



fighting heart disease  
and stroke  
european heart network

27 April 2022

## European Commission Healthier Together Initiative 2022

### Input from the European Heart Network

#### 1. Why we need a comprehensive and ambitious plan to tackle cardiovascular disease?

##### If CVD were a country



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#### The Heavy burden of CVD

Cardiovascular disease (CVD) is a vast group of disorders, all related to the heart and circulatory (vascular) system, including stroke, with a high prevalence of morbidity and mortality in the EU.

CVD remains the leading cause of death in the EU claiming over 1.8 million deaths per year, which accounts for 37% of all deaths in the EU.<sup>1</sup>

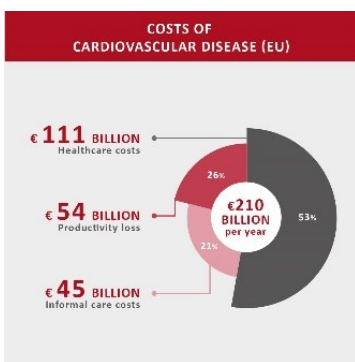
Steady and substantial reductions in mortality rates in previous decades have slowed down over the past five to ten years in several Western European countries (e.g. France, Germany and the United Kingdom). This has contributed to the slowdown in life expectancy improvements. These adverse trends have been attributed to an insufficient awareness of CVD, limited and

<sup>1</sup> EHN Strategic plan 2019 – 2023: <https://ehnheart.org/about-us/ehn-strategic-plan-2019-2023.html>

geographically varied investment in cardiovascular prevention and treatment, and the rising prevalence of obesity and with that, of diabetes, hypertension, dyslipidaemia and atherosclerosis.<sup>ii</sup>

In addition, many people develop cardiovascular disorders due to unmodifiable risk factors, such as their genetic predisposition or congenital factors. A group of cardiovascular disorders is linked to functional decline due to ageing. Some cardiovascular disorders result from other chronic conditions or their therapies, such as treatment for certain types of cancer, diabetes, hypertension, chronic kidney disease, pulmonary disease. The recent COVID-19 pandemic has also demonstrated that infectious diseases can heavily impact people’s cardiovascular health in the longer term<sup>iii</sup>.

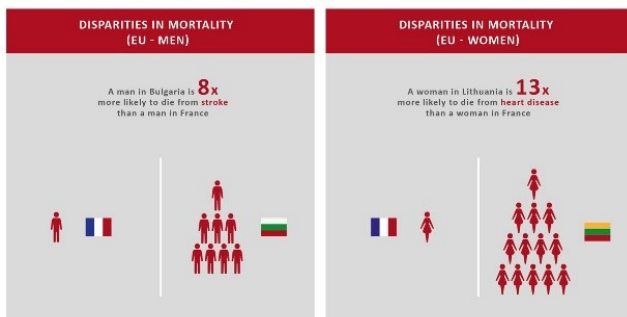
For some people, CVD can cause sudden and unexpected death; for others, death comes after a sometimes-lengthy period of ill health. CVD can have devastating consequences on the lives of individuals. In the EU it is estimated that almost 63 million people live with CVD and that 13 million new cases of CVD are being diagnosed every year.



The cost of CVD to the EU economy has been estimated at EUR 210 billion, of which slightly more than half was due to direct health care costs, a quarter to productivity losses and a fifth to the informal care of people with CVD.<sup>iv</sup> This estimate does not consider the welfare losses associated with premature mortality related to these diseases.

### Cardiovascular inequalities are significant throughout the EU

There are wide inequalities in mortality from CVD across different population groups within countries, but also between European countries, reflecting the wider differences in major preventable and non-preventable risk factors.



The prevalence of CVD is higher in Eastern and Central EU Member States and lower in Western, Northern and Southern European countries. Also, in line with the prevalence data, death rates from both heart diseases and stroke are higher in Central and Eastern Europe than in Northern, Southern and Western Europe. CVD is the single most important

contributor to excess mortality in Eastern European countries compared to Western countries. While in men less than 50% of the excess mortality is due to CVD, in women this percentage is even as high as 80%. **Adequate use of structural and cohesion funds** combined with improved digital and health literacy could be important contributors to bridging the gap.

### The cardiovascular legacy of COVID-19

COVID-19 clearly demonstrated the strong need for a European Health Policy combined with the co-operation and joint action of EU Member States. The resilience of national healthcare

systems clearly reached a breaking point while fighting against recent threats to public health and healthcare systems.

