fighting heart disease and stroke

european heart network

Cardiovascular Risk Assessment – a European Heart Network position paper – 2014

Executive Summary

Cardiovascular disease (CVD) (the main forms of which are coronary heart disease and stroke) is the main cause of death in the EU, accounting for over 1.9 million deaths each year, and is also one of the leading causes of years lost due to an early death (under the age of 65). Many people do not die when they have a heart attack or stroke. They live with marked persisting disability, particularly after a stroke, preventing millions of people from enjoying a happy and active ageing.

CVD is a major economic burden across the EU estimated to cost the EU economy almost 196 billion euros (2009 figures) every year. Of total cost, over €106 billion represent direct health care costs and €90 billion lost productivity and the cost of informal care.

Across the European Union, millions of people are at high risk of developing and dying prematurely from CVD. High-quality risk-assessment programmes, using validated risk-assessment tools (including only five basic elements for assessing CVD risk: sex, age, tobacco use, blood cholesterol and blood pressure), can help determine the most appropriate preventive measure for these people. Risk-assessment programmes are complementary to whole-population approaches. There is a significant amount of CVD morbidity and mortality that can be avoided through primary prevention and early detection of these diseases.

In countries where health care is provided and paid for by the governments, risk-assessment programmes to prevent CVD will not necessarily require entirely new funding and they are cost-effective. Moreover, considering the substantial indirect cost (lost productivity and informal care) of CVD across Europe, preventing people from becoming patients thus allowing them continued active participation in economic and social activity is likely to prove a benefit.

The European Heart Network (EHN) recommends that the European Commission, as part of a comprehensive EU strategy on cardiovascular diseases, makes a proposal for an EU recommendation on strategic national cardiovascular risk-assessment programmes to be implemented by the EU Member States.

Aim

The aim of this paper is to provide information to decision makers about cardiovascular disease (CVD) risk-assessment programmes to identify high-risk individuals.

About the European Heart Network

The European Heart Network (EHN) is a Brussels-based alliance of heart foundations and other like-minded non-governmental organisations throughout Europe. EHN has members in 24 countries in Europe. EHN plays a leading role in the prevention and reduction of cardiovascular diseases, in particular heart disease and stroke, through advocacy, networking, capacity-building and patient support, so that they are no longer a major cause of premature death and disability throughout Europe.

Introduction and background

Cardiovascular disease (CVD) (the main forms of which are coronary heart disease and stroke) is the main cause of death in the EU, accounting for over 1.9 million deaths each year. Coronary heart disease itself is the single most common cause of death in the EU, leading to 681 000 deaths per year. Stroke is the second single most common cause of death in the EU, accounting for just over 460 000 deaths in the EU each year.[1]

Not only is CVD the main cause of death in the EU, it is one of the leading causes of years lost due to an early death (under the age of 65).[2] A combination of disease prevention and improved treatment has brought about a decline in cardiovascular death rates in the past decades.[3] However, there are substantial and persistent inequalities between countries in the EU and there are some countries in which CHD mortality rates have begun to significantly increase in recent years or decades in younger subpopulations.[4]

Many people do not die when they have a heart attack or stroke. They live with marked persisting disability, particularly after a stroke. As a result of this ill health and disability, millions of people are unable to enjoy a happy and active ageing and many families are left to care for partners or relatives who have been incapacitated by cardiovascular diseases. Moreover, the collective burden of cardiovascular disease on society is evident. Cardiovascular diseases, together with other chronic non-communicable diseases, cost economies dearly, through the medical and social care needs, as well as the economic impact of premature retirement and reduced work force productivity.

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[1] Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis; http://www.ehnheart.org/cvd-statistics.html.

[2] http://www.euro.who.int/en/data-and-evidence/european-health-report-2012

[3] Capewell, S. (2009) Cardiovascular disease: massive and costly. Is it preventable? Presentation to MEP Heart Group, 9 December 2009; http://www.mepheartgroup.eu/meetings-activities/item/26-achieving-heart-health-in-europe-why-the-european-parliament-matters-9-december-2009.html.

[4] Trends in age-specific coronary heart disease mortality in the European Union over three decades: 1980–2009; Nichols et al; European Heart Journal doi:10.1093/eurheartj/eht159

CVD is a major economic burden across the EU estimated to cost the EU economy almost 196 billion euros (2009 figures) every year. Of total cost, over €106 billion represent direct health care costs and €90 billion lost productivity and the cost of informal care.[5]

Identification of high-risk individuals

Rationale and Benefits

The aim of CVD risk-assessment programmes is to detect people who are at high risk of developing cardiovascular diseases.

