

Time for a revolution in reporting of global health data



The United Nations Millennium Declaration¹ in 2000, when the world agreed to the Millennium Development Goals (MDGs),² set in motion undoubtedly the most concerted effort for poverty alleviation and improvement in global health. The declaration prompted substantial increases in financing for global health, both from traditional donors and innovative financing sources,³ scaling up preventive and life-saving interventions. For the health MDGs (MDG 4, to reduce child mortality; MDG 5, to improve maternal health; and MDG 6, to combat HIV/AIDS, malaria, and other diseases), the reported figures show impressive achievements overall—yet these achievements remain elusive for the poorest and most needy countries.⁴

The MDG targets have not only helped to focus on results but also created an impetus for measurement, spurring new institutions and civil society to monitor investments in global health and progress towards the MDGs.⁵ New formations, such as the independent Expert Review Group on Women's and Children's Health, are now holding politicians to account for their funding promises.⁶

The emergence of new institutions and participants, a critically important development in global health, has enabled close scrutiny of results announced by international agencies and data used to report progress towards the MDGs, with striking findings. We now know that even the most basic civil registration and vital statistics are lacking in poor countries;⁷ one in three babies does not receive a birth certificate before their first birthday, and almost 5.5 million stillbirths or neonatal deaths go unrecorded annually.⁸

In 2009, only four of the 22 WHO high-burden tuberculosis countries (those accounting for 80% of the world's estimated tuberculosis cases in 2000) had well-functioning vital registration systems that appropriately coded causes of death.⁹ For countries with generalised HIV epidemics, the Joint United Nations Programme on HIV/AIDS (UNAIDS) still uses surveillance data (often incomplete) among pregnant women attending sentinel antenatal clinics to estimate prevalence of HIV.¹⁰ The picture for malaria is no better; in 2013, WHO reported that only 62 of the 103 countries with ongoing malaria transmission had submitted data of sufficient quality to assess malaria trends reliably during 2000–12.¹¹ Not surprisingly, these findings have prompted some to

question the fidelity of the results reported,¹² and others to urge for more transparency and rigour when estimating the impact of global health investments.⁵ Still, few days go by when new results for global health are not announced, showing what can be achieved when the world commits to targets and gets serious about the results. But how robust are the announced figures?

In *The Lancet*, Christopher Murray and colleagues¹³ provide a very comprehensive and rigorous analysis of global, regional, and national incidence, prevalence, and mortality for HIV, tuberculosis, and malaria (MDG 6) from 1990 to 2013 with important findings. The results are revealing: the number of people living with HIV, the authors estimate, was 17.1% lower than UNAIDS estimates in 2005 and in 2012 was 18.7% lower; 6.6 million fewer individuals were living with HIV in 2012 compared with UNAIDS estimates (around 29 million vs 35.6 million; peak mortality of 1.7 million [95% uncertainty interval 1.6 to 1.9 million] in 2005 vs around 2.3 million estimated by UNAIDS and a difference of 635 000). For tuberculosis, the differences are astounding. WHO estimates tuberculosis prevalence (all forms, including tuberculosis in HIV-positive individuals) declined from 14.5 million in 1990 to around 12 million in 2012, whereas Murray and colleagues estimate an increase from around 8.5 million in 1990 to 12 million in 2012.¹³ Non-HIV related tuberculosis mortality has declined, say WHO, from around 1.4 million in 2000 to 1 million in 2012,¹⁴ but Murray and colleagues show a smaller fall from around 1.6 million in 2000 to 1.3 million in 2012 (based on figure 13 in the study¹³ and Brown J, Institute for Health Metrics and Evaluation, personal communication). In addition to differences in the magnitude of decline, the mortality levels differ by 300 000, a difference of almost one third. The differences for malaria are no less substantial, albeit with much more uncertainty around the estimates. Murray and colleagues estimate malaria incidence to have peaked in 2003 at 232 million cases (143 million to 387 million), declining thereafter to 165 million new cases (95 million to 284 million) and 855 000 deaths (703 000 to 1 032 000) in 2013,¹³ similar to the total in 2012. By contrast, WHO estimates suggest a similar level of new cases in 2003, but 207 million (135 million to 287 million) new cases and 627 000 deaths in 2012.¹¹

Published Online
July 22, 2014
[http://dx.doi.org/10.1016/S0140-6736\(14\)61062-X](http://dx.doi.org/10.1016/S0140-6736(14)61062-X)
See [Articles](#) page 1005



Sunday Alamba/AP/Press Association Images

So who is right? Beyond the striking differences to the estimates provided for HIV, tuberculosis, and malaria by WHO and UNAIDS, a remarkable aspect of the study by Murray and colleagues is the detailed information provided on the data sources, methods, and models used.¹³ For incidence, prevalence, and mortality the authors compare and contrast key data sources, key adjustments to data, modelling strategies, uncertainty analyses, and the differences between Global Burden of Disease (GBD) 2013 estimates and those by WHO (for tuberculosis and malaria) and UNAIDS (for HIV), to clarify the sources of variance in the estimates and illustrate where information from WHO and UNAIDS is not readily available—a bold and welcome action, for which the authors should be commended.