The COVID-19 pandemic has made life even harder for people living with CVD both in terms of access to care and delivery of regular<sup>v</sup> and emergency<sup>vi</sup> care.

Data shows that pre-existing cardiovascular conditions are particularly important predictors of COVID-19 severity and mortality.<sup>vii</sup> It is now clear that COVID-19, which is an infectious disease affecting the lungs, also affects other organs, including the heart. Studies have shown that 15–40% of COVID-19 patients had a history of cardiac disease and 10–30% showed laboratory signs of cardiac injury and cardiovascular involvement, associated with a more severe clinical course. Studies have also shown that the risk and 1-year burden of cardiovascular disease in survivors of COVID-19 are substantial. Care pathways of those surviving acute episodes of COVID-19 should include attention to cardiovascular health and disease.<sup>viii</sup>

Improving cardiovascular health is key in making our healthcare systems more resilient to pandemics. COVID-19 has brought to light the high vulnerability of CVD patients, showing that by reducing the burden of CVD and other chronic conditions, the European population will be more resilient to future health threats.

While in the past, EU health policies and programmes have addressed certain aspects and risk factors of CVD through prevention and health promotion policies, a coherent, structured and financed European Plan for Cardiovascular Health has been missing so far. This is rather surprising given the high prevalence of CVD at EU level, making it killer No 1 in Europe and worldwide.

**Therefore, the EU and Member States must develop a dedicated European Cardiovascular Health Plan with the overall aim to reduce premature morbidity and mortality from CVD and tackle inequalities in cardiovascular health in the EU.**

## 2. The importance of primary and secondary prevention

### 2.1 Ambitious public health measures to mitigate cardiovascular risk factors

Contrary to common belief, CVD is not only caused by behavioural risk factors. A greater reduction of exposure to the main behavioural risk factors – tobacco, unhealthy diet, physical inactivity and harmful use of alcohol – would increase the number of years lived in good health. Many people are already disabled by ill health before they reach the retirement age. Effective population-wide interventions to prevent CVD have the potential to provide both human and economic benefits with considerable returns on investment. With the EU Green Deal, the EU Farm to Fork Strategy and prevention measures proposed in the ‘Beating Cancer Plan’, many primary prevention measures that would also prevent other non-communicable diseases are already in the EU pipeline and hopefully well on their way to being implemented in Europe. **Concrete policy measures in the field of primary prevention** can be found in the paper

*'Fighting cardiovascular disease - a blueprint for European Action'*, jointly developed by EHN and the European Society of Cardiology (ESC). They include:

- Set nutrient profiles to underpin nutrition and health claims as required by the EC regulation on nutrition and health claims (EC) No 1924/2006
- Adopt rules on simplified front-of-pack nutritional labelling
- Adopt regulations restricting all marketing to children, including digital, of food and drinks high in fat, salt and sugar
- Raise minimum tobacco excise duties to the highest possible level
- Bring excise duties on “roll your own” tobacco up to the same level as manufactured cigarettes
- Strengthen regulation on e-cigarettes
- Encourage the development and approval of EU funded projects (in particular, projects supported by EU Structural Funds) that have a positive impact on active living
- Raise minimum excise duties on alcoholic beverages to the highest possible level
- Introduce mandatory, front-of-pack energy labelling on alcohol
- Introduce mandatory ingredients list on alcoholic beverages
- Revise the ambient air quality directive adopting the WHO Air Quality Guideline values as limit values.

## **2.2 The importance of early detection and secondary prevention**

Not all cardiovascular diseases can be prevented. Unmodifiable risk factors, such as genetic predisposition, congenital factors, functional decline due to ageing, or cardiovascular morbidity due to other chronic conditions or infectious diseases, such as COVID-19, and their therapies cannot be ignored.

Secondary prevention via early detection is therefore equally crucial. For example, around 20% – 40% of heart attacks occur in people previously undiagnosed with CVD. To assist these people to reduce their risks, and to avoid the onset of disease, it is crucial to identify them early and provide them with the appropriate advice and preventative treatment.

By investing in early detection, more cases of CVD will be diagnosed. People will have the possibility to be treated early in quality-assured pathways to prevent the onset of the disease, which can lead to debilitating CVD events and deaths.

