

## Mortality decrease from cardiovascular disease in Europe: 50 % in 30 years!

E. E. van der Wall

Published online: 3 September 2013

© The Author(s) 2013. This article is published with open access at Springerlink.com

While it is known that European mortality rates from heart disease have substantially decreased within all age groups, it has been assumed that this decline might not be seen in younger adults. In younger people, the benefits from reduced smoking might be offset by increases in obesity, diabetes, and other potential risk factors for cardiovascular disease. Nichols et al. (Deakin University, Melbourne, Australia) analysed mortality data provided by the World Health Organisation (WHO) for 26 countries in the European Union from 1980 to 2009. The data were recently reported online in the *European Heart Journal* [1]. The aim of the study was to examine sex-specific trends in cardiovascular mortality between 1980 and 2009 in the European Union and compare trends between adult age groups. The authors investigated trends in deaths from coronary heart disease between 1980 and 2009 in both men and women divided into four age groups: younger than 45 years, 45 to 54 years, 55 to 64 years, and 65 years or older. In many countries, the age-standardised mortality rate in 2009 was less than 50 % compared with the figures in the 1980s. The largest decreases in mortality for both men and women were seen in Denmark, the Netherlands, Sweden, the United Kingdom, and Malta, respectively, ranging from minus 72 % for men in Denmark to minus 57 % for men in Malta. On the other hand, there were only small decreases among men in Hungary, Latvia, Lithuania, and Poland, whereas there was a significant 29 % increase among Romanian men, indicating wide disparities across Europe.

Absolute coronary heart disease mortality rates among young adults were low compared with older age groups. However, in terms of percentages, between 1980 and 2009

coronary heart disease mortality rates in individuals younger than 45 years decreased as fast as for all ages combined in 22 of 26 countries for men and around 50 % of the countries for women. Among the individuals below 45 years, downward trends appeared to be slowing in both men and women in Italy, Latvia, Lithuania, and the United Kingdom, as well as among men in Poland and Slovakia, and among women in the Czech Republic and France. In the individuals between 45 and 54 years, decreases appeared to be slowing in both women and men in Latvia and the United Kingdom, in women in Lithuania, and in men in Austria, the Czech Republic, Slovakia, and Sweden. In Greece, women between 45 and 54 years showed a significant increase in death rates.

Overall, rates of death from heart disease in many European countries were less than 50 % compared with the figures in the 1980s, with little evidence that the decline is slowing among younger adults, where risk factors such as obesity and diabetes are supposed to be increasing. For most European countries the study by Nichols et al. [1] heralds good news as death rates have come down quite substantially in the last 30 years. Although the study did not look specifically for causal mechanisms, the authors suggested that progress was probably mainly due to the use of better drugs—such as statins and antihypertensive medication—as well as overall lower rates of smoking. However, in particular obesity and diabetes remain a true concern, as rising rates of obesity and diabetes could reverse the considerable progress made in the past 30 years [2].

Apart from the suggestion by the authors that the decline in mortality was primarily related to reduced smoking and the use of risk-modifying drugs, it should be realised that over the past 15–20 years substantial benefits have been reached by strict adherence to guidelines [3, 4], early detection of disease [5], cardiac rehabilitation [6], and interventional procedures such as ICDs, PCI and cardiac surgery [7–12]. For instance, it has been claimed that approximately 50 % of the decline in

E. E. van der Wall (✉)  
Interuniversity Cardiology Institute of the Netherlands (ICIN)–  
Netherlands Heart Institute, Catherijnesingel 52, P.O. Box 19258,  
3501 DG Utrecht, the Netherlands  
e-mail: ernst.van.der.wall@icin.knaw.nl

mortality from coronary heart disease in the United States from 1980 to 2000 may be attributable to reductions in major risk factors, and about 50 % to evidence-based medical and interventional therapies [13]. With the increasing potential and number of interventional strategies over the past decade the balance may well shift to advanced treatment as the primary reason for the decline in mortality.

Remarkably, among the five countries with the largest decreases in mortality, the Netherlands took the second position with a decrease of minus 71 %. Over the period 1980–2009, 8,179,936 males were subject of the study, having a total death rate of 65,365, with 6184 deaths due to coronary heart disease (9 % of total). A total of 8,350,452 females were subject of the study, having a total death rate of 68,870 with 4481 deaths to coronary heart disease (7 % of total). The largest difference was observed in the period 2000–2009. This can be considered a good achievement for our country, both from the perspective of prevention and treatment [14, 15].

To summarise, the important findings of the recent study in the European Heart Journal were that 1) rates of death from heart disease in many European countries are now less than 50 % (in the Netherlands even 71 %!) compared with the figures in the 1980s in both the entire population and younger adult age groups, and 2) trends differed significantly between countries but not within differing age groups in any given country.

