The Health Policy Partnership

Secondary prevention of

HEART ATTACK AND STROKE

Country profile for

Romania

This project was initiated and funded by Amgen (Europe) GmbH.

About this report

This country profile is part of a multi-year policy project on the secondary prevention of heart attack and stroke in Europe. It is based on interviews and consultation with national experts as well as an analysis of data and research for Romania.

The work was funded by Amgen (Europe) GmbH. All outputs developed as part of this project are non-promotional. Findings are based on existing literature and input and review from expert stakeholders, who have not been remunerated for their contributions. The Health Policy Partnership was appointed by Amgen to conduct research and drafting with full editorial control, incorporating input from expert stakeholders and the Amgen policy team on an equal and transparent basis. All outputs have been shared with contributors for final approval, and reviewed by Amgen's legal and medical team for the purposes of scientific accuracy and compliance with industry codes of conduct in public life.

All figures cited are based on the most recent data available at the time of research (October 2020).

Acknowledgements

We thank the experts for providing pro bono input in interviews and during revision of drafts:

- **Dr Christina Tiu,** President, Romanian Society of Neurology; Associate Professor, University of Medicine and Pharmacy 'Carol Davila', Bucharest
- **Professor Dragoș Vinereanu,** President-elect, Romanian Society of Cardiology; Professor of Cardiology, Emergency Hospital of Bucharest

Please cite this report as: Budig K, Harding E. 2021. *Secondary prevention of heart attack and stroke: country profile for Romania.* London: The Health Policy Partnership.

CONTENTS

EXECUTIVE SUMMARY

Heart attack and stroke are a significant societal concern in Romania. Heart attack is the most serious consequence of coronary heart disease (CHD). There are 1,080,126 people living with CHD and more than 452,322 people who have survived a stroke – and these numbers are on the rise.[1] Together, both diseases are responsible for 38% of all deaths in Romania, with CHD being the leading cause of mortality and stroke the second leading cause.[2]

The financial cost to society is substantial. In 2015, CHD and cerebrovascular disease – of which stroke is the most common condition – cost the Romanian economy €1.32 billion.

Per capita spending on care in CHD and cerebrovascular disease remains low, despite the significant impact of the diseases on public health. Romania spends just €16 per capita on direct healthcare costs for CHD and cerebrovascular disease combined, which represents the second lowest spending in this area in the European Union (EU).[3] However, these costs still represent approximately 4% of the country's total healthcare expenditure.[3]

Low funding and inefficient use of resources may be leading to preventable deaths. These issues have been highlighted as restricting the effectiveness of the Romanian public health system[2] and are likely significant factors in the country's high rates of preventable deaths for CHD and cerebrovascular disease. Romania has higher rates of avoidable deaths than most EU countries.

No national data appear to be collected regarding secondary prevention of heart attack and stroke, impeding the accountability and benchmarking of services. Romania lacks national registries, surveys and public social security data in these areas.[4] Expansion of the existing registries for heart attack [5 6] and stroke[7] may help to address this.

There is an absence of dedicated formal policy addressing secondary prevention in heart attack and stroke to direct improvement efforts. The National Health Strategy 2014–2020[8] outlines several goals related to secondary prevention, such as increasing access to rehabilitation and long-term care services, but no specific targets have been set.[9]

Heart attack and stroke care pathways face structural barriers, partly owing to a lack of dedicated policy and funding. In particular, restrictions to the amount of rehabilitative care that patients can receive under the national health insurance act as a significant barrier to preventing recurrence of heart attack and stroke.[10 11] Many patients cannot afford to self-finance their care,[12] and the lack of reimbursement is likely contributing to the high drop-out rate from secondary prevention programmes, estimated at 40–60% for cardiac rehabilitation.[11]

A lack of stroke rehabilitation centres means that many patients are not referred to this important intervention, despite its proven efficacy. Following stroke treatment, 73% of patients are discharged to their homes, even though more than 50% are unable to walk independently at discharge.[13]

Provision of cardiac rehabilitation is poor. Few specialist cardiac rehabilitation centres exist,[11] not many cardiac patients are referred and, of those who are referred, few attend. Only 24% of CHD patients reported being advised to attend cardiac rehabilitation programmes and, of those, only 14% participated.[14] The shortage of specialist centres is leading to patients being treated in general rehabilitation centres,[15] which often lack the appropriate facilities and staff knowledge to effectively conduct cardiac rehabilitation.[16]

Recent efforts by the Romanian Society of Cardiology are driving policy change that could see the use of cardiac rehabilitation increasing. The National Health Insurance House is reported to have committed to reimbursing patients for cardiologist-prescribed cardiac rehabilitation, which currently does not happen.[16] Discussions are also reported to be underway on the establishment of dedicated, cardiologist-run cardiac rehabilitation units in public hospitals.[16]

Healthcare professional societies are driving clinical leadership in secondary prevention for heart attack and stroke. The societies are translating international guidelines on the prevention of cardiovascular disease (CVD) in clinical practice[17] and setting up working groups to support national and European strategies on CVD prevention. Improving the provision and quality of cardiac rehabilitation is part of this work.[18] Societies have also led efforts to improve healthcare professionals' knowledge on secondary prevention, particularly the appropriate use of medications to prevent a repeat heart attack.[16]

Despite educational efforts, clinical decisions around secondary prevention in heart attack and stroke often deviate from national guidelines. In heart attack, pharmacological therapies to prevent recurrence are underused in acute care, leading to increases in hospital-based mortality for patients with acute coronary syndrome.[19] Medication prescription at hospital discharge has also been noted as suboptimal.[5] These issues have been found in the application of pharmacological therapies for the long-term management of CVD more widely.[4]

Heart attack and stroke patients in Romania face inequalities relating to secondary prevention. Rehabilitative services for heart attack and stroke are not covered for people who are not covered by the national health insurance (around 14% of the population),[2] with particular groups adversely affected. Those include the Roma population, agricultural workers and those who are self-employed.