Recent evidence suggests that evidence-based, targeted case-finding in selected settings and to specific population groups known to be at high risk, are more likely to be effective for reducing CVD. Digital technologies and big data could potentially transform early detection, for example, by stratifying the population into risk groups using data from electronic health records or by self-monitoring, but further research and scientific validation of such technologies is needed.<sup>ix</sup>

**EU Member States should establish a joint action in secondary prevention.** The aim would be to identify and manage individuals at high risk of developing CVD.<sup>x</sup> Targeted high-quality, risk-assessment programmes (including approaches that enable the inclusion of hard-to-reach groups) can help identify people at risk and determine the most appropriate preventive measures.

### **3. Unlock the full potential of digital technologies for cardiovascular health**

#### **3.1 Digitalisation for cardiovascular innovation**

Digital health, big data and artificial intelligence hold great potential to detect cardiovascular diseases, personalise treatment and management, stratify patient populations, develop new medicines and make clinical trials less costly.

To achieve the delivery of safe, effective, sustainable, and user-friendly technologies accessible to all, further exploitation of the potential of digital health in a spirit of co-creation between patients and health care professionals is a must. Furthermore, the interoperability and implementation of electronic health records are crucial to realise a large-scale roll-out of digital health technologies.<sup>xi</sup>

The advantages of quality-assured national registries - aiming to support continuous quality improvement at the hospital and country level - have been demonstrated by the Swedish,<sup>xii</sup> the Finnish<sup>xiii</sup> and more recently, the UK models.<sup>xiv</sup> Continuous data collection and provision can substantially improve quality of care, resulting in improved outcomes. To achieve this, the use of validated quality indicators to assess the effect of various measures on healthcare outcomes and inequalities across the EU must be guaranteed.<sup>xv</sup> There is a need for CVD registries to be coordinated and expanded at European level in order to inform evidence-based decision-making throughout the cardiovascular disease pathway.

Currently, the high cost of randomised controlled trials and the reluctance of payers to reimburse therapies that produce only moderate benefits for patients are a major hurdle to the development of new cardiovascular treatments and the reason why several pharmaceutical companies have moved out of investing in the cardiovascular area. To mitigate these worrying trends, innovative approaches are urgently needed.

**The EU and its Member States should promote and support the development of harmonised and comprehensive health information systems on CVD. They should also invest in increasing the digital capability** so that the evidence generated within health systems allows to:

- improve the collection of epidemiological data on CVD across the EU
- identify unmet needs for cardiovascular patients in terms of treatments and medical procedures

- assess whether existing therapies and treatments produce patient-relevant outcomes
- drive public and private investments towards research, innovation and development of medicinal products that address real needs of cardiovascular patients and contribute to improving the quality of life for people living with CVD
- improve the speed and efficiency of multi-country randomised clinical trials at lower cost and without compromising patient safety
- monitor the availability of medicines and medical devices in the cardiovascular field with a view to predict and mitigate potential shortages, especially in emergency situations.

### 3.2 Digital innovation for saving lives

It is estimated that 350,000 people suffer out-of-hospital cardiac arrests<sup>2</sup> every year in Europe, with only 10% surviving until hospital discharge. There are large regional differences in sudden cardiac arrest survival rates across Europe.<sup>xvi</sup>

In cases of cardiac arrest, immediate provision of cardiopulmonary resuscitation (CPR) is crucial to keep oxygen flowing in and out of the lungs and to keep oxygenated blood flowing through the body. CPR can help save lives and minimize the damaging effects that can occur while waiting for emergency responders to arrive. International studies emphasize the importance of early life-saving interventions during a cardiac arrest to help save more lives. International and European guidelines<sup>xvii</sup> from resuscitation organisations cast special attention on **technologies which support early life-saving interventions such as citizen responder systems.**

Over the years, many heart foundations and associations in collaboration with other national actors have developed and maintained resuscitation programmes for a lay public, defibrillator registries, and smartphone applications establishing citizen responder systems connected to emergency call centres and services.<sup>xviii</sup> Evaluation studies on such programmes demonstrate that an increased proportion of victims who receive early CPR (i.e. before the ambulance arrives) increase their chances of survival from sudden cardiac arrest and therefore CPR has a positive effect on overall survival rates.<sup>xix</sup>

**Member States should establish a joint action to support CPR training, education, and citizens' emergency response networks with supportive digital technologies, and to develop evidence-based guidelines.**

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<sup>2</sup> The wider public often perceives that a cardiac arrest and a heart attack are the same thing, while they are different emergency events requiring different responses. A heart attack occurs due to a blood circulation problem (often caused by a clot in one of the coronary arteries). Cardiac arrest occurs when the electrical activity of the heart becomes suddenly so abnormal that the heart stops pumping blood around and fibrillates instead. A heart attack may sometimes trigger a cardiac arrest, but it is not the sole cause. Sudden cardiac arrest can occur in people who have no known heart disease (e.g. cardiomyopathy, inherited heart conditions, congenital heart disease, heart valve disease, acute myocarditis, or other).

