



**FIGURE 266-2** Cardiovascular disease deaths as a percentage of total deaths and total population in seven economic regions of the world defined by the World Bank. (Based on data from *Global Burden of Disease Study 2010: Global Burden of Disease Study 2010 Mortality Results 1970–2010*. Seattle, Institute for Health Metrics and Evaluation, 2012.)

### GLOBAL TRENDS IN CARDIOVASCULAR DISEASE



CVD accounts for nearly 30% of deaths worldwide, a number that is expected to increase. In 2010, CHD accounted for 13.3% of all deaths globally and the largest portion of global years of life lost (YLLs) and disability-adjusted life-years (DALYs). The second largest cause of death was stroke (11.1% of all deaths), which was also the third largest contributor to global YLLs and DALYs (Table 266e-2). Together, CHD and stroke accounted for nearly a quarter of all deaths worldwide. The burden of stroke is of growing concern among LMICs. The impact of stroke on DALYs and mortality rates is more than three times greater in LMICs as compared to HICs. By 2030, the number of deaths due to stroke is projected to increase by more than 30%, the majority of which will occur in LMICs.

With nearly 85% of the world's population, LMICs largely drive global CVD rates and trends. Ten million CVD deaths occurred in

LMICs in 2010, compared to 5.6 million in HICs. Globally, there is evidence of significant delays in age of occurrence and/or improvements in case fatality rates; between 1990 and 2010, the number of CVD deaths increased by 31%, but age-adjusted death rates decreased by 21.2% in the same period.

Although HIC population growth will be fueled by emigration from LMICs, the populations of HICs will shrink as a proportion of the world's population. The modest decline in CVD death rates that began in the HICs in the latter third of the twentieth century will continue, but the rate of decline appears to be slowing. However, these countries are expected to see an increase in the prevalence of CVD, as well as the absolute number of deaths as the population ages.

Significant portions of the population living in LMICs have entered the third phase of the epidemiologic transition, and some are entering the fourth stage. Changing demographics play a significant role in future predictions for CVD throughout the world. For example, the population growth rate in Eastern Europe and Central Asia was 0.7% in 2012, whereas it was 1.3% in South Asia.

CVD rates will also have an economic impact. Even assuming no increase in CVD risk factors, most countries, but especially India and South Africa, will see a large number of people between 35 and 64 die of CVD over the next 30 years, as well as an increasing level of morbidity among middle-aged people related to heart disease and stroke. In China, it is estimated that there will be 9 million deaths from CVD in 2030—up from 2.4 million in 2002—with half occurring in individuals between 35 and 64 years old.

### RISK FACTORS

The global variation in CVD rates is related to temporal and regional variations in known risk behaviors and factors. Ecological analyses of major CVD risk factors and mortality demonstrate high correlations between expected and observed mortality rates for the three main risk factors—smoking, serum cholesterol, and hypertension—and suggest

**TABLE 266e-2** MORBIDITY RELATED TO HEART DISEASE: 2010–2030

Deaths	2010	By 2030
CVD deaths: annual number of all deaths	15.6 million	24.2 million
CVD deaths: percentage of all deaths	30.0%	32.5%
CHD deaths: percentage of all male deaths	13.0%	14.9%
CHD deaths: percentage of all female deaths	14.0%	13.1%
Stroke deaths: percentage of all male deaths	9.9%	10.4%
Stroke deaths: percentage of all female deaths	13.0%	11.8%

**Abbreviations:** CHD, coronary heart disease; CVD, cardiovascular disease.

**Source:** Adapted from *Global Burden of Disease Study 2010: Global Burden of Disease Study 2010 Mortality Results 1970–2010*. Seattle, Institute for Health Metrics and Evaluation, 2012; J Mackay, G Mensah: *Atlas of Heart Disease and Stroke*. Geneva, World Health Organization, 2004.