

Editorial

Prevention of cardiovascular disease: challenges and opportunities

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Cardiovascular diseases (CVD) remain a primary healthcare and public health issue and the leading cause of death worldwide¹. Today, nearly 17 million deaths each year (30% of all deaths) are because of CVD, and 80% of CVD deaths are in low-middle income countries. More than 2600 Americans die from CVD each day (1 death/33 s)^{1,2}. More than 150 000 deaths/year occur in individuals < 65 years and more than 220 000 deaths/year occur suddenly before hospitalization^{1,2}. The total CVD mortality in the United States is comparable to other western countries, including Italy (Fig. 1): 43.5% of deaths are due to CVD in Italy vs 40.1% in the United States.

We are faced with some critical challenges for the 21st century in preventing CVD, reducing its burden, and improving cardiovascular health throughout the world.

The first challenge is to deal with an ever aging population. At present, globally, 10.7% of men and 14.7% of women are

> 65 years, with Italy having the oldest population: 14.6% of men and 19.8% of women \geq 65 years (Fig. 2). Moreover, it has been estimated that in 2040 there will be 77 million people \geq 65 years (21% of total population) in the United States alone. This is obviously important since the aging of the population leads to an increased prevalence of chronic diseases such as heart failure, hypertensive heart disease, type 2 diabetes mellitus, insulin resistance and metabolic syndrome. This latter is an ominous combination of visceral obesity, atherogenic dyslipidemia (low levels of high-density lipoprotein cholesterol and elevated levels of triglycerides), hypertension and glucose intolerance that contributes to insulin resistance and a heightened risk for diabetes and CVD.

Another challenge to face is the increasing prevalence of obesity which is associated with CVD since adipose tissue is a pro-inflammatory endocrine organ, secretes an-

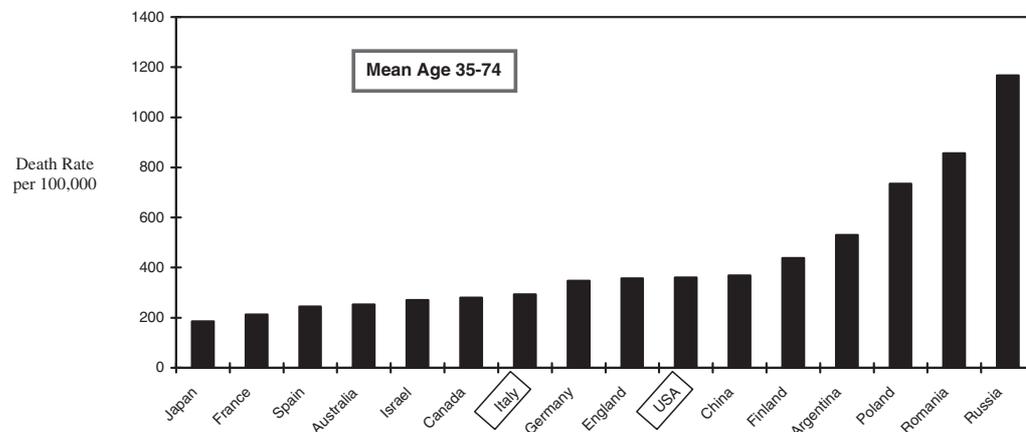


Figure 1. Worldwide cardiovascular disease mortality rate. Source: American Heart Association and World Health Organization.