Some public advocacy has occurred around secondary prevention in heart attack and stroke, but awareness-raising activities are likely constrained by the limited number of CVD and stroke patient organisations. National experts have suggested that the absence of these organisations has contributed to the lack of national objectives for stroke, as stroke patients' needs are not being voiced at the national level.[20]

Key definitions

CARDIOVASCULAR DISEASE (CVD) is an umbrella term which describes diseases of the heart, blood vessels and circulation (the flow of blood through the arteries). It includes coronary heart disease (often called ischaemic heart disease) and cerebrovascular diseases (i.e. those relating to arteries in the brain).

CORONARY HEART DISEASE (CHD) is characterised by atherosclerosis (a build-up of fatty substances) on the walls of arteries that serve the heart – coronary arteries. The most dangerous consequence of CHD is a heart attack.

HEART ATTACK happens when an obstruction in the coronary artery cuts off oxygen-rich blood. This deprives the heart of oxygen and, as a result, heart muscle tissues start to die (infarct). Heart attack is also called myocardial infarction.

CEREBROVASCULAR DISEASE is a group of conditions which affect the blood vessels of the brain. The most common type of cerebrovascular disease is stroke.

STROKE is caused when blood supply is blocked to a part of the brain, which leaves it deprived of oxygen. Most strokes are caused by blood clots (ischaemic), but some happen because of a burst blood vessel (haemorrhagic). As it is linked to the cardiovascular system, stroke is a type of cerebrovascular disease, but because of its effects on the brain and nervous system, the World Health Organization classifies stroke as a neurological disease.

SECONDARY PREVENTION describes preventive care that aims to stop an existing illness from progressing. In the context of heart attack and stroke, secondary prevention is a combination of interventions to prevent another heart attack or stroke from occurring. It typically spans lifestyle changes (dietary changes, increased physical activity and smoking cessation), risk-reducing medication, rehabilitation and psychosocial support.

INTRODUCTION

Heart attack and stroke are a significant societal concern in Romania. Heart attack is the most serious consequence of coronary heart disease (CHD). Official data sources estimate that more than one million people are living with CHD and more than 450,000 have survived a stroke – and these numbers are rising.[1] CHD is the leading cause of mortality, while stroke remains the second leading cause, together accounting for 38% of all deaths.[2]

The extraordinarily high prevalence of heart attack and stroke means their prevention and control should be a national priority. However, there is a lack of dedicated formal policy addressing primary or secondary prevention for these conditions, partly because the absence of relevant national data has been a barrier to linking public health needs and national policy.[4]

Low funding and inefficient use of resources contribute to high rates of preventable deaths from both heart attack and stroke. Romania's standardised rates for amenable mortality – deaths that could be avoided if appropriate healthcare interventions were enacted – are the highest in the European Union (EU) for women, and the third highest for men.[2] CHD accounted for almost a third of the amenable deaths (31.4%) and cerebrovascular disease – of which stroke is the most common condition – for almost a quarter (23%).[2] These high rates of preventable deaths are further exacerbated by slow progress in reducing behavioural risk factors, such as smoking and alcohol consumption.

THE CASE FOR CHANGE

Economic cost of heart attack and stroke

Heart attack and stroke place a significant financial strain on Romania's healthcare system, its society and economy. In 2015, direct healthcare costs (inpatient and outpatient care) were €0.32 billion for CHD and cerebrovascular disease combined, representing approximately 4% of the country's total healthcare expenditure.[3] Indirect costs (including informal care and loss of productivity) have been estimated at just over €1 billion for CHD and cerebrovascular disease combined (*see Table 1*).

Per capita spending on the care of patients with CHD and cerebrovascular disease is low despite the significant impact the two diseases are having on public health. Direct costs of care in CHD and cerebrovascular disease combined are just €16 per capita, the second lowest in the EU.[3] While CVD is the leading cause of mortality in Romania, the budget allocated to it has been reported as 14 times smaller than that for oncological diseases and eight times smaller than that for dialysis.[21] Wider government investment in healthcare is also low. Romania allocated just 4.9% of its GDP to healthcare in 2015, compared with the EU average of 9.9%, and has seen a steady decrease in healthcare spending as a share of its GDP since 2010.[2]

Table 1. Coronary heart disease and cerebrovascular disease: direct and indirect costs to society in 2015[3]

	Direct cost	Indirect cost			Total
	Healthcare costs	Productivity losses due to mortality	Productivity losses due to illness	Informal care	
Coronary heart disease	€164,181	€316,808	€22,960	€299,978	€803,927
Cerebrovascular disease	€163,118	€185,026	€33,133	€205,207	€586,484
Combined cost	€327,299	€501,834	€56,093	€505,185	€1,390,411

Cost in thousands per year.

Epidemiology

CHD and stroke are having a huge impact on Romanian society, currently representing the top two causes of death in Romania. In 2016, CHD and stroke together accounted for more than 550 deaths per 100,000 population.[22] Around 109,000 cases of CHD and 66,900 strokes occur each year (*see Table 2*), with estimates indicating that the prevalence has risen over the past ten years.[1]

The death rates for CHD and stroke are excessively high compared with the rest of the EU. In 2016, the death rate from CHD was almost three times higher than the EU average, and the death rate from stroke was more than two times higher.[22]

The number of people in Romania who experience a heart attack or stroke is growing, which increases demand on the healthcare system to manage them effectively in the long term. A continuing rise in new heart attack and stroke cases can be partly explained by Romania's ageing population.[23] Behavioural risk factors, such as smoking, also play a significant role: in 2017, they were thought to be responsible for 62% of deaths.[22]

Slow progress in addressing behavioural risk factors appears to be a major factor behind the growing numbers of heart attacks in younger adults, and is also of serious concern for stroke. Excess weight and obesity among children has increased significantly in recent years and the number of teenagers who regularly smoke is high.[22] Worryingly, 88% of younger heart attack patients (aged under 45) are smokers.[24] Alcohol use in Romania is also significant, with 50% of men engaging in episodic heavy alcohol consumption (binge drinking).[22]

Table 2. Coronary heart disease and stroke (2019): epidemiological data for Romania[1]

	Coronary heart disease[a]	Stroke[b]
Number of people living with the disease (prevalence)	1,080,126	452,322
Number of new cases per year (incidence)	109,537	66,930
Deaths	69,806	52,826

a. Including heart attack.

b. Ischaemic and haemorrhagic stroke.

