absolutely unknown article; it is also not unusual that they appeal to your vanity by highlighting your alleged expertise in a certain topic.

Messages usually go like this: "Dear Professor ....., we have read your article titled 'Prevalence of predatory journals worldwide'. We are impressed by the quality of your work and we are contacting you to ask you to submit your next study on this topic." Using the same modality, they usually invite you to become part of the editorial committees of journals with a name that is "similar" to those of renowned scientific publications.

What is hidden behind all this? This type of messages is mostly part of the so-called "predatory journals" world, whose main objective is to make money, in an unethically but not illegal manner. These journals show little or no care at all regarding the quality of the articles they publish, fail to follow best practice standards for academic publications, and impose a fee on the author, who finances the publication of his/her work.<sup>1</sup>

The term "predatory journals" was coined in 2010 by Jeffrey Beall, a librarian at the University of Colorado, who created a blog where he published a list of journals and publishers carrying out such practice. The blog generated a big controversy, including editorial comments and legal claims in both directions, which ended up in him taking down his blog in 2017.<sup>2</sup>

The usual practice of predatory journals includes some of the following characteristics:<sup>3</sup>

- They promise publication in short time.
- They claim a false impact factor.

- Their assessment fee is unclear.
- Their office address is not entirely transparent.
- Their name is similar to that of renowned journals.
- Electronic spamming.

### When did it all start?

Many people have pointed out that the problem started with the open access initiative.<sup>4</sup> This emerged from the combination of several factors: on the one side, the pressure to "publish or die" in the academic setting led to the existence of more and more manuscripts available for a limited number of journals willing to publish them. On the other side, the advent of the Internet and the subsequent changes in the publishing business, the globalization of knowledge, and the pressure for free access to such knowledge have led to questioning the limitation of scientific information imposed by large publisher groups.<sup>5</sup> Finally, the great number of journals that we need to access to be updated makes it financially unsustainable to subscribe to all of them, either at an individual or institutional level.

The open access initiative seeks to obtain free access to all scientific information available online. Given that scientific journals bear an unavoidable cost that would be left uncovered without readers' subscription, it was suggested that authors should take over the publication step by paying what is known as an "article processing fee." Such processing includes the controls a good journal should conduct to avoid publishing articles without scientific merit or that are clearly fraudulent. Unfortunately, this altruistic initiative brought about unscrupulous groups that only sought a financial return: predatory journals. They disseminate manuscripts in exchange for an article processing fee but their thirst for profit