MedTech Europe
from diagnosis to cure

An EU Action Plan for Better Cardiovascular Health

2021

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About MedTech Europe

MedTech Europe is the European trade association for the medical technology industry including diagnostics, medical devices and digital health. Our members are national, European and multinational companies as well as a network of national medical technology associations who research, develop, manufacture, distribute and supply health-related technologies, services and solutions.

Executive Summary

Cardiovascular diseases (CVDs), including heart failure, atrial fibrillation-related stroke, heart valve disease or coronary heart disease, can impact people of all ages. CVDs are the leading cause of death in the EU,[1] and an important factor in the numbers of chronic conditions and disabilities.

Not only do CVDs have a human health cost, but they also represent a significant financial burden for European healthcare systems. It's time to step up investment in healthcare systems across Europe, and devoting resources to cardiovascular health must be part of this.

Despite the challenges posed by CVDs, exacerbated further by the COVID-19 pandemic, there is still a lack of awareness about the risk of cardiovascular diseases. Acknowledgement from policymakers of the fragile situation facing CVD patients and healthcare systems is one step towards improving and saving patients' lives. The strong case for finding solutions to improve cardiovascular health is obvious, which would in parallel reduce the strain CVDs put on healthcare systems.

The case for an EU Action Plan for Better Cardiovascular Health

The European Commission's EU4Health programme, Next Generation Recovery Funds and Horizon Europe Research Funds provide an opportunity to further tackle the burden of CVDs and improve cardiovascular health of citizens, by implementing actions proposed in an **EU Action Plan for Better Cardiovascular Health**.

This EU Action Plan should consider the **complete patient pathway**: from prevention and early detection to accessing care and treatment, and quality of life and functional status, while bearing in mind the important role of digitalisation and innovation at all stages.

The European Commission should:

- Facilitate best practices: **Establish a Joint Action amongst Member States to encourage more focus on secondary prevention and early detection** through appropriate diagnostic checks, heart and vascular health checks, and to identify barriers to the wider uptake of rehabilitation
- Improve data and evidence: Leverage the European Health Data Space to create a **common European CVD information system** focused on patient outcomes and treatment options, to improve CVD registries and to **implement and improve quality measurement indicators** to monitor patient access to CVD care
- Invest in research: **Broaden the scope of European Reference Networks beyond rare diseases**, beginning with an ERN on structural heart disease – including coronary, heart failure and stroke – and strengthen research on the **value of CVD medical devices and diagnostics** and the impact on patients' lives
- Strengthen access and innovation: In the framework of the new Public Private Partnership on Health Innovation, **facilitate pilots to have efficient access to innovation in a secure manner, such as through Early Feasibility Studies**

Member States should:

- **Invest smartly to improve access:** In their Recovery Plans, allocate investments into projects aiming to **improve equal access to detection, CVD care and treatment,** and **reward smart investments into (digital) medical innovations** that improve patient outcomes and quality of life, reduce the burden on hospitals and improve the resilience of the healthcare system
- **Promote awareness, digitalisation and capacity-building:** **Introduce widespread early detection and screening programmes**, while promoting the use of **digital and diagnostic tools** to facilitate early detection and invest in **comprehensive multidisciplinary early detection training programmes** for reskilling healthcare professionals, especially within primary care and amongst specialist nurses

An EU Action Plan for Better Cardiovascular Health under the EU4Health Programme, supported by Next Generation Recovery Funds and Horizon Europe Research Funds, can provide exactly the necessary framework and incentives to achieve this. Bringing together Member States and EU institutions, as well as the key stakeholders who drive the issue of CVD, will help to improve the lives of millions of people. This will ensure that people can live longer, healthier lives – regardless of where they are born in the EU – and that they can continue to contribute to society and the economy.

