Seeking Improved Global Child Health: Progress Toward Millennium Development Goal 4

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“Count what is countable, measure what is measurable, and, what is not measurable, make measurable”

Galileo Galilei (1564–1642).

It is considered axiomatic by those pursuing better health outcomes that well defined goals and clear timelines are essential to orderly progress. Many attribute to Florence Nightingale (1820–1910) leadership in creating the beginnings of management science by calling for accurate measurement applied to healthcare decision making in the 19th century. This guiding principle recognized in the earlier quotation from Galileo finds a modern counterpart in the Millennium Development Goals (MDG), the focus of this editorial [1].

With important implications for child health, the United Nations Millennium Summit, in 2000, advanced a set of eight development goals and targets intended to create a partnership between developed and developing countries with the aim of eliminating poverty and encouraging economic and social development [1]. Specific reductions in infant/child and maternal mortality were also targeted. The resulting campaign that began at the turn of the century has been endorsed by UN member states presently numbering 193 and by at least 23 international organizations representing civil society [2].

Why is this important to the readers of *Pediatric Drugs*? The achievement of optimal drug therapy, while not explicitly described, is clearly an element central to the

main thrust of the Millennium Campaign. Goal 4, reduce child mortality; Goal 5, improve maternal health; and Goal 6, combat HIV/AIDS, malaria and other diseases [2, 3] are all reliant to some extent on achievement of consistent therapeutic excellence if ambitious targets for reduced morbidity and mortality are to be met. MDG 4 targets a reduction by two-thirds in the 1990 under-5 mortality rate (U5MR) by July 1, 2015. In addition, Goal 8 calls for new partnerships in development, including Target 8e, establishment of cooperative programs with pharmaceutical companies to provide access to affordable drugs in developing countries [3].

Evidence-informed therapy provides an essential foundation for the entire range of preventive and curative interventions in maternal and child health. Reductions in infant and child morbidity and mortality rely on improved nutrition and sanitation coupled with effectively deployed and equitably accessible therapies, including especially those targeting common conditions: micronutrients including trace minerals such as zinc, vitamins, vaccines, antimalarials and antimicrobials. The extent of shortfalls globally in provision of priority medicines for maternal and child health has recently been highlighted [4].

As a key component of the Millennium Campaign, more research about effects and disposition of medicines in the maturing infant and child is also needed. This has partly been accomplished in recent years by facilitation of pediatric clinical trials thanks to regulatory measures in the United States and in the European Union, but also as a result of a more positive attitude to research in children. Children have the same rights as adults to have access to therapies with drugs that are well documented in their own age groups. Although most progress in pediatric pharmacology has been made in developed countries, the clinical results will be applied in future for the benefit of children

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worldwide. In a developing country context, more information is still needed about how malnutrition, a major cause of morbidity in children, influences the outcome of drug therapy.

The Summit goals were reaffirmed in 2005, and in mid-2012 the UN Secretary General appointed a panel of 27 public and private leaders to advise on continued activities after conclusion of the formal campaign in December 2015 [5]. Few would question the intrinsic value of the proposed aims and substantial progress has been made in the past 13 years, even if some dramatic variation remains among specific countries or between regions. As of October 2013, the program has realized the following achievements in the child health field [6].

- The average annual rate of U5MR reduction has accelerated globally from 1.2 % (1990–1995) to 3.9 % (2005–2012).
- Since 1990, the U5MR worldwide has dropped by 47 %.
- All regions except Sub-Saharan Africa and Oceania have reduced U5MR by more than 50 %.
- Eastern Asia, with a reduction of 74 %, and North Africa, 69 %, have already met the MDG 4 target.
- Latin America/Caribbean, with a 65 % U5MR reduction and western Asia at 62 % are on track to meet the MDG 4 target.

Additional indicators include infant mortality rate [7] and the proportion of 1-year-old children immunized against measles [8].

- Infant mortality in 1990 for low-income countries was reported as 104 deaths per 1,000 live births and by 2012 this figure was lowered to 56 [7]. By contrast, the average figure for high-income countries decreased from 12 to 5 in the same period.
- In 2011, approximately 84 % of the world's children received one dose of measles vaccine by their first birthday, up from 72 % in 2000 [8]. Figures for European countries in 2012 range from 88 % in Switzerland to 99 % in Greece, Hungary and Slovakia [9].
- Between 2000 and 2012, increased measles vaccination was associated with a 78 % decrease in mortality [8].

Despite the benefit that has accrued from clearly defined targets, it is difficult to generalize about the extent to which MDGs have been achieved. The pattern of progress seems better established now than it did in 2010 and it appears increasingly likely that, despite the need for continuing effort, it will be possible to declare substantial success by Campaign's end. Perhaps more importantly, UN member states and participating international organizations will have a more precise measurement of important

development outcomes, including those in the health domain. Such numbers will provide a better idea of realistic targets for the ensuing decade. Continued progress in maternal and child health and in treatment of communicable diseases and reduction in child mortality is dependent on evidence-informed therapeutics based on dedicated studies of drugs in children. Improvements in knowledge transfer and heightened access to essential therapeutic products are essential.

Beginning in 2006, an International Alliance for Better Medicines for Children was created with a commitment to building a stronger evidence base in support of pediatric therapeutics [10]. The efforts of WHO, especially after the World Health Assembly of 2007 to 'Make Medicines Child Size' and to provide sound prescribing information to those caring for children [11] have had complementary positive impact on the pursuit of MDGs. In 2013, the WHO published an updated edition of its influential handbook, the 'Pocket Book of Hospital Care for Children,' and this will continue to bring substantial improvements in child health outcomes in resource-poor settings [12]. Plans are also well advanced for publication in 2014 of a multi-author compendium of expert advice from child health specialists on how best to address continuing therapeutic challenges in low- and middle-income countries.

Fast forwarding to 2030, one can anticipate that children worldwide are likely to have attained something approaching therapeutic equity and, if that happens, the MDG effort of 2000–2015 will unquestionably be seen as one of the key catalysts to such a welcome development.

Conflict of interest None.

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