Improving data collection and estimation methods for child and adult mortality

April 13 2010

Three research papers and a perspective published in *PLoS Medicine* this week highlight the importance of gathering accurate information on numbers of deaths, and suggest ways of improving estimates in countries where complete vital registration systems do not exist. In the first paper, Julie Rajaratnam from the University of Washington, and colleagues from Harvard University and the University of Queensland, provide an overview of current systems of methods of estimating deaths where death registration is incomplete. In the two subsequent papers they lay out new methods for measuring mortality in children under 5 by taking summary birth history from mothers, and in young adults by collecting information from surviving siblings.

One of the fundamental building blocks for determining the burden of disease in populations is to reliably measure the level and pattern of mortality by age and sex. Incomplete registration systems mean not all deaths are counted and resulting estimates of death rates for the population are then underestimated. The topic of the first paper, death distribution methods, are a set of demographic methods used to estimate the fraction of deaths that are registered and counted by civil registration systems. Understanding the limitations and appropriate application of these methods is essential in order for them to be appropriately used.

The second paper focuses on mortality in children under five - a critical measure of human development. In countries with complete vital registration systems that capture all births and deaths, under-five mortality can be directly calculated. Current methods in places without

such complete registration have traditionally used complete birth histories as a source of information, but these can be long and complex to collect. This paper focuses on developing new methods that are based on summary birth history, which requires only two questions: how many live births has each mother had and how many of them have survived, and the validation of estimates using these summary birth history methods.

The final paper presents a survey method known as the corrected sibling survival method to measure adult mortality - a key metric for understanding the levels and patterns of disease in a population. This new method aims to address both the survival and recall biases that have previously hindered the use of such survey data to estimate adult mortality.

In a related perspective, "Mortality Measurement Matters: Improving Data Collection and Estimation Methods for Child and Adult Mortality" by Ties Boerma and Colin Mathers of the World Health Organisation the authors state that "The accurate measurement and estimation of mortality levels, trends, causes, and differentials are a cornerstone of public health." and conclude that "The methods presented in these three papers present a welcome effort to improve the analysis of imperfect mortality data."

More information: *Murray CJL, Rajaratnam JK, Marcus J, Laakso T, Lopez AD (2010) What Can We Conclude from Death Registration? Improved Methods for Evaluating Completeness. PLoS Med 7(4): e1000262. doi:10.1371/journal.pmed.1000262

*Rajaratnam JK, Tran LN, Lopez AD, Murray CJL (2010) Measuring Under-Five Mortality: Validation of New Low-Cost Methods. PLoS Med 7(4): e1000253. doi:10.1371/journal.pmed.1000253.

*Obermeyer Z, Rajaratnam JK, Park CH, Gakidou E, Hogan MC, et al. (2010) Measuring Adult Mortality Using Sibling Survival: A New Analytical Method and New Results for 44 Countries, 1974. PLoS Med 7(4): e1000260. doi:10.1371/journal.pmed.1000260

* Mathers C, Boerma T (2010) Mortality Measurement Matters: Improving Data Collection and Estimation Methods for Child and Adult Mortality. PLoS Med 7(4): e1000265. doi:10.1371/journal.pmed.1000265