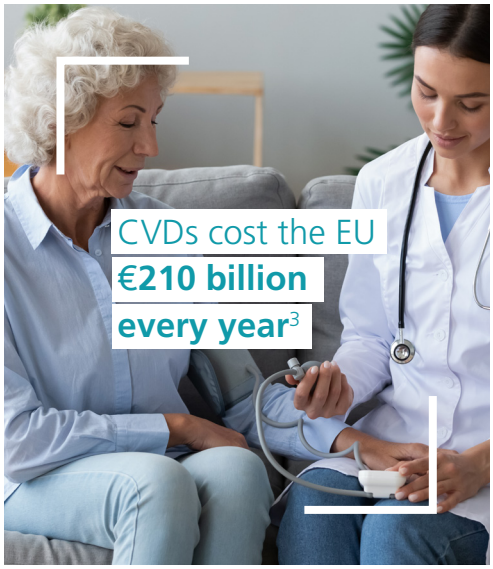
This Roadmap is the MedTech industry's contribution to the debate and aims to establish a strategic vision of the policy actions needed within an EU Action Plan for Better Cardiovascular Health. It builds on input from various experts and stakeholder organisations in the field who provided constructive input, and follows on from our 2019 Call to Action.[2]

We stand ready to continue to cooperate with all stakeholders and key decision-makers around this vision to make it a political reality.

The scale of the problem

CVDs are the leading cause of death in the EU,[1] and an important factor in the numbers of chronic conditions and disabilities. Over 13 million new CVDs are diagnosed each year, resulting in over 60 million people living with CVDs in the EU[3] from a total population of 446 million people.[4]

Not only do CVDs have a human health cost, but they also represent a significant financial burden for European healthcare systems. It is estimated that CVDs cost the EU €210 billion every year: €111 billion in healthcare costs, €54 billion in loss of productivity and €45 billion in informal care for CVD patients.[3] The resilience of European healthcare systems are tested, compounded by a shrinkage in GDP growth due to COVID-19.[5] It's time to step up investment in healthcare systems across the region and devoting resources to cardiovascular health must be part of this. Good population health, including cardiovascular health, is a fundamental value of all societies that can be directly controlled by policymakers.[6]



Ageing, lifestyle and the environment are examples of societal and demographic factors that lead to CVD diagnoses and deaths. The high life expectancy rates enjoyed generally across the EU will continue to lead to an ageing society. Coupled with the increased risk of CVD as people age, the number of CVD diagnoses and deaths are therefore predicted to increase.[7]

Although some cardiovascular diseases can be prevented by healthy and active lifestyles, this is not the case for all CVDs. Non-modifiable risk factors for CVDs do exist, such as functional decline, family history, inherited high cholesterol and diabetes.[8] Primary prevention therefore clearly does not solve the full scale of the problem. The existing challenges facing CVD patients and healthcare professionals in Europe have been exacerbated by COVID-19.

95% of all COVID-19 deaths are attributable to those with underlying conditions, with cardiovascular diseases being the leading comorbidity, accounting for 65% of these deaths.[9] Moreover, COVID-19 can lead to cardiovascular abnormalities in patients who did not have health conditions before acquiring the virus.[10]

COVID-19 has also had negative repercussions on the delivery of adequate care for patients suffering from CVDs. During the first and subsequent waves, there has been a decrease in people presenting to hospital for fear of contracting the virus.[11] Furthermore, the pandemic has significantly delayed CVD diagnosis and treatment due to lack of healthcare resources.[12]

A fragmented policy landscape

Over the last decade, many other disease areas, such as cancer and neurodegenerative diseases, have been receiving increasing levels of policymaker attention compared to CVD. This can be explained by the visible reduction in mortality from CVD, coupled with scientific progress and rapidly developing treatments in other disease areas over recent years.

While CVD receives some political and policy attention in certain countries, it has not been sufficient. In some EU countries, comprehensive stand-alone national CVD strategies are lacking, with many Member States favouring the inclusion of CVDs within overall health strategies. In France, the 2018-2022 National Health Strategy calls for the prevention of cardiovascular risks by supporting changing lifestyle habits,[13] while Italy's 2020-2025 National Plan for Prevention focuses on health, societal and environmental factors contributing to CVDs.[14]

A REGIONAL EXAMPLE: SCOTTISH HEART DISEASE PLAN[15] (2021)

The new Scottish Heart Disease Plan takes a disease pathway approach, looking beyond primary prevention and lifestyle factors towards ensuring equitable and timely access to diagnosis, treatment and care for people with suspected heart disease in Scotland.