POLICY PRIORITIES

Achieving national policy leadership in secondary prevention of heart attack and stroke

Policy leadership

Romania lacks dedicated formal policy to address secondary prevention in heart attack and stroke. There does not appear to be a dedicated heart attack strategy or a national stroke strategy (see *Table 3*).[25]

Overarching policies and plans exist that may lead to improvements in the secondary prevention of heart attack and stroke; however, no national targets relevant to secondary prevention have been set. The National Health Strategy 2014–2020[8] is the health sector's main medium-term planning tool that sets objectives for public health, services and system-wide measures. Significantly, it is the first national health strategy in Romania to have an allocated budget.[2] It recognises the suboptimal performance of preventive services and one of its key objectives is the reduction of morbidity and mortality attributable to non-communicable diseases (which encompass heart attack and stroke) through preventive health programmes.[2 8] Goals related to secondary prevention include increasing access to rehabilitation and long-term care services, although no specific targets have been set.[9]

Frameworks to implement the objectives of the National Health Strategy have yet to address secondary prevention. The Ministry of Health is working to make the Strategy operational by developing a specific plan and a monitoring framework to facilitate implementation.[2] Eight regional plans have been established with the aim of reorganising the Romanian health system in line with the national strategic objectives; however, these currently concentrate on primary prevention.[16]

Recent efforts by the Romanian Society of Cardiology are contributing to policy change that could increase the use of cardiac rehabilitation. Rehabilitation for heart attack is currently reimbursed only if prescribed by a specialist in general rehabilitation medicine. However, it has been reported that the National Health Insurance House has recently committed to reimbursing patients for cardiac rehabilitation prescribed by cardiologists.[16] It is hoped that the new policy will streamline the patient pathway, potentially making cardiac rehabilitation available to more patients.[16] Experts have reported that the Romanian Society of Cardiology and the National Insurance House are in discussions with the Minister of Health about setting up dedicated, cardiologist-run cardiac rehabilitation units in public hospitals.[16] Rehabilitation for cardiac patients is currently delivered on general rehabilitation wards by general rehabilitation specialists. who may not have the appropriate knowledge or resources to effectively manage heart attack patients.[16]

Table 3. Heart attack and stroke: summary of key policies for secondary prevention

	Heart attack	Stroke
Key policies	**National Health Strategy 2014–2020. Health for wealth** (Strategia Națională de Sănătate 2014–2020. Sănătate pentru prosperitate)[8] includes several goals related to secondary prevention in cardiovascular disease; however, no specific targets have been set.	

Guidelines and clinical leadership

In heart attack, there are consistent efforts to strengthen clinical leadership in secondary prevention, but European guidelines that are translated into Romanian are not always up to date. The Romanian Society of Cardiology has translated European guidelines on CVD prevention in clinical practice[11 17] and has set up working groups to support national and European strategies on CVD prevention.[18] However, not all of the European guidelines endorsed by the Society have been translated into Romanian, potentially limiting their use in clinical practice, whereas those that have been translated are now out of date (*see Table 4*).

The Romanian Society of Cardiology has set up a working group which is helping to advance secondary prevention in heart attack, including cardiac rehabilitation. The stated purpose of the Cardiology Prevention and Cardiovascular Recovery Working Group is to support national and European strategies on CVD prevention in order to reduce cardiovascular mortality and improve quality of life, including for high-risk patients and those with an established cardiac condition.[18] Both the Society and the working group have taken a leading role in driving policy change on the use of cardiac rehabilitation in Romania. This has resulted in a commitment from the National Health Insurance House to reimburse patients for cardiologist-prescribed cardiac rehabilitation and plans to set up rehabilitation units in public hospitals.[16]

The Society has also led efforts to improve healthcare professionals' knowledge around secondary prevention for heart attack. Educational programmes have been created for general practitioners on the use of medications for secondary prevention in primary care, including for heart attack.[16]

Individual healthcare centres are advancing cardiac rehabilitation in Romania by taking part in European-level collaborations. The University of Craiova's Faculty of Physical Education and Sport, for example, is a partner in the European Commission's 'Take Heart' project.[26 27] The aim of the project is to improve the quality of cardiac rehabilitation and increase attendance of eligible patients by identifying and sharing best practice about physical activity in cardiac rehabilitation.[27] Another goal of the project is to increase awareness about cardiac rehabilitation and its benefits through national media coverage, conferences, articles and educational activities.

In stroke, professional societies have shown leadership on secondary prevention through engagement in European initiatives and the creation of national guidelines. One such document, the 'Diagnostic and Treatment Guide for Cerebrovascular Diseases', includes guidance for healthcare professionals on preventing the recurrence of stroke.[28] Its release in 2009 was a significant milestone, but it may now be due a revision to incorporate recent developments in care for secondary prevention. Currently, the Romanian Society of Neurology is actively involved in implementing the Stroke Action Plan for Europe 2018–2030, whose goals include specific targets to improve stroke care and secondary prevention across Europe.[20]

Clinical leadership in secondary prevention for non-communicable diseases is being furthered by the development of educational initiatives aimed at improving healthcare professionals' knowledge. The National Prevention Forum is a medical alliance supported by the Ministry of Health and Ministry of Education that focuses on reducing the prevalence of non-communicable diseases.[29] Each year it holds masterclasses for medical professionals in the prevention and treatment of non-communicable diseases. The masterclasses have covered the appropriate treatment of patients with cardiovascular risk and guideline-based management of acute coronary syndrome.[30]

