

## Editorial

# Cardiovascular disease: putting transition in perspective

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The absolute number of deaths attributable to cardiovascular disease (CVD) is already higher in developing countries than in the most developed ones (9 millions versus 3 millions), and the proportion of total deaths due to CVD in the African region is expected to double from 9 to 18% between 1990 and 2020.<sup>1</sup> The corresponding increase in morbidity and related sequels is appalling.<sup>2</sup> What we know from the trends in CVD risk factors in less developed countries, such as high blood pressure, is worrisome.

This situation is in accordance with the paradigms of demographic transition as developed by Warren Thompson around 1930,<sup>3</sup> and epidemiological transition as described by Abdel Omran around 1970.<sup>4</sup> Both paradigms dissect the mechanisms which underlie the changes between two demographic and epidemiological patterns, i.e. from high to low birth and death rates, and from a high burden of infectious, rapidly lethal diseases toward a predominance of degenerative and chronic diseases. The link between the two transitions is that infectious disease control leads to a decline of premature mortality and to the emergence of CVD as the first of the degenerative diseases.<sup>5</sup>

These paradigms are more descriptive than conceptual, but provide a helpful framework to outline public health perspectives. A major issue is the sort of response needed in developing countries. The good news is that degenerative diseases, and especially CVDs, are fairly well known in terms of nosology, epidemiology and management.<sup>6</sup> Thus, translating the available knowledge into public health action is the unique challenge we are facing.

The bad news is that this challenge is a huge one. As a first problem, population-based prevention, if restricted to health education, is of limited effectiveness.<sup>7</sup> Social and other environmental factors have to be addressed if some substantial, long-standing impact is expected. A second problem is that individual prevention and care generate high costs. Degenerative diseases require long-term (often lifelong) interventions (e.g. for high blood pressure). Thus, the initial costs will be substantial, even if the treatments are more efficient than in developed countries.<sup>8</sup>

A more general difficulty leading to high costs of transition is that many developing countries are facing a double burden of disease, from both 'new' degenerative diseases and 'old' infectious diseases such as malaria and tuberculosis. Developed countries have been fortunate to avoid this double burden

because of the slowness of the mortality decline, allowing a smooth transition between the two patterns. Moreover, an important part of the stress on health services provoked by this double burden is related to the need to support a large range of skills in health services. This is an unlikely perspective in countries still struggling with a dysfunctional public health system.

Promising strategies against the global CVD pandemic have to combine strong policies against known risk factors (particularly tobacco as well as food and transportation policies) with individual care using the most effective drugs. Another ingredient of success is to rediscover the unity of public health, i.e. to avoid playing degenerative diseases against infectious ones. Contraversies between degenerative disease and infectious disease specialists are to be compared with the heated debate over the best end of the egg for extracting the contents (which, according to Gulliver, turned out into a war between big enders and little enders). Similar amphigoric discussions have no place in public health. But there is a lot to do for those interested in a population-wide approach embracing all the health needs of the people.

## References

- 1 World Health Organization. *The World Health Report 2002. Reducing risks, promoting healthy life*. Geneva: WHO, 2002.
- 2 World Health Organization. *Preventing chronic diseases: a vital investment*. Geneva: WHO, 2005.
- 3 Kirk D. Demographic transition theory. *Popul Stud* 1996;50:361–87.
- 4 Omran AR. The epidemiologic transition. A theory of the epidemiology of population change. *Milbank Mem Fund Q* 1971;49:509–38.
- 5 Reddy KS, Yusuf S. Emerging epidemic of cardiovascular disease in developing countries REDDY1998. *Circulation* 1998;97:596–601.
- 6 Yusuf S, Hawken S, Ounpuu S, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): case-control study. *Lancet* 2004;364:937–52.
- 7 Ebrahim S, Smith GD. Exporting failure? Coronary heart disease and stroke in developing countries. *Int J Epidemiol* 2001;30:201–5.
- 8 Cooper R, Rotimi C, Kaufmann J, et al. Hypertension treatment and control in sub-Saharan Africa: the epidemiological basis for policy. *BMJ* 1998;316:614–17.

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