#### **4. Modernise cardiovascular patients' pathway by supporting interdisciplinary health care models combined with digital health to strengthen outpatient care**

Digital technology has begun to change the practice of medicine. Digital health can be defined as the use of digital technology in medicine. It encompasses a broad scope of tools to engage, motivate, monitor and empower people to prevent diseases, to improve care for patients and make healthcare systems more efficient.

A review of digital health research from 2000 until the end of 2019, funded by the European Heart Network, presents available evidence on the effectiveness of digital health tools in interventions in prevention and management of cardiovascular patients.<sup>xx</sup>

In the field of **remote consultation and monitoring**, current evidence suggests that incorporating digital health tools in the patient pathway can be effective in:

- reducing blood pressure,
- improving hypertensive patients' medication adherence and self-management,
- improving chronic management of type 2 diabetes,
- maintaining long-term, self-management of ischaemic heart disease after cardiac rehabilitation,
- reducing rehospitalisation and improving self-management and heart failure patients' quality of life.

During the COVID-19 pandemic remote consultation and monitoring, including the use of mobile-health (m-health) tools and wearables, became essential to replace (or at least to support) the traditional face-to-face interaction between patients and clinicians. The need to improve access to digital healthcare has increased due to COVID-19 and this for many years to come.

In the field of **telerehabilitation**, current evidence suggests that telerehabilitation or home-based exercise:

- is an effective way to deliver exercise training for ischaemic heart disease patients:
  - who cannot attend centre-based cardiac rehabilitation,
  - as an add-on to centre-based cardiac rehabilitation to increase long-term effects of cardiac rehabilitation,
- could possibly improve the uptake of exercise training in heart failure patients,
- is cost-effective, whether standalone or as add-on to centre-based rehabilitation.

If governments are aiming at making our healthcare systems more resilient, then the cardiovascular patient pathway and the entire multi-stakeholder healthcare ecosystem needs to be modernised and embrace effective innovations for out of hospital care, monitoring, rehabilitation and management.

**The EU and its Member States should therefore work with all stakeholders, and most notably patients, to reorganise cardiovascular services and put in place effective models for out-of-hospital services, accessible to all.**

## 5. Improve health and digital literacy to tackle inequalities.

The uneven burden of CVD across different population groups reflects the wider inequalities within countries. Public investment into programmes aimed at improving health and digital literacy are important enablers to tackle inherent inequalities.

Low health literacy is a public health challenge throughout Europe, where one in every three to almost one in every two Europeans may not be able to understand essential health-related material.<sup>xxi</sup> Increasing health literacy rates is a means to empower citizens, including patients, and will contribute towards scaling down inequalities with the aim of building a healthier society.

Though digitalisation has increasingly been embedded in our everyday life, the state of digital literacy and education in Europe varies greatly between countries. 84% of the EU's population are internet users, with smartphones being the most frequently used device, but digital literacy is surprisingly low. Only 57% of the EU's population aged 16–74 had a basic level of digital literacy in 2017.<sup>xxii</sup> Low digital and health literacy are especially associated with older age and low socio-economic status. Being able to use the internet and basic digital technologies can be life-transforming and can improve quality of life for people who possess the know-how. Therefore, the introduction of digital health is only beneficial for those who have sufficient digital literacy. Increasing digital literacy rates will also help contribute to scaling down existing inequalities.

Digital health literacy is a blurry notion for most people. There is a lack of understanding of what it entails and how it can add value, and there is even less information on common solutions and issues in a cross-border context, combined with concerns over data protection and confidentiality. In its 2020 report, the eHealth Stakeholder Group (EHSg) underlined that digital health literacy is the key to successful diffusion of digital health in society, to facilitate secondary use of health data and to build up trust in the potential of digitalisation.<sup>xxiii</sup>

**The EU and Members States must invest in programmes aimed at increasing health and digital literacy rates of all citizens across countries.** Adequate use of structural and cohesion funds in combination with the EU Digital Education Action Plan are important tools towards this goal.



## Annex: EHN strategic documents and papers

The following papers and strategic documents from the European Heart Network include a list of concrete policy recommendations and examples of good practice that can inspire future European policies and programmes aimed at improving cardiovascular health for all European citizens.