Table 4. Heart attack and stroke: national clinical guidelines for secondary prevention

Heart attack	Stroke
The Romanian Society of Cardiology has endorsed guidelines from the European Society of Cardiology (ESC), including: • 'Cardiovascular disease prevention in clinical practice' (2016)[31] • 'Myocardial revascularisation and the management of MI in patients presenting with ST-segment elevation' (2017)[31] • A range of guidelines that emphasise management of key risk factors to reduce repeat events, including those on diabetes, pre-diabetes and cardiovascular disease (2019), dyslipidaemias (2019), chronic coronary syndromes (2019) and arterial hypertension (2018)[31]	**Diagnostic and Treatment Guide for Cerebrovascular Diseases (2009)**,[28] which includes three specific guides covering: the diagnosis and treatment of stroke, secondary prevention and neurological recovery
2012 European Guidelines on CVD prevention in clinical practice (2014),[17] Romanian translation	
Compendium of abbreviated ESC guides (2014),[32] Romanian translation. Covers the prevention of cardiovascular diseases, including heart attack	

Advocacy and awareness raising

> Romania does not have a stroke survivor organisation. There are other diseases and pathologies that have strong patient organisations, so they have a voice. Stroke survivors do not have a voice.
>
> DR CRISTINA TIU

Some public advocacy is occurring around secondary prevention in heart attack and stroke, but awareness-raising activities are likely constrained by the limited number of CVD and stroke patient organisations in Romania. While most EU member states have regional or national-level patient stroke organisations, *The Burden of Stroke in Europe* report found no evidence of their existence in Romania.[33] Experts have suggested that the absence of these organisations has contributed to the lack of national objectives for stroke, as stroke patients' needs are not being voiced at the national level.[20]

Advocacy activities around secondary prevention in heart attack and stroke are being led by medical societies and non-governmental organisations. The Romanian Society of Cardiology has run campaigns to increase awareness of secondary prevention, including for heart attack, among cardiologists, general practitioners and patients. The campaigns were hosted on a dedicated website featuring fact sheets, videos and an online TV programme.[34] The society has also developed an education and information patient portal.[34] In 2017, the National Family Medicine Society and the Pop Popa Foundation for Cardiovascular Disease launched a campaign called 'How many lives does your heart have?'[35] to draw attention to the fact that heart attack patients are at an increased risk of a repeat event. The campaign's website provides information on CVD risk factors and responds to key questions about heart attack. In stroke, the CardioPrevent Foundation in Timisoara[36] established a partnership with a chain of pharmacies to provide free atrial fibrillation testing once a week for people aged over 55 who were already receiving treatment for CVD. Medical societies have also written to the government to ask for the abolishment of regulations that restrict stroke patients to just three weeks of outpatient care per year.[10]

Ensuring availability of comprehensive data

Romania does not appear to collect national data regarding the secondary prevention of heart attack or stroke, which is likely impeding accountability and the benchmarking of services. The country lacks national registries, national surveys or public social security data on this issue (*see Table 5*).[4 25] Initiatives for comprehensive acute care registries are underway,[37] but post-acute data to assess secondary prevention outside of hospital are limited to those collected through the EURObservational Research Programme (EORP) run by the European Society of Cardiology (ESC).[5 16]

There is no audit system to evaluate the results of national cardiovascular prevention initiatives. Data are available on some cardiovascular risk factors only from reports of the National Statistics Institute, while data on cardiovascular mortality are only available from annual statements.[11] Cardiac rehabilitation programmes also lack an audit. In 2016, the CVD prevention coordinators for Romania working for the European Association of Preventive Cardiology reported that they hoped to use data collected from public and private cardiac rehabilitation units to initiate a national registry of cardiac rehabilitation.[11] As of 2019, experts interviewed for this report stated that this had not progressed.[16]

The lack of systematic data collection on the quality of healthcare services in relation to secondary prevention of heart attack and stroke hinders assessment of these services. Romania participated in the EUROASPIRE II, III, IV and V initiatives, which have given an insight into whether joint European societies' guidelines on CVD secondary prevention are being followed in everyday clinical practice.[11] The data only cover a small number of patients in Romania. Other data used in international comparisons, such as in-hospital case-fatality rates for heart attack and stroke, are not available.[2] Few providers appear to be collecting this information even for internal quality purposes. A review of ten Romanian public hospitals found that the majority did not systematically record data on 30-day standardised mortality after admission for heart attack or stroke.[38]

There are some promising data initiatives, mostly in the acute setting, that could potentially be scaled up and expanded across the country to incorporate elements of secondary prevention. The Romanian Registry for ST-elevation Myocardial Infarction had begun to establish nationally representative data on heart attack, with 19 interventional and 45 non-interventional cardiology centres contributing data in 2011.[5]

Inclusion of follow-up data in the registry would likely enable a better understanding of secondary prevention in heart attack. For stroke, acute registries could potentially be linked to primary care data to provide a more complete picture of secondary prevention across the care pathway. Of the two stroke registries currently operating in Romania, the European Stroke Organisation: Enhancing and Accelerating Stroke Treatment's (ESO-EAST) Registry of Stroke Care Quality already collects indicators specifically related to secondary prevention, such as lipid-lowering therapy and smoking cessation advice.[39] Around 26 Romanian hospitals and institutes contribute to the registry.[20] The Romanian National Registry of Interventional Treatment of Acute Stroke also collects data on a range of indicators, including recurrence and mortality.[7] It has been noted that modifying the existing registries to collect data on secondary prevention would require significant additional investment in education and resources to ensure health professionals are able to fill in registry data while caring for patients.[20]

Romania has a National Register of Cardiovascular Diseases, but this would need significant expansion to incorporate data relevant to secondary prevention. Evaluation indicators include physical indicators such as the number of patients treated by cardiovascular surgery per year, and efficiency indicators, such as the average treatment cost of patients who have cardiovascular surgery.[40]

