

# Cardiovascular disease in the elderly: a challenge for science and clinical care

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By 2035 it has been estimated that about 25% of the world's population will be 65 years or older. A dual challenge for the 21<sup>st</sup> century is to link progress in basic and behavioral research with a well-developed health-care system that provides evidence-based care for the growing number of older people.

Biomedical research to investigate the underlying mechanisms of aging and research into behavioral interventions that slow or reverse age-related physical or mental decline are rapidly evolving. For example, studies that have evaluated approaches to reduce functional or mental decline in human aging favor the positive effects of continued mental activity and physical activity. Older patients with coronary artery disease have exercise trainability comparable to that of younger patients participating in similar exercise rehabilitation programs, and show similar improvements in quality of life. Consequently, older individuals, with or without coronary artery disease, should be strongly encouraged to undertake an exercise program. Unfortunately, the general public and health-care providers and the practice style of upcoming physicians are focused on medical technology and pharmaceuticals rather than on evolving basic and behavioral scientific knowledge. Thus, one of the most critical challenges concerning the elderly is how to convey such scientific progress to all training physicians and how to implement a greater focus on exercise and behavioral programs into the health-care system in general.

From a more-specific, clinical perspective there are other challenges. Cardiovascular diseases such as coronary artery disease and myocardial infarction, congestive heart failure and atherothrombotic or hemorrhagic stroke are the leading causes of morbidity and mortality in the elderly. The challenge here is how to prevent the occurrence and recurrence of

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**Competing interests**

The author declared he has no competing interests.

www.nature.com/clinicalpractice  
doi:10.1038/ncpcardio0370

these diseases, since at this frailer stage in life they result in a high financial burden to the health-care system and society. With appropriate postinfarction therapy there is a similar reduction in morbidity and mortality between older and younger patients, but, despite the evidence, these drugs are underused in the older postinfarction patient.

In Western countries, congestive heart failure is the number one discharge diagnosis for older adults and is associated with more than 300,000 deaths annually in the US. The frequently dramatic clinical manifestations of the syndrome and beneficial response to therapy probably explain the high use and compliance of proven base medications, which confer benefit in the elderly. The most critical issue, however, is to administer appropriate therapy in the earliest stages of ventricular dysfunction.

The incidence of atherothrombotic and hemorrhagic stroke is also increased in the elderly. The impact of stroke on patients' survival and quality of life is so great that preventive strategies directed toward the control of hypertension, which can result in either type of stroke, and atrial fibrillation, which often leads to embolic stroke, are of the utmost importance. Despite various randomized trials showing a significant reduction in stroke rate with a thiazide-type diuretic or a long-acting dihydropyridine calcium-channel blocker, the systolic blood pressure control rate in the elderly is less than 20%. Furthermore, atrial fibrillation raises the risk of stroke fivefold, but anticoagulation is only given to about 50% of elderly patients.

The science of aging is advancing dramatically, as are the potential preventive and therapeutic strategies for the most prevalent diseases. There is, however, a huge gap between the recognition and application of such therapies. The challenge is to overcome this gap.