The Plan does not specifically address wider societal public health measures, but rather four key pillars:

1. **Prevention** - tackling risk factors: minimise preventable heart disease by improving the detection, diagnosis and management of risk factor conditions

2. **Timely and equitable access to diagnosis, treatment and care**: ensure that everyone with suspected heart disease in Scotland has equitable access to timely and evidence-based diagnosis, treatment and care

3. **Workforce**: ensure appropriate staff resource and training to deliver timely and equitable services across Scotland for people with heart disease

4. **Effective use of data**: ensure that high-quality, standardised data is available and used effectively to support clinical decision-making, understand patient outcomes and enable better service-planning

The same applies at EU and WHO Europe level, with CVDs being addressed within policies aimed at preventing chronic diseases, such as tobacco control and environmental legislation,[16] or non-communicable diseases.[17] The success levels of EU policies to date vary, given that their impact is often determined by the structural, political and financial barriers set by Member States.[18]

CVD should have its own place within EU and national policy agendas through a clear EU Action Plan for Better Cardiovascular Health, linked to the many relevant EU health policy initiatives ongoing and expected over the coming years. There are several opportunities to be leveraged for the benefit of cardiovascular patients and health systems, from the options the European Health Data Space will bring for sharing data on CVDs, to the funding opportunities afforded to CVD by the EU4Health and Horizon Europe programmes.

A NATIONAL EXAMPLE: SPANISH CARDIOVASCULAR HEALTH STRATEGY[19] (2020)

Approved in November 2020 by the Spanish Senate, the overall objective of the strategy is to reduce incidence, morbidity and mortality, and prevent disability to achieve improvements in the quality of life and well-being of patients and their families. Taking a multidisciplinary design and methodology, the Strategy is focused on caring for people, considering both a general approach to cardiovascular health and applying this to conditions and pathologies that require specific actions. The Strategy follows three key values, including patient safety, continuity of care and the promotion of information systems. It includes proposals for improving early diagnosis, multidisciplinary units and cardiac rehabilitation.

Roadmap towards better cardiovascular health in Europe

Roadmap towards better cardiovascular health in Europe

As stated in the European Commission's Communication on 'Building a European Health Union: Reinforcing the EU's resilience for cross-border health threats', a European Health Union can only be as strong as its Member States' commitment to it.[20] An EU Action Plan for Better Cardiovascular Health, with actions that can also be implemented by national governments, would be a significant step towards improving cardiovascular health in Europe in line with ambitions for a true European Health Union.

The added value of a common EU policy approach to cardiovascular diseases cannot be denied. By joining forces and harmonising efforts to improve cardiovascular health, all EU citizens will benefit from a stronger, healthier economy. An EU Action Plan for Better Cardiovascular Health, containing actions that can be easily transferred to Member States as common policy, is a necessary first step.

A number of tools are already at the EU's disposal to improve cardiovascular health, including regulatory powers, however there is a need to ensure better coordination with national governments. COVID-19 has shown that coherent EU policies in the field of health, and increased collaboration between countries, can reap major benefits. European action on CVD should focus on the areas the EU has competence over and where Member States cannot deliver alone, including exchange of best-practices, research, harmonisation of practices, digitalisation, innovation and regulatory action.

New and improved policies, however, cannot be the only solution. The European Commission's EU4Health programme, which aims to address cross-border health threats and strengthen health systems, is an opportunity to further tackle non-communicable diseases such as CVD by implementing actions proposed in an EU CVD Plan. It can only be successful if adequate levels of funding are guaranteed, and specific measures are put forward to improve cardiovascular health in Europe. Above all, the most important element to improving cardiovascular health in Europe is political leadership. Making cardiovascular health a political priority for the EU will not only improve patient outcomes, but lead to a stronger and healthier society for all citizens.

> **"There is a need for a harmonised, unified European response to tackle cardiovascular diseases"**
>
> *Professor José L. Zamorano, Head of Cardiology, University Hospital Ramón y Cajal, Madrid, Spain*

Any policy proposals included in such an Action Plan should consider the complete patient pathway: from prevention and early detection to accessing care and treatment, and quality of life and functional status, while bearing in mind the important role of digitalisation and innovation at all stages.