- Fighting cardiovascular disease—a blueprint for European Action, European Heart Network and the European Society of Cardiology, 2020 <https://ehnheart.org/eu-action-on-cvd.html>
- EHN paper, 2021, CVD Risk Assessment Programmes, <https://ehnheart.org/publications-and-papers/publications/1304:cvd-screening-2021.html>
- EHN paper, 2020, What is the value of digital tools for cardiovascular patients? <https://ehnheart.org/publications-and-papers/publications/1285:digital-tools-cardiovascular-patients.html>
- EHN paper, 2020, Physical Activity Policies for Cardiovascular Health, <https://ehnheart.org/publications-and-papers/publications/1243:physical-activity-policies-for-cardiovascular-health.html>
- EHN paper, 2020, Electronic Cigarettes and Cardiovascular Disease, <https://ehnheart.org/publications-and-papers/publications/1241:electronic-cigarettes-and-cardiovascular-disease.html>
- EHN paper, 2022, Heated Tobacco Products and CVD, <https://ehnheart.org/publications-and-papers/position-papers-and-statements/1327:heated-tobacco-products.html>
- EHN paper 2019, Heart Failure and Cardiovascular Diseases, <https://ehnheart.org/publications-and-papers/publications/1202:heart-failure-and-cardiovascular-diseases.html>
- EHN paper, 2017, Transforming European Food and Drink policies for cardiovascular health, <https://ehnheart.org/publications-and-papers/publications/1093:transforming-european-food-and-drinks-policies-for-cardiovascular-health.html>
- EHN paper, 2013, Cardiac and Stroke Rehabilitation, <https://ehnheart.org/component/attachments/attachments.html?task=download&folder=publications&id=2077>

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<sup>i</sup> Roth GA et al.; Global Burden of Cardiovascular Diseases Writing Group. Global Burden of Cardiovascular Diseases and Risk Factors, 1990-2019: Update From the GBD 2019 Study. *J Am Coll Cardiol*. 2020 Dec 22;76(25):2982-3021. doi: 10.1016/j.jacc.2020.11.010. Erratum in: *J Am Coll Cardiol*. 2021 Apr 20;77(15):1958-1959. PMID: 33309175; PMCID: PMC7755038.

<sup>ii</sup> OECD/The King's Fund (2020), Is Cardiovascular Disease Slowing Improvements in Life Expectancy?: OECD and The King's Fund Workshop Proceedings, OECD Publishing, Paris, <https://doi.org/10.1787/47a04a11-en>

<sup>iii</sup> Xie, Y., Xu, E., Bowe, B. et al. Long-term cardiovascular outcomes of COVID-19. *Nat Med* 28, 583–590 (2022). <https://doi.org/10.1038/s41591-022-01689-3>

<sup>iv</sup> Wilkins, E, Wilson, L, Wickramasinghe, K, Bhatnagar, P, Leal, J, Luengo-Fernandez, R, Burns, R, Rayner, M & Townsend, N 2017, European Cardiovascular Disease Statistics 2017. European Heart Network, Brussels.

<sup>v</sup> M Mujtaba, Sapna, FAISAL Khanzada, DANISH Qayyum, TAHIR Saghir, SHARF Buraro, Impact of Covid-19 on cardiovascular clinics: are we ready for tele-medicine?, *European Heart Journal*, Volume 43, Issue Supplement\_1, February 2022, ehab849.178, <https://doi.org/10.1093/eurheartj/ehab849.178>

<sup>vi</sup> Baldi E. et al., COVID-19 kills at home: the close relationship between the epidemic and the increase of out-of-hospital cardiac arrests, *European Heart Journal*, Volume 41, Issue 32, 21 August 2020, Pages 3045–3054, <https://doi.org/10.1093/eurheartj/ehaa508>

<sup>vii</sup> See Data reports and summary statistics of the CAPACITY Registry, <https://capacity-covid.eu/capacity-news/>