Where do we go from here? Guidelines exist for reporting health research, including for randomised trials and observational studies.¹⁵ Leading economic journals only publish research articles that make available the data, models, programmes, simulations, and other computation details used in analyses to permit replication.^{16,17} Global health studies providing estimates of incidence, prevalence, mortality, and morbidity should be subject to similar standards to further strengthen the transparency, quality, and rigour of data, methods, and results. By providing detailed information on key data sources, key adjustments to data, modelling strategies, and uncertainty analyses, Murray and colleagues have pushed the boundaries of reporting in global health to levels expected of other disciplines and areas of health research—an important step in the right direction.

Writing in *The Lancet*, Richard Horton has identified three revolutions in global health: the first in metrics,

the second in accountability, and the third in quality of health care.¹⁸ The time is right for the fourth revolution: new global standards to make available the data, methods, and models used in global health estimates of incidence, prevalence, mortality, and morbidity to enable replication, setting in motion a new era in global health research. Only then will we ensure transparency, intensify scrutiny, and create accountability in global health.

Rifat Atun

Harvard School of Public Health, Harvard University, Boston, MA 02115, USA
 ratun@hsph.harvard.edu

I declare no competing interests.

- 1 UN General Assembly. United Nations Millennium Declaration, resolution adopted by the General Assembly, A/RES/55/2. Sept 18, 2000. <http://www.refworld.org/docid/3b00f4ea3.html> (accessed June 27, 2014).
- 2 United Nations Millennium Declaration. UN General Assembly Resolution A/RES/55/2. Sept 8, 2000. <http://www.un.org/millennium/declaration/ares552e.htm> (accessed June 27, 2014).
- 3 Atun R, Knaul FM, Akachi Y, Frenk J. Innovative financing for health: what is truly innovative? *Lancet* 2012; **380**: 2044–49.
- 4 UN. The Millennium Development Goals report 2013. New York: United Nations, 2013. <http://www.refworld.org/docid/51f8fff34.html> (accessed June 27, 2014).
- 5 Ataya N, Aluttis C, Flahault A, Atun R, Haines A. Improving the assessment and attribution of effects of development assistance for health. *Lancet* 2014; published online June 26. [http://dx.doi.org/10.1016/S0140-6736\(14\)60791-1](http://dx.doi.org/10.1016/S0140-6736(14)60791-1).
- 6 Accountability for women's and children's health. Independent expert review group on women's and children's health. http://www.who.int/woman_child_accountability/ierng/en/ (accessed June 27, 2014).
- 7 Lopez A, Thomason J. Civil registration and vital statistics—everybody's business but nobody's business. *Lancet* 2013; **381**: 1275–76.
- 8 Lawn JE, Blencowe H, Oza S, et al, for *The Lancet* Every Newborn Study Group. Progress, priorities, and potential beyond survival. *Lancet* 2014; **384**: 189–205.
- 9 Glaziou P, Floyd K, Korenromp EL, et al. Lives saved by tuberculosis control and prospects for achieving the 2015 global target for reducing tuberculosis mortality. *Bull World Health Organ* 2011; **89**: 573–82.
- 10 UNAIDS. Methodology—understanding the HIV estimates. November, 2013. http://www.unaids.org/en/media/unaids/contentassets/documents/epidemiology/2013/gr2013/20131118_Methodology.pdf (accessed June 27, 2014).
- 11 WHO. World Malaria Report 2013. Geneva: World Health Organization, 2013. http://www.who.int/malaria/publications/world_malaria_report_2013/en/ (accessed June 27, 2014).
- 12 McCoy D, Jensen N, Kranzer K, Ferrand RA, Korenromp EL. Methodological and policy limitations of quantifying the saving of lives: a case study of the Global Fund's approach. *PLoS Med* 2013; **10**: e1001522.
- 13 Murray CJL, Ortblad KF, Guinovart C, et al. Global, regional, and national incidence and mortality for HIV, tuberculosis, and malaria during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013; *Lancet* 2014; published online July 22. [http://dx.doi.org/10.1016/S0140-6736\(14\)60844-8](http://dx.doi.org/10.1016/S0140-6736(14)60844-8).
- 14 WHO. Global tuberculosis report 2013. Geneva: World Health Organization, 2013. http://www.who.int/tb/publications/global_report/gtbr13_main_text.pdf?ua=1 (accessed July 4, 2014).
- 15 Equator Network. Enhancing the quality and transparency of health research. <http://www.equator-network.org/library/> (accessed June 27, 2014).
- 16 The American Economic Review. Data availability policy. <http://www.aeaweb.org/aer/data.php> (accessed June 27, 2014).
- 17 Econometrica. Replication policy. <http://www.econometricsociety.org/submissioninstructions.asp#replication> (accessed June 27, 2014).
- 18 Horton R. Offline: The third revolution in global health. *Lancet* 2014; **383**: 1620.