



Secondary prevention of
**HEART ATTACK
AND STROKE**

Country profile for
Spain

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 Spain.

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EXECUTIVE SUMMARY

Heart attack and stroke are a significant societal concern in Spain. There are more than 1.5 million people living with coronary heart disease (CHD) and more than 552,000 who have survived a stroke – and those numbers are on the rise.¹ Prevalence and mortality rates for heart attack and stroke are lower in Spain than in many other European countries, but in 2016 CHD was still the leading, and stroke the second-leading, cause of death.²

The financial cost to society and the healthcare system is substantial. CHD and cerebrovascular disease cost the Spanish economy €7.4 billion in 2015.³

Heart attack and stroke patients are at an elevated risk of repeat events, but much can be done to lessen this risk. Risk reduction can be achieved through the timely application of guideline-recommended measures for secondary prevention, such as structured rehabilitation and the appropriate management of long-term cardiovascular risk factors.

However, in Spain these measures are applied inconsistently, a situation that is putting patients at an unnecessarily high risk of repeat events. While established care pathways covering secondary prevention exist for both heart attack and stroke, from acute crisis to long-term care, their implementation is suboptimal. For instance, only 17% of cardiac units provide an integrated care pathway⁴ and few of Spain's autonomous communities have stroke care protocols linking rehabilitation to primary care.⁵

Access to specialist heart attack and stroke units varies significantly across Spain, despite the fact that treatment in these units helps to optimise acute care and reduce repeat events. In heart attack, only around 36% of cardiology departments in teaching hospitals lead an acute and critical cardiovascular care (ACCC) unit, and the availability of those units varies by region.⁶ In stroke, only 11 out of 17 autonomous communities have stroke units in place, and even in these regions access can be limited.^{7,8}

Too few heart attack patients have access to cardiac rehabilitation. Despite cardiac rehabilitation having been proven to prevent repeat events, a lack of specialist centres has resulted in an estimated annual unmet need of 165,097 cardiac patients.⁹ The number of cardiac rehabilitation centres varies significantly by region,^{10 11} which is likely contributing to less than 25% of heart attack patients undertaking this important intervention.¹²

When heart attack and stroke patients enter primary care, too few receive the appropriate medications to prevent repeat events. A cohort study in 21 primary care centres in 8 Spanish autonomous communities found that adherence to European clinical practice guidelines for secondary prevention of cardiovascular disease was low, with only 38.6% of patients receiving guideline-recommended medications.¹³

The underuse of medications for secondary prevention during patients' long-term care is increasing their risk of mortality. At one year follow-up, patients with cardiovascular disease (CVD) who are not taking any of the guideline-recommended types of medications have a significantly higher risk of death compared with optimally treated patients.¹⁴

Patient education about behavioural risk factors needs to be better emphasised. With 63.5% of patients with acute coronary syndrome (ACS), of which a heart attack is the most severe expression, readmitted to an intensive care unit found to present with the same behavioural risk factor/s as at first admission (smoking, obesity, sedentary lifestyle, alcohol consumption), this is an urgent problem to address.¹⁵

There appears to have been a lack of national leadership to address these gaps and inequalities; however, encouraging recent developments may lead to increased focus on secondary prevention. The government has committed to revising the national stroke strategy¹⁶ and is developing an overarching strategy for CVD, although it is not yet known whether the strategy will prioritise secondary prevention.¹⁷

National direction of secondary prevention in heart attack and stroke is made more difficult by the regional nature of the Spanish health system. Although national strategies are endorsed by the Interterritorial Council of the National Health System, national recommendations and objectives are not binding for the autonomous communities.¹⁸ This may result in regional differences in the funding, organisation, delivery and standards of heart attack and stroke secondary prevention.^{7 18 19}

More comprehensive data related to secondary prevention of heart attack and stroke are needed to monitor service performance and inform national and regional policies. Indicators used vary across registries and do not always allow for holistic assessment of quality of care or comparison of results across regions.²⁰ This suggests a need for more standardised and thorough data collection and aggregation.²¹

Implementation of best practice secondary prevention also faces clinical barriers. Studies report, for example, that healthcare professionals often view patient objectives for long-term management as unrealistic and consider consultation time too short to implement guidelines.^{22 23}

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

In Spain, cardiovascular disease (CVD), which includes heart attack and stroke, is a significant societal concern. Official data sources estimate that more than 1,528,000 people are living with coronary heart disease (CHD) and more than 552,000 people have survived a stroke – and these numbers are rising.¹

Heart attack and stroke present a significant cost to the public budget in Spain. The cost of CHD and cerebrovascular disease to the Spanish healthcare system was €2.7 billion in 2015.³ Behind these figures is a more complex story of inequalities and missed opportunities to promote health and manage the burden of disease more effectively.