Despite these favourable findings, it should be emphasised that cardiovascular disease remains the leading cause of death in Europe. According to the WHO, cardiovascular diseases still kill around 17 million people globally each year. It is therefore important that we continue to focus efforts on 1) primary prevention and management of risk factors, 2) early diagnosis by refined imaging techniques, and 3) advanced interventional treatment.

**Open Access** This article is distributed under the terms of the Creative Commons Attribution License which permits any use, distribution, and reproduction in any medium, provided the original author(s) and the source are credited.

## References

1. Nichols M, Townsend N, Scarborough P, Rayner M. Trends in age-specific coronary heart disease mortality in the European Union over three decades: 1980–2009. *Eur Heart J*. 2013 Jun 25. [Epub ahead of print]. doi:10.1093/eurheartj/eh159.

2. Deckers JW, van Domburg RT, Akkerhuis M, Nauta ST. Relation of admission glucose levels, short- and long-term (20-year) mortality after acute myocardial infarction. *Am J Cardiol*. 2013. doi:10.1016/j.amjcard.2013.06.007.
3. Atary JZ, de Visser M, van den Dijk R, et al. Standardised pre-hospital care of acute myocardial infarction patients: MISSION! guidelines applied in practice. *Neth Heart J*. 2010;18:408–15.
4. van Dis I, Geleijnse JM, Verschuren WM, Kromhout D. Cardiovascular risk management of hypertension and hypercholesterolaemia in the Netherlands: from unifactorial to multifactorial approach. *Neth Heart J*. 2012;20:320–5. doi:10.1007/s12471-012-0268-8.
5. Erbel R, Budoff M. Improvement of cardiovascular risk prediction using coronary imaging: subclinical atherosclerosis: the memory of lifetime risk factor exposure. *Eur Heart J*. 2012;33:1201–13. doi:10.1093/eurheartj/ehs076.
6. Sunamura M, Ter Hoeve N, van den Berg-Emons HJ, et al. OPTimal CARDiac REhabilitation (OPTICARE) following Acute Coronary Syndromes: rationale and design of a randomised, controlled trial to investigate the benefits of expanded educational and behavioural intervention programs. *Neth Heart J*. 2013;21:324–30. doi:10.1007/s12471-013-0422-y.
7. van Welsesens GH, Borleffs CJ, van Rees JB, et al. Improvements in 25 years of implantable cardioverter defibrillator therapy. *Neth Heart J*. 2011;19:24–30.
8. Valk SD, Cheng JM, den Uil CA, et al. Encouraging survival rates in patients with acute myocardial infarction treated with an intra-aortic balloon pump. *Neth Heart J*. 2011;19:112–8.
9. Verschuren JJ, Trompet S, Tio RA, de Winter RJ, Doevendans PA, Jukema JW. Ten-year mortality risk of patients undergoing elective PCI: long-term follow-up of the GENetic Determinants of Restenosis (GENDER) study: no increased mortality risk by restenosis, only by coronary artery disease itself. *Neth Heart J*. 2013;21:101–5. doi:10.1007/s12471-012-0370-y.
10. van Domburg RT, Kappetein AP, Bogers AJ. The clinical outcome after coronary bypass surgery: a 30-year follow-up study. *Eur Heart J*. 2009;30:453–8. doi:10.1093/eurheartj/ehn530.
11. Noyez L, Kievit PC, van Swieten HA, de Boer MJ. Cardiac operative risk evaluation: the EuroSCORE II, does it make a real difference? *Neth Heart J*. 2012;20:494–8. doi:10.1007/s12471-012-0327-1.
12. Noyez L, Biemans I, Verkroost M, van Swieten H. Is a sedentary lifestyle an independent predictor for hospital and early mortality after elective cardiac surgery? *Neth Heart J*. 2013 Jul 3. [Epub ahead of print]. doi:10.1007/s12471-013-0444-5.
13. Ford ES, Ajani UA, Croft JB, et al. Explaining the decrease in U.S. deaths from coronary disease, 1980–2000. *N Engl J Med*. 2007;356:2388–98.
14. Nauta ST, Deckers JW, Akkerhuis M, Lenzen M, Simoons ML, van Domburg RT. Changes in clinical profile, treatment, and mortality in patients hospitalised for acute myocardial infarction between 1985 and 2008. *PLoS One*. 2011;6:e26917. doi:10.1371/journal.pone.0026917.
15. Nauta ST, Deckers JW, van Domburg RT, Akkerhuis KM. Sex-related trends in mortality in hospitalized men and women after myocardial infarction between 1985 and 2008: equal benefit for women and men. *Circulation*. 2012;126:2184–9. doi:10.1161/CIRCULATIONAHA.112.113811.