- viii Xie, Y., Xu, E., Bowe, B. et al. Long-term cardiovascular outcomes of COVID-19. *Nat Med* 28, 583–590 (2022). <https://doi.org/10.1038/s41591-022-01689-3>
- ix European Heart Network, Early detection of cardiovascular disease, 2021; Eriksen CU, Rotar O, Toft U, Jørgensen T. What is the effectiveness of systematic population-level screening programmes for reducing the burden of cardiovascular diseases? Copenhagen: WHO Regional Office for Europe; 2021 (WHO Health Evidence Network (HEN), Evidence Synthesis Report 71)
- x European Alliance for Cardiovascular Health (EACH), Proposal for a Member States' Joint Action in secondary prevention, October 2021, <https://www.cardiovascular-alliance.eu/wp-content/uploads/2021/10/EACH-Proposal-EU4Health-21Oct2021.pdf>
- xi Scherrenberg M., Vangenechten G., Janssen A., Dendale P., What is the value of digital tools for cardiovascular patients?, European Heart Network, 2020
- xii SwedeHeart Registry <https://www.ucr.uu.se/swedeheart/>  
Annual report SWEDEHEART 2012. *Scand Cardiovasc J.* 2014 Aug;48 Suppl 63:2-133.  
doi:10.3109/14017431.2014.931551. PubMed PMID: 25119891
- xiii Finland is using all available electronic data in the pilot quality registry for coronary artery disease. Data collected automatically from different sources, such as from diagnostics and various medical procedures, hospitalisation records, medicine purchases, laboratory measurements after discharge, and deaths. National quality register activities in health care are piloted in THL's National health care quality registers pilot project 2018–2020. This work is confirmed to continue in the coming years. More information is available at <https://thl.fi/en/web/social-welfare-and-health-care-reform/health-and-social-services-system-performance-assessment/national-health-care-quality-registers>
- xiv BHF Data Science Centre: a partnership between Health Data Research UK (HDR UK) and the British Heart Foundation (BHF) that sits within HDR UK.
- xv L Dawson, S Biswas, D Stub, J Lefkowitz, L Burchill, C Reid, D Eccleston, National cardiac registries: a systematic review, *European Heart Journal*, Volume 41, Issue Supplement\_2, November 2020, ehaa946.3564, <https://doi.org/10.1093/ehjci/ehaa946.3564>
- xvi CA19137 - Sudden cardiac arrest prediction and resuscitation network: Improving the quality of care, <https://www.cost.eu/cost-action/sudden-cardiac-arrest-prediction-and-resuscitation-network-improving-the-quality-of-care/>  
Grasner JT, Wnent J, Herlitz J, et al. Survival after out-of-hospital cardiac arrest in Europe - results of the EuReCa TWO study. *Resuscitation* 2020;148:218-26, <https://doi.org/10.1016/j.resuscitation.2019.12.042>
- xvii European Resuscitation Council Guidelines for Resuscitation, 2021, <https://cprguidelines.eu/>  
2021 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations: Summary From the Basic Life Support; Advanced Life Support; Neonatal Life Support; Education, Implementation, and Teams; First Aid Task Forces; and the COVID-19 Working Group, *Circulation* 2022;145:e645–e721, <https://doi.org/10.1161/CIR.0000000000001017>
- xviii Examples of CRP programmes and citizens' networks include: Finland [defi.fi](https://www.hartstichting.nl/reanimatie/); the Netherlands <https://www.hartstichting.nl/reanimatie/>; Ireland <https://irishheart.ie/campaigns/the-hard-and-fast-rule/>; Hearrunner Sweden, <https://hearrunner.com/> (funded also by the European Regional Development Fund); Denmark, TrygFonden Hjerteløber <https://hjerterstarter.dk/hjerteloeber/bliv-hjerteloeber/>; the UK <https://www.bhf.org.uk/how-you-can-help/how-to-save-a-life>
- xix Smartphone Activation of Citizen Responders to Facilitate Defibrillation in Out-of-Hospital Cardiac Arrest (2020): <https://www.jacc.org/doi/full/10.1016/j.jacc.2020.04.073>
- xx Scherrenberg M., Vangenechten G., Janssen A., Dendale P., What is the value of digital tools for cardiovascular patients?, European Heart Network, 2020
- xxi Baccolini, V., Rosso, A., Di Paolo, C. et al. What is the Prevalence of Low Health Literacy in European Union Member States? A Systematic Review and Meta-analysis. *J GEN INTERN MED* 36, 753–761 (2021). <https://doi.org/10.1007/s11606-020-06407-8>
- xxii Eurostat Quality of life indicators – education, [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quality\\_of\\_life\\_indicators\\_-\\_education&oldid=453223](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quality_of_life_indicators_-_education&oldid=453223)
- xxiii eHealth Task Force Report, Redesigning health in Europe for 2020, <https://digital-strategy.ec.europa.eu/en/library/eu-task-force-ehealth-redesigning-health-europe-2020>