MedTech Europe calls on the EU institutions to consider the following policy proposals as priority areas for action within an EU Action Plan for Better Cardiovascular Health:

1. Research and prevention

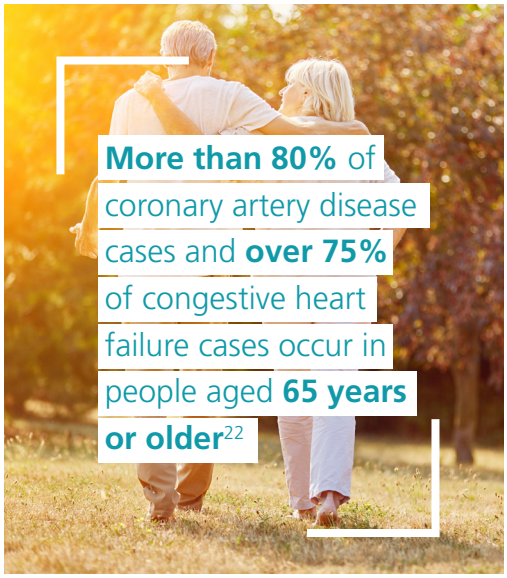
Did you know…?
In-vitro diagnostics (IVDs) are important tools for CVD prevention, detection and management. Spotting early warning signs and personal risk factors are some of the benefits of IVDs, allowing for early diagnosis and treatment. For example, IVDs can help to assess and monitor the individual risk for heart failure in patients with diabetes which helps to initiate preventive measures for disease progression much earlier. IVDs are responsible for approximately two-thirds of clinical decision-making while accounting for just 2% of healthcare spending.[21]

The EU's competence to introduce initiatives to improve public health has led to many actions on primary prevention over the years, such as frameworks for alcohol consumption, food labelling and tobacco excise duties. There is often a perception that primary preventative measures alone, such as living a healthy lifestyle, solve the problem of CVDs.

However, this does not reflect the reality. Many cardiac disorders can either be inherited congenital heart disease, can be due to other diseases such as diabetes and chronic kidney disease, or are linked to functional decline due to ageing, such as age-related structural heart diseases.

By focusing on secondary prevention, the impact of the disease can be reduced and avoid any critical and permanent damage before the onset of any symptoms.[24] It is also crucial to prevent a recurrence of cardiovascular diseases and mitigate any complications that may arise from them, for example, treating heart defects to avoid the development of heart failure.

Elements of secondary prevention, such as cardiac rehabilitation, and early identification of 'at risk' groups with medical technologies can improve patient outcomes and help patients return to full participation in society following their illness. However, rehabilitation is a resource that is often overlooked with fragmented uptake across Europe.[3]



Digital technologies, combined with healthcare systems equipped with strong digital infrastructures to support health records and data collection, can also significantly improve prevention of CVDs,[3] including allowing for the personalisation of prevention actions. A mobile application for cardiovascular health, for example, can be an important tool both for education and for risk assessment, informing users about their CVD risk and warning them to ask for heart and vascular health checks or to go for tests at the appropriate time.

Any initiatives to strengthen data collection and surveillance mechanisms for CVDs, such as pan-European knowledge centres and registries, will allow for better understanding and information on CVDs, help to take corrective actions and ultimately prevent CVDs. Structured data, based on common European definitions that can be easily analysed, is key to the successful implementation of CVD registries.

The European Cancer Information System (ECIS),[25] consisting of a variety of mechanisms to collect up-to-date health data and indicators on diseases, is a prime example of a database that can be used for policymaking purposes and the model should be expanded to CVDs. The proposed European Health Data Space[26] can support this by harmonising and facilitating the cross-border exchange of data. The European Reference Networks (ERNs) are another example of an existing EU tool that could be leveraged to collect data on CVDs. While the current scope of ERNs is focused on low-prevalence diseases, extending the scope of ERNs to more prevalent diseases like coronary or structural heart disease could make this a reality.

"A united EU approach, including a standardised campaign for the prevention of CVDs, is fundamental"

Professor Damian Gruson, Head of Medical Biochemistry, Saint-Luc University Hospital (UCL), Brussels, Belgium

A united EU approach to primary and secondary prevention is fundamental. With 20% of the EU4Health budget dedicated to health promotion and disease prevention,[27] now is the time to build on existing initiatives to improve CVD health literacy amongst Europeans, reduce inequalities in CVD prevention across the continent, and ultimately lower premature disease and mortality rates amongst people of all ages.

