

SPECIALISTFOCUS

Relationship between Cholesterol and CHD

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Coronary heart disease (CHD) and stroke are leading causes of morbidity and mortality, and it is estimated that CHD will be the single largest cause of disease burden globally by the year 2020. Across the world, most deaths (32 million) each year are attributed to non-communicable diseases, and more than half of these (16.7 million) result from cardiovascular disease. Cardiovascular mortality is projected to double globally between 1990 and 2020, with developing countries shouldering approximately 80 per cent of the increased disease burden. At least 75 to 80 per cent of new cases of CHD are explained by major risk factors, including hypercholesterolemia.

Epidemiologic studies and randomised controlled trials support the effectiveness of cholesterol lowering with statins to lower CHD risk, CHD mortality, and all-cause mortality. A recent meta-analysis by the Cholesterol Treatment Trialists demonstrated a 12 per cent proportional reduction in all-cause mortality (19 per cent reduction in coronary mortality) for each 1-mmol/L (~38-mg/dL) decline in low-density lipoprotein cholesterol (LDL-C). A prior meta-analysis showed a 15 per cent decline in CHD mortality risk and an 11 per cent decline in all-cause mortality risk for each 10-percentage-point lowering in total cholesterol (TC).

Recognising the benefits of intensive statin treatment in coronary prevention, consensus coronary prevention panels have recommended consideration of increasingly aggressive LDL-C targets, particularly in patients at very high risk. An update to the US consensus guidelines recommended considering an LDL-C target of <70 mg/dL as a therapeutic option in patients at very high risk, including individuals with acute coronary syndromes, multiple risk factors (particularly diabetes), poorly controlled and severe risk factors (particularly continued smoking), and/or multiple risk factors of metabolic syndrome. However, studies from around the world have shown that most patients at elevated CHD risk do not achieve even less stringent cholesterol goals. The Return on Expenditure Achieved for Lipid Therapy (REALITY) study demonstrated that approximately 60 per cent of Europeans did not achieve national cholesterol goals.

Singapore is a small country with a population of 4.35 million that has a multiethnic (77 per cent Chinese, 14 per cent Malay, eight percent Asian Indian) population and a rapidly developing economy. Per capita gross national product is among the highest in the region, and the standard of living is comparable to standards in developed western countries. Like these societies, Singapore has witnessed an increasing life expectancy and median population age. Life expectancy at birth rose from 62 years in 1957 to 79.3 years in 2004. The proportion of the population older than 65 years increased from 2.2 per cent in 1970 to 8.0 per cent in 2004 and is expected to reach 10 per cent by 2012 and 20 per cent by 2033.

With rapid economic and social development and an ageing population, the burden of disease has shifted from infectious to chronic, "lifestyle" diseases (for example, cardiovascular disease). By 1990, heart disease was the second leading cause of death after cancer in Singapore. As of 1999, Singapore's age-standardised CHD death rate (100/100,000) was comparable to those in the United States (125/100,000) and Australia (97/100,000) and was among the highest of Southeast Asian nations (higher than in Japan [22/100,000] and Hong Kong [40/100,000]).

Certain ethnic groups in Singapore may be at increased CHD risk. With the advent of the 1991 National Health Policies Committee and improved primary prevention and medical care interventions (for example, increased coronary revascularisation procedures), CHD events and age-adjusted CHD case-fatality rates declined during the 1990s. However, myocardial infarction (MI) event rates and age-standardised coronary mortality rates were more than two times higher in ethnic Malays and Asian Indians compared with ethnic Chinese. The most recent Singapore National Health Survey showed that the prevalence of hypercholesterolemia fell from 25.4 per cent in 1998 to 18.7 per cent in 2004 but was highest in ethnic Malays (22.8 per cent).

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