Importantly, these programmes will not only identify those at risk but will also ensure that the individuals are helped to reduce their risks, and avoid the onset of disease, through early primary prevention interventions (e.g. smoking cessation, weight management, exercise interventions) and use of medication in accordance with the European Guidelines on Prevention of Cardiovascular Diseases in Clinical Practice.[6]

Across the European Union, millions of people are at high risk of developing and dying prematurely from CVD. High-quality risk-assessment programmes, using validated risk-assessment tools, can help determine the most appropriate preventive measures for these people. In deprived communities, the rate of high-risk individuals is known to be significantly higher than in other areas.[7] It is, therefore, critical to establish structures that enable the inclusion of hard-to-reach groups and to perform opportunistic risk assessment.

Risk-assessment programmes are complementary to whole-population approaches. Small reductions in population cholesterol concentrations, blood pressure, or smoking translate into substantial reductions in cardiovascular events and deaths. Whole-population interventions rely on policies such as strictly limiting the prevalence of industrial trans fats ink the food chain, significantly reducing salt (sodium) and saturated fat intake, providing smoke-free public and work places, sufficient statutory number of lessons of physical exercise in school curricula as well as facilitating physical activity in everyday life through, amongst others, sensible urban planning. It is universally recognised that the two elements are needed in comprehensive cardiovascular disease prevention strategies.

Evidently, treating and managing people with overt cardiovascular disease according to standards and guidelines, including routine access to appropriate rehabilitation, remain a priority. It should also be noted that people with diabetes as well as people with very high levels of individual risk factors and decreased kidney function are automatically at high risk. They deserve immediate attention to all risk factors without any further risk assessment.

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[5] Nichols M, Townsend N, Luengo-Fernandez R, Leal J, Gray A, Scarborough P, Rayner M (2012). European Cardiovascular Disease Statistics 2012. European Heart Network, Brussels, European Society of Cardiology, Sophia Antipolis; http://www.ehnheart.org/cvd-statistics.html.

[6] European Guidelines on cardiovascular disease prevention in clinical practice (version 2012), Perk et al, http://eurheartj.oxfordjournals.org/content/33/17/2126, http://www.escardio.org/guidelines-surveys/esc-guidelines/GuidelinesDocuments/guidelines-CVD-prevention-ES-FT.pdf.

[7] Cardiovascular diseases inequalities: causes and consequences. Capewell, S. http://www.slideshare.net/sanidadyconsumo/cardiovascular-disease-inequalities-causes-and-consequences

Effectiveness and cost-effectiveness

Many studies have demonstrated the effectiveness of lowering risk factors at an individual level.[8] Though evidence indicates that lifestyle counselling to individuals does not reduce total or cardiovascular disease mortality or clinical events in general populations[9,10,11], this does not rule out benefits of clinically indicated or otherwise targeted risk assessment and counselling[12]. Therefore, offering risk-assessment and prevention programmes assisting people in efforts to reduce their risks of cardiovascular diseases should be supported by governments within a nation-wide CVD prevention strategy. In the European Union, Slovenia and the UK have developed such programmes. Elsewhere, such programmes should be tailored to suit local conditions and resources.

In countries where health care is provided and paid for by the governments, risk-assessment programmes to prevent CVD will not necessarily require entirely new funding. For example, in the UK, the Government has undertaken extensive economic modelling of its vascular check programme to assess cost-effectiveness. It concluded that the policy was "highly cost effective" with a conservative estimate that the cost per quality adjusted life year (QALY) was around €4 600 (the internationally recognised benchmark is around €38 000 per QALY).[13] The UK vascular check programme includes diabetes and kidney disease. Other studies have also demonstrated cost-effectiveness.[14]

However, the absolute cost of assessment of risk of CVD and subsequent intervention remains relatively low. Moreover, considering the substantial indirect cost (lost productivity and cost of informal care) of cardiovascular diseases across Europe, preventing people from becoming patients thus allowing them continued active participation in economic and social activity is likely to prove a benefit.

Programmes

Programmes to identify high-risk individuals have two elements: risk assessment and intervention.

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[8] Ebeltoft Health Promotion Project (EHPP), Lauritzen et al, Scandinavian Journal of Public Health 2008; 36; 650, http://sjp.sagepub.com/content/36/6/650.abstract; Screening for risk of cardiovascular disease is not associated with mental distress. The Inter99 study. Prev Med 2009 Mar;48(3):242-6. Epub 2008 Dec 25; CUORE project: implementation of the 10-year risk score, Palmieri et al, European Journal of Cardiovascular Prevention & Rehabilitation 389925; D A Wood, K Kotseva, S Connolly, C Jennings, A Mead, J Jones, A Holden, D De Bacquer, T Collier, G De Backer, O Faergeman, on behalf of EUROACTION Study Group; Nurse-coordinated multidisciplinary, family-based cardiovascular disease prevention programme (EUROACTION) for patients with coronary heart disease and asymptomatic individuals at high risk of cardiovascular disease: a paired, cluster-randomised controlled trial www.thelancet.com Vol 371 June 14, 2008.