Research and prevention policy proposals:

- **Establish a Joint Action amongst Member States to encourage more focus on secondary prevention and early detection** through appropriate diagnostic checks, heart and vascular health checks, and to identify barriers to the wider uptake of rehabilitation
- Leverage the European Health Data Space, to create a **common European CVD information system** focused on patient outcomes and treatment options, to improve CVD registries and to **implement and improve quality measurement indicators** to monitor patient access to CVD care
- **Broaden the scope of European Reference Networks beyond rare diseases**, beginning with an ERN on structural heart disease – including coronary, heart failure and stroke

BEST PRACTICE EXAMPLE: 'FARMERS HAVE HEARTS' CAMPAIGN (IRELAND)

Research has shown that the general reduction in Irish mortality rates from CVDs has not been reflected in male farmers, with calling the vet taking precedence over a check-up with a GP. The 'Farmers Have Hearts' campaign aims to raise farmers' consciousness of their cardiovascular health, reduce risk factors for heart disease among farmers and encourage them to access cardiovascular health services in a timely and regular fashion[28]

BEST PRACTICE EXAMPLE: EUROHEART REGISTRY[29]

EuroHeart's mission is to develop and maintain an international collaboration that provides common definitions of quality of care indicators and the availability of an IT infrastructure for continuous online registration of high quality and harmonised patient data, with real-time feedback supporting continuous improvement of care and outcomes in patients with common cardiovascular diseases

2. Early detection

Did you know…?
Non-invasive cardiac imaging is a combination of several methods that can gather images related to the structure and function of the heart. Imaging can be used to assess symptoms to identify or exclude forms of heart disease, establish risks of contracting CVDs in the future, and inform clinicians whether additional tests or treatment are required.[30]

Much more can also be done with regards to diagnosing people who may be at risk of CVDs, before the disease has developed. Most CVDs have better prognosis, higher treatment success, and lower social cost, if diagnosed and treated early. Innovation in the healthcare sector, particularly for medical technologies, can be an enabler of positive changes in earlier CVD diagnosis. CVD morbidity and mortality could be reduced through a combination of prevention measures targeting the entire population and complementary programmes for the early detection of high-risk CVD patients.[31]

Facilitating access to comprehensive and regular checks can help to achieve this. In addition, better understanding of risk factors and predisposition, and using evidence-based biomarkers and diagnostic tools, can identify patients at risk of developing CVDs before the onset of disease or delaying complications arising from them.

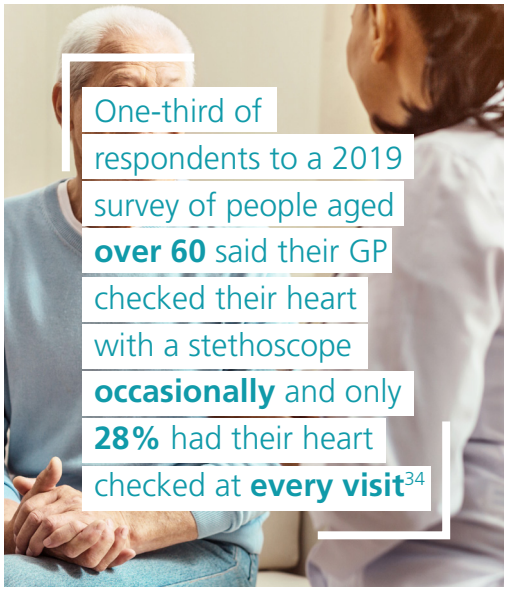
Gender represents a major barrier to early diagnosis, particularly amongst women, given the common misperception of cardiovascular diseases as male diseases and difficulty in identifying symptoms in females. Although differences in gender-related risk factors are now identifiable, this is often not reflected in practice resulting in misdiagnosis of women with CVDs.[32,59] While women of fertile age

are at a lower risk of cardiac events, after menopause, women with untreated risk factors are vulnerable to developing myocardial infarction, heart failure, and sudden cardiac death.[33]

There is value of case-finding within clinical practice, which involves assessing individuals that may be at risk of CVD when they use the health system.[35] However, detection rates of many CVDs, especially age-related diseases such as structural heart diseases, remain poor. Often such conditions can be spotted by a simple stethoscope check of the heart and confirmed by an echocardiogram. Unfortunately, stethoscope checks of the heart are not happening routinely across Europe.

