

# New disability weights for the global burden of disease

Joshua A Salomon<sup>a</sup>

Since its launch in the early 1990s, the global burden of disease study has produced a highly influential set of findings on the impacts of different diseases, injuries and risk factors on population health.<sup>1–3</sup> One important contribution of the study has been the development of the disability-adjusted life year (DALY) as a new metric for quantifying losses of healthy life, due either to premature mortality or to time lived in a state of reduced health. To account for both types of outcomes in a commensurable way, DALYs require a set of numerical weights attached to the wide array of non-fatal consequences from different diseases and injuries. The conceptualization and measurement of these “disability weights” have prompted considerable commentary and debate.<sup>4–6</sup>

At present, studies on the global, regional or national burden of disease continue to draw heavily on the set of disability weights derived in the 1996 revision of *The global burden of disease*.<sup>7</sup> For the 1996 study, a panel of health professionals developed these disability weights in a deliberative group exercise. First they evaluated 22 indicator conditions using a method called the “person trade-off”. Based on the resulting values, the 22 conditions were then grouped into seven different classes of severity. For the remainder of the outcomes in the study (referred to as “disabling sequelae”), participants were asked to allocate a set of typical cases for a particular sequela across the seven classes. The indicator conditions within each class supplied a concrete operational definition for the average severity level in that class and thus marked points of reference on the numerical scale ranging from perfect health to death.

Critics of the DALY have questioned aspects of this approach. The use of an expert panel has provoked suggestions for a more inclusive measurement exercise to represent the broader perspectives of communities and societies.<sup>4</sup> Other researchers have asked whether there may be important variation in assessments of health outcomes across diverse cultures and environments,<sup>6,8,9</sup> indicating a need for more cross-country measurement and comparison. Some critics have opposed, on ethical grounds, the use of the person

trade-off technique as implemented in the 1996 group exercise.<sup>5</sup>

Over the past two years, with support from the Bill & Melinda Gates Foundation, a research consortium including the Institute for Health Metrics and Evaluation, Harvard University, Johns Hopkins University, University of Queensland and the World Health Organization has been leading a major revision of the global burden of disease, in collaboration with a network of hundreds of experts from around the world. An essential element in this study is a comprehensive re-estimation of disability weights for the full set of around 230 unique sequelae associated with the array of disease and injury causes in the study.

The design of this new study responds to critiques of past efforts in several significant ways. With two major components of survey-based data collection, the new study uses simple paired-comparison questions. In these questions, respondents are asked to consider two hypothetical individuals characterized by different functional limitations, and to indicate which person they would regard as healthier. These simple questions permit input from a broad cross-section of respondents spanning diverse cultural, environmental and demographic circumstances. Straightforward analytic approaches allow inferences about cardinal weights at the population-level based on ordinal responses by individuals.<sup>10</sup>

The first component of the study comprises new population-based household surveys in six countries (Bangladesh, Indonesia, Peru, South Africa, the United Republic of Tanzania and the United States of America). Data from these surveys will deliver welcome empirical evidence on questions regarding the extent of variation in health assessments across different settings. The second component uses an open-access, internet-based survey, which is intended to expand its global reach. Presently available in English, eventual translation of the survey into other languages will further broaden participation. Design overlap with the household survey will allow direct comparison and evaluation of possible selection effects due to non-random sampling, while the web-based format and unrestricted access allow broader input from

voices that are seldom heard in discussions on global health priorities.

Reliable, valid and comparable measurement of non-fatal health outcomes is as essential as accurate measurement of mortality and causes of death in assessing the health of populations. Persistent challenges to existing disability weights demand further empirical study through data collection efforts that are broad-reaching and inclusive. This time around, everybody is invited to make his or her view count by participating in the online disability weights measurement survey available at: <http://www.gbdsurvey.org> ■

## References

1. Murray CJL, Lopez AD. Evidence-based health policy – lessons from the Global Burden of Disease. *Science* 1996;274:740–3.
2. Ezzati M, Lopez AD, Rodgers A, Vander Hoorn S, Murray CJL; Comparative Risk Assessment Collaborating Group. Selected major risk factors and global and regional burden of disease. *Lancet* 2002;360:1347–60.
3. Lopez AD, Mathers CD, Ezzati M, Jamison DT, Murray CJL. Global and regional burden of disease and risk factors, 2001: systematic analysis of population health data. *Lancet* 2006;367:1747–57.
4. Ustün TB, Rehm J, Chatterji S, Saxena S, Trotter R, Room R et al. Multiple-informant ranking of the disabling effects of different health conditions in 14 countries. WHO/NIH Joint Project CAR Study Group. *Lancet* 1999;354:111–5.
5. Arnesen T, Nord E. The value of DALY life: problems with ethics and validity of disability adjusted life years. *BMJ* 1999;319:1423–5.
6. Mont D. Measuring health and disability. *Lancet* 2007;369:1658–63.
7. Murray CJL. Rethinking DALYs. In: Murray CJL, Lopez AD, editors. *The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Boston: Harvard School of Public Health; 1996:1–98.
8. Reidpath DD, Allotey PA, Kouame A, Cummins RA. Measuring health in a vacuum: examining the disability weight of the DALY. *Health Policy Plan* 2003;18:351–6.
9. Jelsma J, Chivaura VG, Mhundwa K, De Weerd W, de Cock P. The global burden of disease disability weights. *Lancet* 2000;355:2079–80.
10. Salomon JA. Reconsidering the use of rankings in the valuation of health states: a model for estimating cardinal values from ordinal data. *Popul Health Metr* 2003;1:12.

<sup>a</sup> Harvard School of Public Health, 665 Huntington Avenue, Boston, MA, 02115, United States of America. Correspondence to Joshua A Salomon (e-mail: [jsalomon@hsph.harvard.edu](mailto:jsalomon@hsph.harvard.edu)).