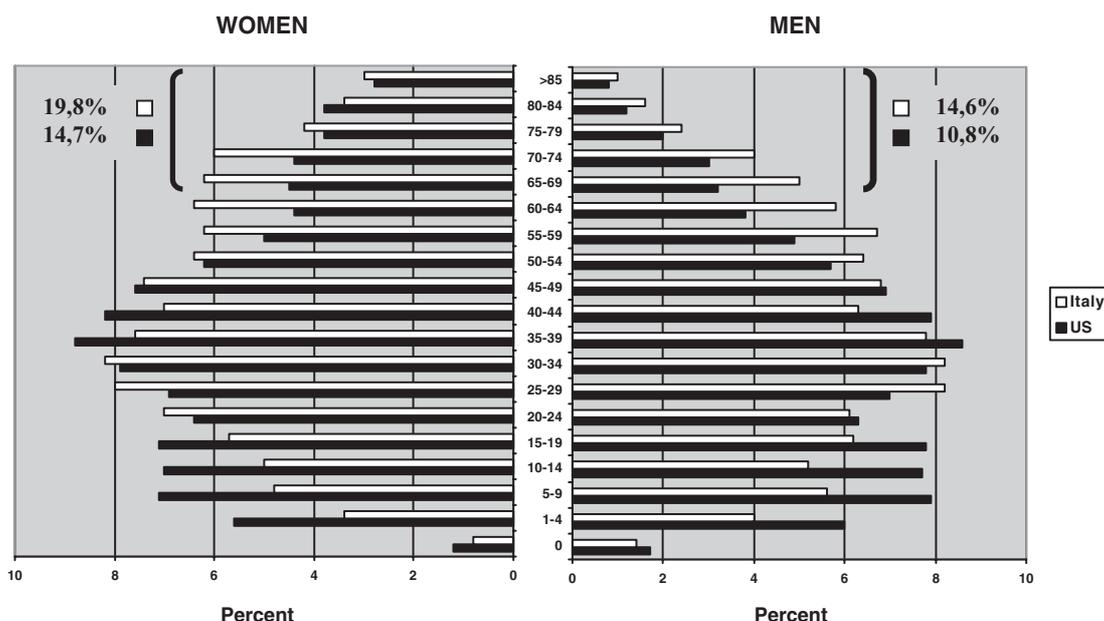


Figure 2. Population demographics in the United States and Italy (1997). Source: World Health Organization.

giotensin II, has a direct cardiotoxicity and induces a prothrombotic state and insulin resistance. The prevalence of obesity in the United States has increased from 13% in 1960 to 31% today³. Recent statistics from the Center of Disease Control and Prevention indicate that nearly two thirds of American adults are overweight (body mass index > 25 kg/m²) and more than 30% are simply obese (body mass index > 30 kg/m²). Interestingly, the trends in obesity are paralleled by similar nationwide trends in type 2 diabetes throughout the world^{4,5}.

These challenges must be transformed into effective solutions. To do so we must be more successful in the translation of science into clinical practice and into the community⁶. If we do not effectively apply advances from research, we fail in our duties to patients and society as a whole. We need to apply proven prevention and treatment strategies more broadly and more successfully in healthcare systems, in clinical practices and among members of the general public⁷. One way to do this is by adhering to recommended guidelines, like those developed jointly by the American College of Cardiology (ACC) and the American Heart Association (AHA)⁸⁻¹⁰. In fact, following guidelines can dramatically improve patient care. It has been demonstrated that patients cared for in-hospitals that adhere to treatment guidelines have a significantly better outcome than patients treated in facilities with low adherence to these guidelines^{11,12}.

Physicians are often well aware of guidelines, but a gap exists between what we know and what we do¹³. National data in the United States regarding the rate of hospital implementation of post-myocardial infarction secondary prevention treatment with aspirin, beta-blockers, angiotensin-converting enzyme inhibitors,

and lipid-lowering drugs, as well as counseling regarding smoking cessation, bear this out.

The AHA launched its *Get With the Guidelines* program to address this treatment gap. *Get With the Guidelines* is a prospective, hospital-based intervention program to increase compliance with coronary artery disease secondary prevention treatment guidelines by the time of hospital discharge¹⁴. *Get With the Guidelines* is based on established AHA/ACC guidelines and provides a web-based hospital tool kit and a patient management tool that can be individualized for each patient's particular characteristics. It also serves as a program for continuing medical education for healthcare providers and best practice examples for hospitals.

Unfortunately provider awareness does not guarantee successful implementation. If 75% of patients with acute myocardial infarction were enrolled in *Get With the Guidelines* at discharge with an 85% adherence rate to secondary prevention guidelines, it is estimated that 80 000 lives would be saved annually. This represents one third of our goal of reducing cardiovascular deaths by 25%.

As members of the community of science and medicine, we are no strangers to challenges. History has also shown that in the face of enormous challenges, we find innovative solutions. What is required is focused, concerted efforts by the medical profession.

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