Identifying high-risk CVD patients should be a standard part of medical consultation in general practice and supported by health systems.[31] It is fundamental that GPs regularly check their patients, are aware of when it is important to refer a patient to hospitals for diagnostics tests, or to see a specialist.

Medical technology innovations, such as IVDs, digital stethoscopes or echocardiography, can play an important role in facilitating those checks, in appropriate referrals and ensuring timely access to treatment where needed. However, access to echocardiography testing is not sufficiently widespread across Europe, as it requires the appropriate equipment and qualified sonographers. This has resulted in some European countries experiencing a shortage of people with sonography skills in the healthcare workforce.[36] IVDs can support accurate and early detection of heart failure,[37] by allowing for appropriate diagnostic work-up which in turn drives efficiency in resource allocation.[38]



Did you know…?

Digital stethoscopes are a new innovation that could vastly improve detection in primary care. They provide an opportunity for health professionals to be trained in detection and for more reliable assessment of patients

Early detection policy proposals:

- In addition to the EU Joint Action on secondary prevention, detection and rehabilitation, introduce **national-level widespread early detection and screening programmes**, while promoting the use of **digital and diagnostic** tools to facilitate early detection
- At national and regional level, invest in **comprehensive multidisciplinary early detection training programmes** for reskilling healthcare professionals, especially within primary care and amongst specialist nurses

BEST PRACTICE EXAMPLE: VENETO REGION CARDIOVASCULAR SCREENING PROGRAM (CARDIO50)[39]

To estimate cardiovascular risk among over 50 year olds in the population, the CARDIO50 screening programme aimed to create an integrated assistance model to counteract modifiable risk factors amongst healthy people. The screening visit involved, amongst others, measurement of blood sugar and cholesterol levels and a lifestyle assessment through a standardised questionnaire. Once the screening is complete, a computer application classifies the individual's risk category following a predefined algorithm

The YOUNG50 project is now transferring the best practices from the Italian CARDIO50 project to Lithuania, Luxembourg and Romania to improve early detection[40]

3. Access to diagnosis, treatment and care

Did you know…?
The first artificial pacemaker was implanted into a Swedish patient in 1958.[41] Since then, pacemakers have driven many developments in cardiac science and medicine. Today, pacemaker innovation not only aims to reduce mortality, but to improve design to reduce discomfort and the need for additional surgeries and invasive procedures.[42]

Many people rely on medical technologies to save their lives or help them manage their disease, but they often lack the access that can provide the most benefit to them personally. Funding and reimbursement processes have grown increasingly complex and are under systemic pressure. With increasing demand for care, and ever-evolving technologies, authorities across Europe agree that technologies should be rewarded for the value and outcomes they bring.

"The rapid development of effective tools to prevent, detect and treat cardiovascular diseases might have made investments in CVD research a victim of their own success. However, implementation of novel treatments is not equal, and the utilisation of modern tools and treatments show large variability both within and between centres and countries"

Professor Lars Wallentin, Senior Professor of Cardiology, Uppsala University, Uppsala, Sweden

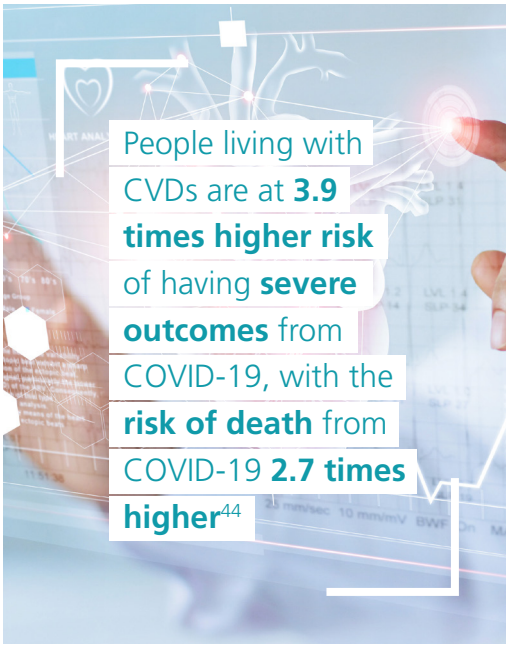
A transversal, patient-level approach can provide continuity to patients in the care they receive throughout the pathway. Disease-specific, and not cardiologist-specific, guidelines would ensure patients are treated in a consistent manner by all healthcare professionals. More digital coherence is also needed for patients, to improve communication between all providers and ensure systematic treatment and care. There should be a patient story that can be accessed by all caregivers if necessary.