[9] Effect of screening and lifestyle counselling on incidence of ischaemic heart disease in general population: Inter99 randomised trial; Jørgensen et al; BMJ 2014;348

[10] General health check in adults for reducing morbidity and mortality from disease; Krogsbøll et al; Cochrane Database Syst Rev2012;(10):CD009009.

[11] Socioeconomic position and participation in baseline and follow-up visits: the Inter99 study; Bender et al; Eur J Prev Cardiol 2012;

[12] Krogsbøll LT, Jørgensen KJ, Larsen CG, Gøtzsche PC. BMJ 2012;345:e7191

[13] UK Department of Health, Putting prevention first, Vascular Checks: risk assessment and management, Impact Assessment, 2008, www.dh.gov.uk/publications.

[14]Comparison of mass and targeted screening strategies for cardiovascular risk: simulation of the effectiveness, cost-effectiveness and coverage using a cross-sectional survey of 3921 people. K D Lawson et al. Heart 2010 96: 208-212, 2009, http://heart.bmj.com/content/96/3/208.full.pdf. Ebeltoft Health Promotion Project (EHPP), Lauritzen et al, Scandinavian Journal of Public Health 2008; 36; 650, http://sjp.sagepub.com/content/36/6/650.abstract.

Risk assessment

Assessing risk of CVD requires the use of a validated risk-score tool which integrates multiple risk factors. Several risk-score tools are available and validated. Some of these are listed in annex A, which is not exhaustive.

Five basic elements are sufficient for assessing CVD risk: sex, age, tobacco use, blood cholesterol and blood pressure. These are included in all validated risk-score tools. In addition, the assessment may include taking the pulse which would allow identifying asymptomatic atrial fibrillation. Other elements are full lipid profiles (LDL, HDL cholesterol and triglycerides), family history of premature CVD, diabetes, body mass index, waist circumference and lifestyle factors other than smoking (e.g. exercise, intake of fruit and vegetables) as well as social deprivation. The measurement of all elements are straight forward, non-invasive and relatively cheap. Where very high levels of individual risk factors are found, the assessment should be expanded to include family members. In particular, where very high level of blood cholesterol is found, cascade-screening should take place.

It is preferable that life-time risk is assessed since age is a predominant risk factor. Life-time risk assessment avoids underestimation in younger individuals. However, it should be noted that even well-validated risk-score tools assessing life-time risk may underestimate risk in some ethnic groups, for whom not enough data are available, and overestimate risk in higher socio-economic groups.

It is essential that those performing risk assessment know how to interpret the risk and how to communicate it properly to the individual.

Intervention

No risk assessment should take place unless a prevention system is in place which allows mitigating the individual's risk through lifestyle counselling and medication where appropriate.

Counselling must include smoking cessation, advice on nutrition and exercise as well as weight control. Evidence of effectiveness of general health counselling may not be conclusive; but a number of studies from different countries/regions provide models for optimal health counselling interventions. Comprehensive smoking cessation programmes have been proven to be effective.[15] Proven benefits of medical therapies to lower blood pressure[16] or serum cholesterol[17] can only be realised if eligible high-risk individuals are identified.

[15] Review: smoking cessation reduces the risk of death and non-fatal myocardial infarction in coronary heart disease, Critchey et al, JAMA 2003;290:86–97, http://ebm.bmj.com/content/9/1/28.extract, Intensive Smoking Cessation Intervention Reduces Mortality in High-Risk Smokers With Cardiovascular Disease, Syed M et al, 2007, http://chestjournal.chestpubs.org/content/131/2/446.full.pdf+html, World Bank, Tobacco Control at a Glance, Washington, 2003.

[16] Law MR, Morris JK, Wald NJ. Use of blood pressure lowering drugs in the prevention of cardiovascular disease: meta-analysis of 147 randomised trials in the context of expectations from prospective epidemiological studies. BMJ 2009;338:b1665

[17] Cholesterol Treatment Trialists' (CTT) Collaboration. Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170 000 participants in 26 randomised trials. Lancet 2010;376:1670-81

Professional guidelines[18] provide advice on and set thresholds for use of medication.

Conclusion

There is a significant amount of CVD morbidity and mortality that can be prevented in individuals through primary prevention and early detection of these diseases.

Identification of people at high risk of CVD does not turn individuals into patients but rather allows them to extend their healthy life years and stay active.

