

## Global health risks: progress and challenges

Gretchen Stevens,<sup>a</sup> Maya Mascarenhas<sup>a</sup> & Colin Mathers<sup>a</sup>

WHO's upcoming report *Global health risks* will identify the global and regional mortality and disease burden associated with 24 health risks. These risk factors range from environmental risks such as exposure to smoke from indoor solid fuel use, to metabolic risks such as high blood pressure. The report finds that five leading risk factors (childhood underweight, unsafe sex, alcohol use, unsafe water and sanitation, and high blood pressure) are responsible for one-quarter of all deaths in the world and one-fifth of all disability-adjusted life years (DALYs). Success in reducing exposure to these five risk factors alone would increase global life expectancy by nearly 5 years.

This report describes the changing risk profiles of developing countries. Global health risks are in transition as declining fertility rates and fewer deaths from infectious diseases at young ages are reflected in population age patterns with a predominance of older people. At the same time, patterns of physical activity, diet, alcohol and tobacco consumption are changing. Low- and middle-income countries now face increasing burdens of chronic, noncommunicable conditions in addition to infectious diseases.

Understanding the effects of health risks is vital to designing and targeting prevention efforts. However, the analysis of risk factors is challenging due to the inherent complexity of finding and interpreting evidence on risks and their causal associations with disease and disability. Risk assessment is limited both by epidemiologic knowledge and by availability of global information on risk factor exposure. To carry out a quantitative risk assessment, evidence must exist first, to show that the exposure to each risk causes disease, second, to quantify the magnitude of harm caused by each exposure, and lastly, to

assess the presence of each risk in the population globally.

Some risk factors are easier to assess than others. Exposure to biological risks such as high body mass index (BMI) or vitamin deficiencies can be measured with relatively little error, and can be linked to disease outcomes on an individual basis. In contrast, it is more difficult to precisely measure exposure to dietary, environmental and behavioural risk factors. For these risks, the lack of precise measurements makes it more challenging to link exposures to disease incidence. Because it is more difficult to generate epidemiological evidence about dietary, environmental and behavioural risk factors, they are less likely to be included in a comparative risk assessment. When included, their burden may be estimated with more uncertainty than for risks that are easier to measure. This inevitably produces a set of estimates for risk factors that are not perfectly comparable and must be interpreted carefully.

Risk factors are not all equally easy to measure and similarly, some prove to be more amenable to interventions than others. To ensure consistency across the risk factors, the burden of each risk factor is calculated by comparing the actual situation to a counterfactual one where exposure to the risk factor is at an ideal level. For some risk factors, such as micronutrient deficiencies, effective policies to ensure adequate nutrition in low-cost settings are known. Achieving the ideal exposure level is feasible and affordable. However, for a risk factor such as high body mass index, few effective interventions have been demonstrated. While some isolated populations have a mean BMI in the ideal range, attaining a low population mean BMI is a daunting task for today's societies.

Assessing and interpreting the impact of risks on health is challenging due to the inherent complexity of finding and interpreting evidence on risks and their causal associations with disease and disability at the population level. The comparative risk assessment framework used in the *Global health risks* report is the most comprehensive, cross-disciplinary, global effort to face these challenges.<sup>1</sup> The results from the report provide powerful input for policy actions when combined with information about interventions, their costs and their efficacy. They also identify risk factors for which more research is needed to develop effective interventions, such as overweight and physical inactivity.

A comprehensive revision and update of the health burden attributable to risk factors is now under way as part of the Global Burden of Diseases, Injuries and Risk Factors study.<sup>2</sup> The new study will quantify the effects of risk factors for 1990 and 2005, allowing for an analysis of trends in exposure of and effects of risks, and will include additional risk factors, such as salt intake, folic acid deficiency and intimate partner violence. Comparative risk assessment methods will continue to evolve as new epidemiologic evidence becomes available. ■

### References

1. *Comparative quantification of health risks*. Geneva: World Health Organization; 2004.
2. *The global burden of diseases, injuries, and risk factors study: operations manual*. Harvard Initiative for Global Health, Institute for Health Metrics and Evaluation at the University of Washington, Johns Hopkins University, University of Queensland, and World Health Organization; 2008. Available from: <http://www.globalburden.org/gbdops.html> [accessed on 4 August 2009].

<sup>a</sup> Department of Health Statistics and Informatics, World Health Organization, 20 avenue Appia, 1211 Geneva 27, Switzerland. Correspondence to Gretchen Stevens (e-mail: [stevensg@who.int](mailto:stevensg@who.int)).