Patients should also have faster yet safe access to those potentially breakthrough innovations that can transform their lives. The forthcoming Public Private Partnership on Health Innovation under the Horizon Europe programme provides a critical and unique window of opportunity to

consider the introduction of an EU methodology for Early Feasibility Studies (EFS). Such an advanced, collaborative regulatory process for innovation in Europe will enable the introduction of limited, early clinical investigations in accordance with existing EU regulations such as the Medical Devices Regulation, and will improve patient access and ultimately outcomes. EFS will ultimately benefit patients through enhanced and accelerated access, benefit healthcare and social care systems thanks to more efficient uptake of innovation and will enhance Europe's position as hub for research, innovation, and talent.

COVID-19 has created a significant backlog of patients with serious health conditions who will need care, treatment and support. As healthcare systems rebuild, unprecedented collaboration is needed to ensure that immediate and longer-term challenges, such as ageing, can be addressed. As age is a significant risk factor for CVDs, keeping the growing ageing population healthy will relieve pressure on healthcare systems during public health threats such as COVID-19. CVDs have to be addressed as a key component of an ambitious pandemic preparedness programme in order to increase the resilience of healthcare systems for future public health crises and achieve a true European Health Union.

Finally, it has recently been found that health indicators have not always been optimally conceived and measured, in some cases contributing to access challenges faced by patients. By ensuring patients' experiences and perspectives are correctly captured and measured, access to healthcare can improve. Improving access to cardiovascular healthcare through more powerful measurement tools in health systems to elucidate reasons for inequalities can in turn inform better policy decisions.[45]



Access to diagnosis, treatment and care policy proposals:

- In the framework of the new Public Private Partnership on Health Innovation, **facilitate pilots to have efficient access to innovation in a secure manner, such as through Early Feasibility Studies**
- Allocate Next Generation EU Recovery Funds, European Regional Development Funds and other structural funds to **improving equal access to detection, CVD care and treatment** so that patients suffering from CVDs can be treated regardless of their age, gender or location

BEST PRACTICE EXAMPLE: QUALITY INDICATORS AND FINANCIAL INCENTIVES IN POLAND THAT PROMOTE CARE COORDINATION AND EARLY RETURN OF PATIENT'S ABILITY TO WORK

A new model of complex patient care after acute myocardial infarction (AMI) has been in operation in Poland since late 2017, comprising invasive treatment, cardiac rehabilitation and scheduled outpatient follow-up. Its stated objectives are to improve secondary prevention measures, quality of care and long- term health outcomes in AMI-patients. The model implements all key aspects of post-MI care recommended by the European Society of Cardiology (ESC), representing the first nation-wide model of structured and comprehensive post-MI care that closely follows ESC guidelines.[60] Early outcomes are promising, with significant impact on clinical outcomes and quality of care such as lower mortality rate and lower risk of serious cardiological events in patients participating in the new model of care compared to patients who were not included.[61] Work is also underway on other projects utilising value-based healthcare principles in the Polish healthcare system

4. Quality of life and functional status

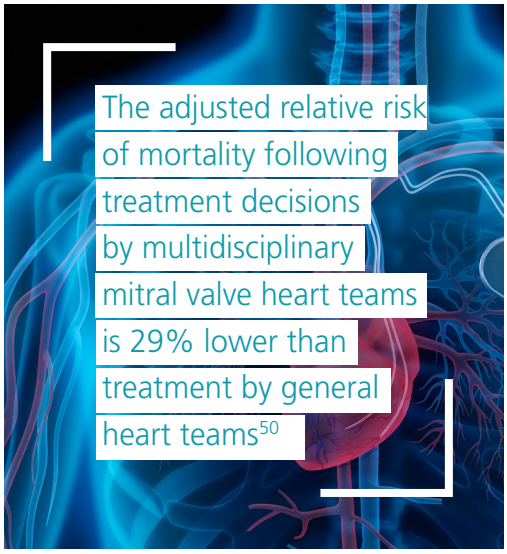
Did you know…?
Transcatheter aortic valve implantation (TAVI) is a technique that can save lives and promote a better quality of life.[46] The method allows for heart valves to be replaced without opening the chest, involving less pain and allowing for shorter procedures and enhanced recovery time.

