Vascular risk prediction charts for integration of age, gender, tobacco use, blood pressure, diabetes and blood cholesterol for predicting heart attacks and strokes

To prevent heart attacks and strokes, the current distribution of cardiovascular risk of the population has to be shifted to a more optimal distribution (Figure 3) using a combination of population-wide strategies and strategies that focus on high-risk groups (9). Decisions about whether to initiate specific preventive and treatment interventions for high-risk groups, and with what degree of intensity, should be guided by the estimation of the risk of suffering vascular events such as heart attacks and strokes. Bringing this paradigm shift from single risk factor management to total cardiovascular risk prediction and management will enable limited health-care resources in LMIC to be targeted to the segment of the population that is most in need and most likely to benefit from interventions (9).

The threshold for implementing high-risk strategies; particularly drug treatment will depend on the economic, political and social realities of each country. For example, very low-income countries may have to decide to place the threshold for implementing high-risk strategies at a 10-year risk of CVD at 40%. Other countries with additional resources may lower it to 30%. As the threshold is lowered, health benefits will increase and costs will escalate. The level of risk at which drug treatment should be started when managing patients within the public health sector is a policy decision that has to be made by health authorities and experts at the national level. The WHO/ISH risk prediction charts facilitate the operationalization of such policy decisions.

The WHO/ISH risk prediction charts is a tool that enables integrated risk assessment and risk prediction in non-Western populations. The risk prediction charts enable the total risk stratification approach for management of CVD to be
introduced in WHO regions where cohort data and resources are not readily available for development of population specific risk prediction charts (9) (Figure 4, WHO/ISH risk charts for all Regions are in compact disc).

Health systems in low-income countries do not have the basic infrastructure facilities to support resource-intensive risk prediction tools, particularly in PHC. As such, the WHO/ISH risk prediction charts use easily measurable indicators of risk to quantify the 10-year cardiovascular risk (9). These include gender, systolic blood pressure, smoking status, type 2 diabetes mellitus and total serum cholesterol (Figure 4). In many LMIC settings, urine sugar may be used as a surrogate marker for diabetes. Serum cholesterol assay, however, is not routinely available in the vast majority of settings. In such settings, average cholesterol derived from national surveys could be used as default concentrations. This would help to further select those who would benefit most from treatment, and guide the intensity and nature of drug treatment. Alternatively, charts that use gender, blood pressure, smoking status...
and type 2 diabetes mellitus only are also available for use in countries that do not have national survey data (compact disc). By using the charts for grading risk, lipids assays could be restricted only to those with an initial coronary risk above a predetermined cutoff level (e.g. 30% or more risk of CVD in 10 years). This would help to further select those who would benefit most from treatment, and also guide the intensity and nature of drug treatment.
Figure 4. WHO/ISH risk prediction chart for use in settings where blood cholesterol can be measured. 10-year risk of a fatal or non-fatal cardiovascular event by gender, age, systolic blood pressure, total blood cholesterol, smoking status and presence or absence of diabetes mellitus.