Table 5. Cardiovascular disease registries in Romania

Registry	Description
Romanian Registry for ST-elevation Myocardial Infarction[5]	Collects data on the characteristics of heart attack patients in Romanian hospitals
Romanian National Registry of Interventional Treatment of Acute Stroke[7]	Records data from the hospitals involved in the Ministry of Health's Priority Action for Interventional Treatment of Patients with Acute Stroke, including at three-month follow-up
EUROASPIRE II, III, IV & V[41]	European-level registries collecting a limited amount of Romanian data on CVD secondary prevention in everyday clinical practice
National Register of Cardiovascular Diseases[40]	Collects data for the national programme of cardiovascular disease to facilitate reimbursement of hospitals' expenditure on medical devices and sanitary materials for specific procedures

Initiation of secondary prevention in the acute care setting

In heart attack, in-hospital mortality has decreased, but too few patients are prescribed medication to prevent repeat events. Dramatic reductions in in-hospital mortality[11 42 43] have been achieved through the initiation of a national programme of invasive treatment, which has helped to create a dedicated acute care pathway for heart attack patients.[42] However, a single-centre study of patients admitted with their first episode of acute coronary syndrome found that an optimal regime of cardiovascular medication was not being prescribed.[19] Data from the Romanian Registry for ST-elevation Myocardial Infarction also identified the underuse of dual antiplatelet therapy and beta blockers during the acute stage.[5] The percentage of patients prescribed statins, beta-blockers or dual antiplatelet therapy at hospital discharge has also been found to be below guideline recommended levels.[5] Patients treated by primary percutaneous coronary intervention (a non-surgical procedure that uses a stent to open up blood vessels in the heart) have also been found to be more likely to receive preventive medications than heart attack patients who do not receive this intervention, despite these drugs being guideline-recommended for both groups.[5]

In stroke, a lack of specialist facilities is impacting patients' access to care for secondary prevention. Specialist acute care is vital, not only for timely stabilisation but also to serve as the setting in which secondary prevention efforts should commence. In 2016/2017 just ten stroke units were reported to be available in Romania[44] but specialised acute stroke treatment based on government legislation is offered in 40 centres across the country.[45]

Stroke units generally provide a higher level of care for acute patients, but significant progress is needed to optimise care in these facilities, including for secondary prevention. While most of the hospitals providing data to the ESO-EAST registry had stroke units, in-hospital mortality was still found to be high (on average 16%), with large differences between the centres.[13] Stroke units also seem to lack stroke rehabilitation provision, despite the importance of its early initiation in preventing repeat events.[46]

Securing participation in structured secondary prevention programmes

> Cardiac rehabilitation is the “black sheep” of secondary prevention after a heart attack. We are very good at prescribing medications, all medications are reimbursed, but in terms of rehabilitation nothing has been set up so far.
>
> PROFESSOR DRAGOȘ VINEREANU

There appear to be gaps in access to structured secondary prevention following a heart attack or stroke. Both patient populations currently lack dedicated rehabilitation centres and face reimbursement limits on free outpatient rehabilitation programmes.

Uptake of cardiac rehabilitation is low. Few patients who are referred to cardiac rehabilitation are in fact attending their sessions.[27] An analysis of the Romanian results of the EUROASPIRE III survey found that only 24% of CHD patients reported being advised to attend cardiac rehabilitation programmes, and of those only 14% participated.[14] In 2017, these low rates were upheld, with fewer than 30% of eligible patients being referred to cardiac rehabilitation, of whom fewer than 40% enrolled in a programme following hospital discharge.[4]

Access to cardiac rehabilitation is restricted for heart attack patients owing to a lack of dedicated public cardiac rehabilitation units. Only three specialised rehabilitation clinics have been reported to exist in Romania for both inpatient and outpatient cardiac rehabilitation. They are complemented by a small number of outpatient rehabilitation clinics in health centres and private units.[11] The lack of facilities means that almost 120,000 cardiac patients are left with unmet needs.[48] Rehabilitation centres in public hospitals are reported to be available in each of Romania’s nine regions;[15] however, they do not meet the requirements of cardiac rehabilitation.[15] Experts have reported that specialists in general rehabilitation may be reluctant to accept CVD patients, whose clinical complications require a specialised approach.[16] The establishment of cardiologist-run rehabilitation units in public hospitals would increase patients’ access to dedicated cardiac rehabilitation.

Romania lacks national oversight of cardiac rehabilitation. There is no national cardiac rehabilitation programme, nor national cardiac rehabilitation guidelines.[15] The existing dedicated cardiac rehabilitation centres are instead guided by European guidelines on cardiovascular disease prevention in clinical practice.[11] There are also questions regarding the quality of cardiac rehabilitation in Romania, due to a lack of data and specialist training. There is no national audit for cardiac rehabilitation,[11] which prevents assessment of these services and their impact on patient outcomes, either at a national or at a local level. A lack of specialist training may also affect the quality of cardiac rehabilitation. In 2016, it was reported that there are no specific professional cardiac rehabilitation training programmes at the national level, and only three months are dedicated to cardiac rehabilitation training as part of the medical curriculum for cardiology.[11]

Restrictions on reimbursement for outpatient rehabilitation likely contribute to the low uptake of cardiac rehabilitation and present a significant barrier to increasing the use of these services. The National Health Insurance House does not fully reimburse outpatient rehabilitation, covering only the first 10 of the 36 recommended sessions.[11] Many patients cannot afford to self-finance,[12] with a complete cycle of out-of-hospital cardiac rehabilitation being reported to cost an average of €360.[15] This is likely contributing to the high drop-out rate from cardiac rehabilitation programmes, which has been reported as 40–60%.[11]

> We need an integrated stroke pathway at the governmental level. If you had a pathway where the patient was seen in acute units and then went on to receive rehabilitation, the patient would return home in a much better condition. However, currently this pathway stops when you have to discharge the patient.
>
> DR CRISTINA TIU