Over recent years, multiple methods have aimed to improve the quality of life of people living with CVDs, from encouraging healthier lifestyles,[47] to incorporating mental health into routine CVD management[48] or moving to less invasive surgeries.[49] Innovation is an important word in the context of quality of life for CVD patients, being a critical factor in improving patient outcomes.

Receiving treatment from several different healthcare professionals can result in fragmented care.[51] A collaborative, multidisciplinary approach along the patient pathway can improve quality of life for patients by providing a comprehensive strategy to treat complex CVDs. By working together closely in collaborative and innovative care delivery models, multidisciplinary teams involving nurses, allied professionals, medical professionals and patients themselves can improve patient outcomes.[52] Heart failure, for example, can see patients suffer from several cardiovascular and non-cardiovascular comorbidities, making the management of individual patients increasingly complex. A multidisciplinary team for heart failure should therefore include a variety of specialists, ranging from heart failure and cardiovascular imaging specialists, to interventional cardiologists.[53]

An adequate mix of the right skills of healthcare professionals is indispensable for effective and efficient health care delivery.[54] More training and investment is needed by Member States to reskill the existing workforce to create such multidisciplinary teams, including specialist nurses. While not all EU countries have adequate specialist nurses,[43] they have been found to improve outcomes for CVD patients, by reducing hospital readmissions and facilitating improved adherence to treatment.

Improving awareness amongst healthcare professionals of the role of specialist nurses through ongoing training and dissemination will promote best practices in this area.[55]



BEST PRACTICE EXAMPLE: THE ROLE OF HEART FAILURE SPECIALIST NURSES (SWEDEN)

In almost all Swedish hospitals today, you will find dedicated heart failure clinics with specialist-trained nurses. This follows clinical guidelines which recommend that heart failure patients receive multidisciplinary care in order to ensure the best possible treatment and avoid readmissions. Studies have found that introducing this practice in primary care in Sweden could be effective in reducing the need for in-hospital care and provide high quality person-centred care.[56]

Finally, embracing digital and technological innovations, as well as a reform of healthcare systems' infrastructure, could play a significant part in improving the quality of life of CVD patients. E-health, mobile health, integrated care, independent living solutions and telemedicine, are social and technological advancements that can improve the lives of citizens with chronic diseases like CVD.[57] Technological process in these components of virtual health mean treatment and care can be provided in innovative ways, seamlessly caring for patients no matter if they are in a hospital, a clinic or at home. Telemedicine is particularly beneficial for elderly patients, who can be cared for at home and thus retaining their independence, leading to improved life quality.

Quality of life and functional status policy proposals:

- Through Horizon Europe, support **multi-stakeholder collaboration on a pan-European study** assessing the value of CVD medical devices and diagnostics and the impact on patients' lives
- Leverage the Next Generation EU recovery programme **to reward smart investments into (digital) medical innovations** that improve patient outcomes and quality of life, reduce the burden on hospitals and improve the resilience of the healthcare system

BEST PRACTICE EXAMPLE: IMPROVING QUALITY OF LIFE THROUGH CVD SMARTPHONE APPS

Studies have found that health apps for CVD management and control, targeting pathologies including hypertension, coronary heart disease, heart failure and stroke, can improve quality of life. Other results showed that app users had improvements in blood pressure, BMI, waist circumference, cholesterol, physical activity, smoking cessation and medication adherence, disease-specific knowledge, psychological well-being and re-hospitalisation rates[58]

Acknowledgements

Building on the extensive evidence available on the burden of CVD in Europe, this Roadmap includes insights obtained through a series of expert interviews with key opinion leaders and stakeholders from across the region, including Belgium, Poland, Spain and Sweden between March and April 2021. The Roadmap also draws on a series of successful meetings between the Sector Group and the EU institutions throughout the course of 2020.

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- Professor José L. Zamorano, Head of Cardiology, University Hospital Ramón y Cajal, Madrid, Spain
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