At the policy level, national strategies for secondary prevention have not been updated in recent years, and regional adoption of national policy priorities varies. Care is provided with established pathways from acute crisis to long-term treatment in the outpatient setting. However, the availability of integrated care networks and specialist units is suboptimal, and gaps remain in healthcare delivery. This leads to variation in patient outcomes and organisation of long-term care across regions.

THE CASE FOR CHANGE

Economic cost of heart attack and stroke

Direct healthcare costs of heart attack and stroke care place a significant strain on the Spanish healthcare system, as do indirect costs on Spain's society and economy. In 2015, direct costs (including inpatient and outpatient care) amounted to €1.5 billion for CHD and €1.2 billion for cerebrovascular disease.³ Inpatient care for cardiac patients currently takes up 50% of hospitals' capacity in Spain,²⁴ highlighting the need to reduce hospital stay and readmissions for cardiac conditions. Indirect costs (including informal care and loss of productivity) have been estimated at over €4.6 billion for CHD and cerebrovascular disease combined.³

Table 1 provides an in-depth look at direct and indirect costs for these diseases, according to data from the European Cardiovascular Disease Statistics 2017.³

Table 1. Coronary heart disease and cerebrovascular disease: direct and indirect costs to society in 2015³

| | Direct cost | | Indirect cost | | Total |
|--------------------------------|------------------|--------------------------------------|------------------------------------|---------------|------------|
| | Healthcare costs | Productivity losses due to mortality | Productivity losses due to illness | Informal care | |
| Coronary heart disease | € 1,516,851 | €622,626 | €474,722 | €1,906,062 | €4,520,261 |
| Cerebrovascular disease | €1,244,812 | €261,334 | €474,482 | €923,611 | €2,904,239 |
| Combined cost | €2,761,663 | €883,960 | €949,204 | €2,829,673 | €7,424,500 |

Cost in thousands per year.

Epidemiology

Around 166,000 cases of CHD and 60,000 strokes occur in Spain each year.¹

Estimates indicate that the prevalence of CHD, which includes heart attack, has risen over the past ten years. Yet the vast burden of CHD and stroke is preventable: many heart attacks and strokes are repeat events,²⁵⁻²⁷ and could be minimised by effective secondary prevention models, designed specifically for the needs of high-risk patients.^{26 28} A study at an Andalusian hospital showed that for 34% of post-stroke patients it was their second stroke, and their existing risk factors had not been well managed, highlighting the need to reinforce secondary prevention efforts.²⁵

Prevalence and mortality rates for heart attack and stroke are lower in Spain than in many other European countries, but in 2016 CHD was still the leading and stroke the second-leading cause of death.² Every year, close to 54,000 people in Spain die as a result of CHD, and 37,000 die as a result of stroke (see *Table 2* for a summary of key epidemiological data on heart attack and stroke).¹ Mortality rates for CHD vary widely across Spanish regions. For example, Andalusia and the Mediterranean coastline have higher mortality rates, likely owing to socioeconomic and lifestyle-related causes.¹⁹

The number of people in Spain who have had a heart attack or stroke is growing, which creates a greater demand on the healthcare system to manage those patients effectively in the long term. The continuing rise in new cases of heart attack and stroke can be explained partly by the demographic transition: by 2050, Spanish society will be one of the oldest in Europe.²⁹ Obesity, diabetes and hypertension rates are also rising,¹¹ with over one third of all deaths in Spain estimated to be attributable to behavioural risk factors.² It is therefore likely that CVD will grow further as a societal concern and present many strategic challenges to the sustainability of healthcare.