In stroke, rehabilitation is significantly underused, even for patients discharged from stroke units. Too few stroke rehabilitation centres exist to meet demand[13] and there is a complete absence of community services. The lack of a standardised stroke care pathway that would cover post-acute care is likely impacting referral rates to the services that do exist.[20] Analysis of the ESO-EAST Registry of Stroke Care Quality in 2018 found that 73% of stroke survivors were discharged to their homes after treatment, even though over 50% were not able to walk independently.[13] The lack of stroke rehabilitation services offering structured post-acute care is reported to have resulted in limited neurorehabilitation being offered by acute stroke units.[20] When post-acute rehabilitation does take place, it has been reported as often being delivered in geriatric rehabilitation clinics.[48]

Economic barriers restrict access to structured rehabilitation for people who have survived a stroke. Stroke patients are allocated a maximum of 21 days per year for outpatient recovery, limiting their access to this important treatment. This restriction is set out in the Framework Contract on the Provision of Healthcare.[10]

Gaps in national health insurance coverage are likely contributing to inequalities in access to rehabilitation programmes for heart attack and stroke. Neither heart attack nor stroke rehabilitation services are covered for people who do not have health insurance. The national health insurance covers only around 86% of the Romanian population, with the proportion higher in urban (95%) than in rural areas (76%).[2] Groups particularly affected by a lack of health insurance coverage include members of the Roma population who do not have identity cards, agricultural workers and those who are self-employed.[2]

Increasing primary care capacity for long-term risk management

The long-term management of heart attack patients has seen improvement in recent years, but underuse of treatments to prevent recurrence and slow progress in modifying lifestyle risk factors are barriers to best-practice care. For stroke patients, secondary prevention in long-term management remains poor.

Medications to prevent recurrence of cardiovascular events are not being used to their fullest potential, particularly in primary care. Experts have stated that patients are usually managed by cardiologists during the first 12 months after a heart attack. In that period, secondary prevention is often well managed through the guideline-recommended use of beta blockers, statins, angiotensin-converting enzyme (ACE)

inhibitors and aspirin. Afterwards, patients' care is usually transferred to primary care, where medication prescription often becomes suboptimal. Patients have been reported to receive doses lower than the guideline-recommended levels.[16]

Improving the use of medications for secondary prevention in primary care has been the focus of professional education programmes, but sporadic uptake has affected their impact. The Romanian Society of Cardiology started a large-scale programme in 2017 to educate general practitioners on different aspects related to cardiology, including secondary prevention in heart attack. Experts have reported that uptake of the programme has been mixed, with a lot of variability in whether practitioners are open to the learning initiatives.[16]

Despite the underuse of medications, significant progress has been made in controlling cardiovascular risk factors. Between 2006 and 2013, 52% of patients reached their blood pressure target, up from 33% in 2006. Improvement was also noted in total cholesterol control, with 70% of CHD patients reaching the target levels, up from 50% in 2006.[49]

Lifestyle risk factors continue to be an issue, with obesity rates increasing among people with CHD and many continuing to smoke. The EUROASPIRE studies found that the rates of obesity among people with CHD rose from 39% in 2006 to 46% in 2013,[49] with more than 40% of cardiac patients classified as obese in 2017.[4] Smoking rates had shown no significant improvement between 2006 and 2013, with 11% of people with CHD found to smoke.[49]

> When patients go back to their general practitioner, the doctor decreases the dose of statins and of angiotensin-converting enzyme inhibitors. They might prescribe the main four classes of medication for secondary prevention of heart attack, but they don't give the right doses. This is the main problem.
>
> PROFESSOR DRAGOȘ VINEREANU

For stroke patients, secondary prevention in the long term is poor. It is restricted by an absence of protocols to ensure joined-up, multidisciplinary care between primary and secondary services. However, experts have argued that general practitioner-led risk-factor control during patients' long-term care is improving.[20]

There is no interdisciplinary collaboration protocol to ensure long-term management of stroke and direct patients to specialists and therapeutic interventions. To address this, the Romanian Association for Health Communication has initiated a new project called 'AVC 360° – Patient Journey'.[50] The project, which ran through 2018, involved a series of interdisciplinary meetings to improve collaboration between medical specialties. It has been noted, however, that not all key players, for example medical associations such as the Romanian Society of Neurology, were invited to form part of the initiative.[20]

Stroke patients have a legal right to community-based secondary prevention interventions, but a severe shortage of services is impeding this. People who have national health insurance have the legal right to free home care following a stroke.[51] At hospital discharge, patients receive a home care recommendation from their neurologist or medical rehabilitation physician, which is then used by the general practitioner to fill out a home care referral form. Physicians can choose up to four types of care, which include individual physical therapy, mobilisation and interventions established in the care plan. However, the provision of care is inconsistent, and the number of days of home care set by the National Health Insurance House may vary from month to month depending on the funds received.[51] There is also a severe shortage of these services. In 2013, the waiting list for long-term care had nearly 3,000 people on it, and waiting times can be up to two years.[9]

OUTLOOK

Repeat heart attack and stroke currently present an unacceptable risk in Romania. Significant opportunities exist to improve patient outcomes, while potentially reducing costs, through greater commitment to implementation of measures for secondary prevention.

The undersupply of cardiac and stroke rehabilitation services is a major barrier to improving care for secondary prevention, with too few services to meet patient need. The introduction of dedicated cardiologist-run cardiac rehabilitation units in public hospitals may present an opportunity to address this gap, with significant clinical leadership already being shown in this area. Bringing medication use for the control of heart attack and stroke risk factors in line with the European guidelines also offers an opportunity to improve patient outcomes, as risk-factor control is currently inadequate across the entire patient pathway.

To take advantage of these opportunities, national leadership will likely be needed to address both the absence of dedicated formal policy covering secondary prevention in heart attack and stroke, and the lack of relevant national data to monitor and benchmark services. In addition, policymakers may need to rethink restrictions to the amount of rehabilitative care patients can receive under the national health insurance.

