

An epidemic of risk factors for cardiovascular disease

Rarely are findings as stark and as far-reaching as those from the Global Burden of Metabolic Risk Factors of Chronic Diseases Collaborating Group that are published in today's *Lancet*. The three Articles analyse trends over the past generation in body-mass index (BMI), systolic blood pressure, and serum total cholesterol. The inescapable conclusion is that an epidemic of premature cardiovascular mortality is developing, the brunt of which will be borne by low-income and middle-income countries. Because each risk factor is modifiable, the studies are essential reading for health professionals at all levels in all countries, so that action can be taken to avoid catastrophic outcomes.

Led by Majid Ezzati, the investigators compared mean values between 1980 and 2008 across 199 countries and territories. The first study showed that BMI has increased in almost all countries. 1.46 billion adults had a BMI in excess of 25 kg/m² in 2008 and more than 500 million were obese, especially in Oceania. The second paper gives a split picture of systolic blood pressure, which has decreased in wealthy countries and increased in many low-income and middle-income countries. Similarly, the final Article showed that serum concentrations of total cholesterol are converging. Levels were highest in wealthy nations, but decreasing; in developing countries, particularly in Asia, they were rising.

The findings add to concerns about cardiovascular risk factors and population health. On Feb 1, 2011, *Morbidity and Mortality Weekly Report* published two studies on control of hypertension and hypercholesterolaemia in the USA. In both examples, access to medical care was a barrier to effective control of risk factors, and only a minority of people diagnosed achieved targeted outcomes. The challenge of control is even greater in middle-income countries, such as Thailand, where diagnosis lags behind prevalence, according to a study by Gregory Roth and colleagues in the *Bulletin of the World Health Organization*, also published on Feb 1. Taken together, the results imply that only a fraction of those identified at cardiovascular risk in today's *Lancet* Articles will have received effective treatment.

What can be drawn from these observations? First, the potential costs in terms of mortality and health-care expenditure are massive. Cardiovascular disease is the major cause of death worldwide and accounts for 17% of

health spending in the USA. Second, BMI, hypertension, and raised cholesterol (like glucose levels and smoking) can be modified by lifestyle and other interventions. Hence, consequences can be mitigated by effective actions. Third, these data present an early warning of trends that, without swift and effective interventions, will probably intensify—particularly if growing affluence in China and India increases their populations' exposure to risk factors, a pattern seen in wealthier countries.

Developing countries have not only the double burden of communicable and chronic disease, but many also experience the simultaneous challenge of health-system reform. Without universal access to care, well-integrated health services, and strong leadership in public health, response to the above findings will be hampered. In such circumstances, the greatest health gains could come from preventive strategies, as Sonia Anand and Salim Yusuf point out in a Comment.

One example of such an approach is the 2010 Dietary Guidelines for Americans, released on Feb 1, that recommends balancing of calories, reduction of salt, and decrease of cholesterol intake. The 2010 revision emphasises the importance of education and the influence of communities to enable and encourage healthy choices. However, any interventions will need active implementation and careful evaluation to assess benefit and transferability between populations.

How can researchers respond to these findings? There might be a temptation to improve data collection. Although welcome, the experience of Japan (which provided the most complete longitudinal data to the Collaborating Group) was that collection of data did not necessarily improve outcomes. For this reason, data for risk factors will be of greatest value when embedded in well-designed research to test risk-reduction strategies.

Despite great progress and success in improvement of cardiovascular outcomes, the gains of recent years are likely to be overshadowed by the sheer volume of cardiovascular disease that will accrue from untreated risk factors. Because BMI, systolic blood pressure, and serum cholesterol are modifiable, and as forewarning of the potential burden of disease has now been given, failure to make population-based cardiovascular health a greater priority, particularly in low-income and middle-income countries, is unconscionable ■ *The Lancet*



See [Comment](#) page 529

See [Articles](#) pages 557, 568, and 578

For the [MMWR papers](#) see http://www.cdc.gov/mmwr/mmwr_wk/wk_cvol.html

For the [study on detection of high cholesterol](#) see <http://www.who.int/bulletin/volumes/89/2/10-079947.pdf>

For [Dietary Guidelines for Americans](#) see <http://www.cnpp.usda.gov/DGAs2010-PolicyDocument.htm>