High-quality risk-assessment and management programmes could significantly increase uptake of preventive interventions and offer a real opportunity to reduce health inequalities when combined with whole-population approaches.[19]

The EU Council Conclusions on promoting heart health from 2004 highlights the need for both whole-population and high-risk strategies.[20] The European Heart Health Charter supports the establishment of national strategies for detection and management of those at high risk.[21] This is echoed in the Resolution of the European Parliament on action to tackle cardiovascular disease (2007).[22] The Council Conclusions on Innovative approaches for chronic diseases in public health and healthcare systems, adopted in December 2010, call for exploring the scope for early detection of relevant risk factors for chronic diseases.[23] The UN Political Declaration of the High-Level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases of 16 September 2011 recommends investing in early detection of non-communicable diseases taking into account domestic circumstances.[24] The WHO Global Action Plan for the Prevention and Control of NCDs (2013-2020) recommends that health systems should aim to improve prevention, early detection, treatment and sustained management of people with or at high risk for cardiovascular disease and other chronic diseases.[25]

EU action on prevention of CVD through risk assessment responds commendably to the objective of the European Commission's Europe 2020 Flagship Initiative – Innovation Union and its pilot project in the field of active and healthy ageing.[26]

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[18] European Guidelines on cardiovascular diseases prevention in clinical practice, Perk et al. 2012, http://www.escardio.org/guidelines-surveys/esc-guidelines/GuidelinesDocuments/guidelines-CVD-prevention.pdf

[19] Capewell S, Graham H (2010) Will Cardiovascular Disease Prevention Widen Health Inequalities? , http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1000320.

[20] Council of the European Union, 2586th Council Meeting of Employment, Social Policy, Health and Consumer Affairs Council, Luxembourg, 2004., http://ec.europa.eu/health/ph_threats/com/Influenza/influenza_key05_en.pdf.

[21] European Heart Health Charter, 2007, http://www.ehnheart.org/euroheart/european-health-charter.html.

[22] European Parliament resolution of 12 July 2007 on action to tackle cardiovascular diseases, http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//TEXT+TA+P6-TA-2007-0346+0+DOC+XML+V0//EN.

[23] Council conclusions "Innovative approaches for chronic diseases in public health and healthcare systems" 3053rd EMPLOYMENT, SOCIAL POLICY HEALTH and CONSUMER AFFAIRS Council meeting Brussels, 7 December 2010, http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/lsa/118282.pdf

[24] Political declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases, 16 September 2011, http://www.un.org/ga/search/view_doc.asp?symbol=A%2F66%2FL.1&Lang=E.

[25] Global Action Plan for the Prevention and Control of NCDs (2013-2020), http://www.who.int/nmh/events/ncd_action_plan/en/

[26] European Commission Communication on Europe 2020 Flagship Initiative Innovation Union SEC(2010) 1161, http://ec.europa.eu/commission_2010-2014/geoghegan-quinn/headlines/documents/com-2010-546-final_en.pdf.

Recommendation

The European Heart Network (EHN) recommends that the European Commission, as part of a comprehensive EU strategy on cardiovascular diseases, makes a proposal for an EU recommendation on strategic national cardiovascular risk-assessment programmes to be implemented by the EU Member States.

Specifically, EHN recommends that:

- Member States implement programmes that assess individuals' risk of cardiovascular diseases free of charge. These programmes should be designed to optimise opportunistic risk assessment and to target specific population groups likely to be at high risk. Targeting can relate to specific age groups or specific socio-economic groups.

- CVD risk-assessment programmes target people aged 30-65 who are not currently on a disease register or diagnosed with cardiovascular diseases. Individuals invited to risk assessment must be counselled on the potential downstream implications. All information/correspondence should be appropriate to the individual's understanding capacity.

- Healthcare professionals carrying out the assessment and giving lifestyle management advice need not be physicians, but must have received adequate training, including in how to interpret risk and communicate it to the individual. In addition, they should have all necessary and suitably calibrated equipment[27] to undertake the assessment, which should take place in appropriate facilities. Best practice guidelines must be followed and referral back to primary care physicians made as appropriate, according to those guidelines.

- CVD risk-assessment programmes must use validated risk-score tools, which integrate multiple risk factors (see annex A for examples). The risk-score tool used should be one closely linked to the population to which is it applied (i.e. calibrated).

- Follow-up intervention is assured as integral part of Member States' health care systems. This intervention should consist of health counselling (smoking cessation, advice on nutrition and exercise as well as weight control) and drug use where appropriate.

- Data collected through risk-assessment programmes are collected in a standardised manner, to ensure comparability across the EU, and brought together in a centralised EU cardiovascular disease registry.

- CVD risk assessment is repeated with a five-year interval for those not found at high risk or diagnosed with cardiovascular disease.

[27] UK Department of Health, NHS Health Check: Vascular Risk Assessment and Management Best Practice Guidance, 2009.