With concerted action to address the gaps in preventive care for repeat heart attack and stroke, it is likely that patient outcomes can be significantly improved and national health expenditure reduced.

APPENDIX

Leading organisations and data sources consulted for this report

Many organisations and sources of information were identified across the course of the research. These include:

Societatea Română de Cardiologie (Romanian Society of Cardiology)
Societății de Neurologie din România (Romanian Society of Neurology)
Fundatia Romana a Inimii (Romanian Heart Foundation)
Societatea Romana de Reabilitare Medicala (Romanian Society of Rehabilitation Medicine)
Romanian Journal of Cardiology (*Revista Română de Cardiologie*)
Romanian Neurosurgery
Romanian Statistical Review (*Revista Română de Statistică*)

A significant volume of epidemiology data came from the Global Health Data Exchange. More information on this tool can be found here: http://ghdx.healthdata.org/gbd-results-tool

REFERENCES

1. Global Burden of Disease Collaborative Network. 2019. Global Burden of Disease Results Tool. Available from: http://ghdx.healthdata.org/gbd-results-tool [Accessed 09/11/20]
2. Organisation for Economic Co-operation and Development, European Observatory on Health Systems and Policies. 2017. Romania: Country Health Profile 2017, State of Health in the EU. Brussels: OECD Publishing
3. Wilkins E, Wilson L, Wickramasinghe K, *et al*. 2017. European Cardiovascular Disease Statistics 2017. Brussels: European Heart Network
4. Garrofé BC, Björnberg A. 2017. Euro Heart Index 2016 – Secondary Prevention Index 2017. France: Health Consumer Powerhouse
5. Cretu DE, Udroiu CA, Stoicescu CI, *et al*. 2015. Predictors of in-Hospital Mortality of ST-Segment Elevation Myocardial Infarction Patients Undergoing Interventional Treatment. An Analysis of Data from the RO-STEMI Registry. Maedica 10(4): 295-303
6. Tatu-Chițoiu G, Deleanu D, Petriș A, *et al*. 2009. The First Romanian Registry for ST-Elevation Myocardial Infarction (RO-STEMI) (1997–2009). Bucharest: Editura Amaltéa
7. Romanian Society of Neurology. 2018. Acțiunea Prioritară Pentru Tratamentul Intervențional Al Pacienților Cu Avc Acut. Romanian Society of Neurology
8. Ministry of Health. 2014. National Health Strategy 2014–2020. Health for wealth [Strategia Națională de Sănătate 2014–2020. Sănătate pentru prosperitate]. Bucharest: Ministry of Health
9. Vlădescu C, Scîntee SG, Olsavszky V, *et al*. 2016. Romania: Health system review. Health Syst Transit 18(4): 1-170
10. Accident Vascular Cerebral. About this site (in Romanian). Available from: https://www.postavc.ro/despre-sitedepre-site/ [Accessed 03/09/20]
11. Kulcsar I, Gaita D, Tatu Chitoiu G, *et al*. 2016. Country report Romania – April 2016. Biot: European Association for Cardiovascular Prevention and Rehabilitation
12. Busnatu SS, Ion A, Raileanu M, *et al*. 2018. The role of mHealth technology in the secondary prevention of cardiovascular disease. Romanian Biotechnological Letters. Available from: https://romanianbiotechnologicalletters.files.wordpress.com/2018/06/busnatu-s-et-al.pdf [Accessed 06/01/21]
13. Tiu C, Tuta S, Stan A, *et al*. 2018. 'Mortality and disability in stroke patients in Romania: Quality assessment of stroke care inside RES-Q registry and ESO East Project' in European Stroke Organisation Conference: Abstracts. European Stroke Journal 3: 3-586
14. Avram A, Lurciuc S, Craciun L, *et al*. 2010. Euroaspire III Romania - The need to reinforce cardiac rehabilitation in patients with coronary artery disease. Timisoara Medical Journal 60: 299-304
15. European Commission/Take Heart project. Physical activity in patients with CHD. A collaborative partnership to identify and share good practices among European countries. WP4 - Analysis of the Local Contexts. Luxembourg: European Commission

16. Vinereanu D. Interview with Jonathan Scrutton at The Health Policy Partnership [telephone]. 15/03/2019

17. Perk J, De Backer G, Gohlke H, *et al*. 2014. Translation of the European Guidelines on cardiovascular disease prevention in clinical practice (version 2012). Romanian J Cardiol 24(4): 1-92

18. Romanian Society of Cardiology. Cardiology Prevention and Cardiovascular Recovery Working Group. Pupose and activity. Available from: https://www.cardioportal.ro/grupuri-de-lucru/cardiologie-preventiva/scop-si-activitate/ [Accessed 09/11/20]

19. Pop C, Florescu R, Matei C, *et al*. 2017. Role of Optimal Medication Given to Patients with Hypertension and Ischemic Heart Disease Prior to an Acute Coronary Syndrome. Heart Int 12(1): e18-e23

20. Tiu C. 2020. Interview with Jonathan Scrutton and Ed Harding at The Health Policy Partnership [telephone]. 12/08/20

21. Simionescu M, Bilan S, Gavurova B, *et al*. 2019. Health Policies in Romania to Reduce the Mortality Caused by Cardiovascular Diseases. Int J Environ Res Public Health 16(17): 3080

22. Organisation for Economic Co-operation and Development, European Observatory on Health Systems Policies. 2019. Romania: Country Health Profile 2019. Brussels: OECD Publishing

23. Vasile V, Dobre A. 2015. Overview of Demographic Evolution in Romania. Romanian Stat Rev 4: 27-45

24. Ianula R. 2015. Correlations between Lifestyle and Ischemic Heart Disease in Young Patient. Romanian Stat Rev 4: 82-94

25. Camm J, Lobban T, Knight E, *et al*. 2014. The Route Map for Change & the European Atlas on the Prevention of AF-related Stroke. London: The Health Policy Partnership

26. Cardiac Exercise Research Group. The Take Heart Project – physical activity in patients with coronary heart disease. Available from: https://cergntnu.wordpress.com/2016/06/27/the-take-heart-project-physical-activity-in-patients-with-coronary-heart-disease/ [Accessed 04/02/21]

27. European Commission/Take Heart project. Physical activity in patients with CHD. A collaborative partnership to identify and share good practices among European countries. WP5 – Identification of Good Practices. Luxembourg: European Commission

28. Bajenaru O. 2009. Ghid de diagnostic şi tratament pentru bolile cerebro-vasculare [Diagnosis and treatment guide for cerebrovascular disease]. Bucharest: Romanian Ministry of Health

29. Forumul National de Preventie. Evenimente. Available from: http://www.fnp.ro/despre-noi/ [Accessed 09/11/20]

30. National Prevention Forum. Masterclass (in Romanian). Available from: http://www.fnp.ro/master-class-28-octombrie/ [Accessed 09/11/20]

31. European Society of Cardiology. Romanian Society of Cardiology. Available from: https://www.escardio.org/The-ESC/Member-National-Cardiac-Societies/Romanian-Society-of-Cardiology [Accessed 09/11/20]

32. European Society of Cardiology. 2014. Compendiu de ghiduri ESC prescurtate 2014 (Compendium of abbreviated ESC guides 2014). Bucharest: Med Publicis

33. Stevens E, Emmett E, Wang Y, *et al.* 2017. The burden of stroke in Europe. London: Stroke Alliance for Europe

34. Romanian Society of Cardiology. Section dedicated to patients. Available from: https://www.cardioportal.ro/pacienti/ [Accessed 04/11/20]

35. Inimisanatoase. Cardiovascular disease causes three times more deaths than oncological diseases (in Romanian). Available from: http://www.inimisanatoase.ro/bolile-cardiovasculare-cauzeaza-de-trei-ori-mai-multe-decese-decat-bolile-oncologice/ [Accessed 05/12/18]

36. Accident Vascular Cerebral. Campaign for Information and Prevention of AVC, launched in Timisoara (in Romanian). Available from: https://www.postavc.ro/campanie-de-informare-si-de-prevenire-avc-ului-lansata-la-timisoara/ [Accessed 06/01/21]

37. Cotoban AG, Udroiu CA, Vinereanu D. 2019. The Romanian National Registry of non-ST Elevation Acute Coronary Syndromes - Design and Rationale. Maedica 14(3): 191-95

38. Duran A, Chanturidze T, Moreno A, *et al*. 2017. Performance auditing of selected public hospitals with arrears. Contract N: CS/3/37-12. Deliverable 3: Performance Assessment in selected ten hospitals. Oxford: Oxford Policy Management

39. Registry of Stroke Care Quality (RES-Q). What information does RES-Q collect? Available from: https://www.qualityregistry.eu/about-uk#collect [Accessed 09/11/20]

40. National Health Insurance House. National Program of Cardiovascular Diseases (in Romanian). Available from: http://www.cnas.ro/page/programul-national-de-boli-cardiovasculare.html [Accessed 09/11/20]

41. European Society of Cardiology. EUROASPIRE V registry publications. Available from: https://www.escardio.org/Research/Registries-&-surveys/Observational-research-programme/euroaspire-v [Accessed 06/01/2020]

42. Tatu-Chițoiu G, Arafat R, Deleanu D, *et al*. 2012. Impact of the Romanian national programme for interventional therapy in ST-elevation myocardial infarction. EuroIntervention 8(P): P126-P32

43. Societatea Romana De Cardiologie. STEMI treatment guide in pre-hospital (in Romanian). Available from: https://www.cardioportal.ro/ghiduri-src/ghidul-de-tratament-al-stemi-in-prespital/ [Accessed 09/11/20]

44. Aguiar de Sousa D, von Martial R, Abilleira S, *et al*. 2019. Access to and delivery of acute ischaemic stroke treatments: A survey of national scientific societies and stroke experts in 44 European countries. Eur Stroke J 4(1): 13-28

45. Order no. 17/2019 on the approval of the protocol for interventional treatment of patients with acute stroke. 2019. Romania: Enacted 11/01/2019

46. Czionkowska A, Skowrońska M, Niewada M. 2007. Stroke Service in Central and Eastern Europe. Int J Stroke 2(4): 276-78

47. Abreu A, Pesah E, Supervia M, *et al*. 2019. Cardiac rehabilitation availability and delivery in Europe: How does it differ by region and compare with other high-income countries? Eur J Prevent Cardiol 26(11): 1131-46

48. Capisizu A, Aurelian S, Mirsu-Paun A, *et al*. 2016. A key for post stroke rehabilitation in the elderly. Acta Medica Mediterranea 32(4): 1003-07

49. Romanian Journal of Cardiology. Comparison between the control of risk factors for coronary patients in Romania; results from the EuroASPIRE study III and IV. Available from: https://www.romanianjournalcardiology.ro/arhiva/comparison-between-the-control-of-risk-factors-for-coronary-patients-in-romania-results-from-the-euroaspire-study-iii-and-iv/ [Accessed 16/11/20]

50. ARCIS EDU. AVC 360° – Patient Journey (in Romanian). Available from: http://www.arcisedu.ro/avc-360&prev=search [Accessed 09/11/20]

51. Accident Vascular Cerebral. Legal facilities for stroke patients (in Romanian). Available from: https://www.postavc.ro/facilitati-legale-pentru-pacientii-cu-accident-vascular-cerebral/ [Accessed 03/09/20]

FOR MORE INFORMATION, PLEASE CONTACT:

The Health Policy Partnership

68–69 St Martin's Lane, London, WC2N 4JS, United Kingdom
info@hpolicy.com

The Health Policy Partnership

The Health Policy Partnership is a specialist health policy consultancy with longstanding experience in research and the coordination of policy leadership networks.