Table 2. Coronary heart disease and stroke (2019): epidemiological data for Spain¹

| | Coronary heart disease ^a | Stroke ^b |
|---|-------------------------------------|---------------------|
| Number of people living with the disease (prevalence) | 1,528,788 | 552,068 |
| Number of new cases per year (incidence) | 166,334 | 61,102 |
| Deaths | 53,632 | 37,092 |

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

There have been concerted efforts at a central level to improve secondary prevention for heart attack and stroke in Spain. National strategies have included a direct focus on secondary prevention for heart attack and stroke, and indicators of performance have been developed to measure outcomes and quality of care.^{7,19}

Spanish national strategic plans for heart attack and stroke each emphasise the need for recognition and inclusion of secondary prevention in care pathways. The objectives and recommendations of the national strategies are summarised in *Table 3* (see p. 12).

In heart attack, strengthening secondary prevention and cardiac rehabilitation is one of the four pillars of the 2009 Ischaemic Heart Disease Strategy.¹⁹ The strategy highlights the need to initiate comprehensive secondary prevention at the point of hospital discharge, and ensure better access to cardiac rehabilitation and support for patients and carers. It also aims to provide training for healthcare professionals to increase their knowledge about secondary prevention.¹⁹

The Stroke Strategy of the Spanish National Health System also contains objectives in line with the aims of secondary prevention. Examples include emphasising long-term adherence to treatment and sustained risk-factor control.⁷ The Stroke Strategy clarifies that secondary prevention should start early, as soon as the patient is stabilised, with a thorough patient assessment and a comprehensive protocol to assure continuation of risk-factor control in the outpatient setting.⁷

The national strategic plans have not been updated since their release; however, recent developments may lead to a renewed focus on secondary prevention.

The national strategies have been described as outdated and requiring revision,^{7,19,30} therefore it is encouraging that the Ministry of Health, Consumer Affairs and Social Welfare (referred to later as the Ministry of Health) plans to evaluate and update the stroke

strategy in 2020.¹⁶ A national cardiovascular disease strategy is also being developed in consultation with the autonomous communities.¹⁷ This offers an opportunity to refocus efforts on secondary prevention; however, it is not yet known whether the strategy will prioritise this aspect of care. Secondary prevention gained some momentum in 2011 when all autonomous communities in Spain were actively encouraged to develop chronic disease strategies.³¹

Regional adoption of national policy priorities varies. Although national strategies are endorsed by the Interterritorial Council of the National Health System, national recommendations and objectives are not binding for the autonomous communities.¹⁸ For example, while the national Stroke Strategy outlined an optimal care pathway, only 13 of the 17 autonomous communities have some form of protocol or care pathway for stroke patients in place, and only Catalonia and the Basque Country have a follow-up programme for patients who have had a stroke.⁷ Some autonomous communities have developed regional plans, such as the recent Stroke Strategy of the Balearic Islands 2017–2021,³² which highlights the importance of patient-centred secondary prevention. Each autonomous community may have different health priorities, and health spending varies substantially across regions. The Basque Country, Asturias and Navarre, for example, spend over 30% more on health per capita than Andalusia.³³ Regional decision-making is known to have a direct impact on access to preventive therapies for high-risk CVD patients.³⁴⁻³⁶

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The public sector does not currently allocate resources to improve secondary prevention. Efforts to promote secondary prevention are primarily driven by patient organisations, professional societies and private companies.

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

| Heart attack | Stroke |
|--|---|
| <p>Ischaemic Heart Disease Strategy (2009)¹⁹ (Estrategia en Cardiopatía Isquémica del Sistema Nacional de Salud) aims to create, implement and maintain multi-level secondary prevention and cardiac rehabilitation programmes. These should start during patients' hospital stay. Patients should receive the necessary information to continue those programmes after discharge.</p> | <p>Stroke Strategy of the Spanish National Health System (2008)⁷ (Estrategia en ictus del SNS) states that risk factors must be kept in check and patients must undergo preventive treatment. The autonomous communities are tasked with implementing measures to ascertain and increase the number of patients who are still adhering to the treatment five years after the initial event.</p> |
| <p>The Cardiovascular Health Strategy (La Estrategia de Salud Cardiovascular) is currently being developed by the the Spanish Ministry of Health; its priorities are not yet known.¹⁷</p> | |

Guidelines and clinical leadership

National healthcare and health professional organisations are working together to bring CVD secondary prevention in line with internationally accepted standards.

The Spanish Interdisciplinary Vascular Prevention Committee (El Comité Español Interdisciplinario para la Prevención Vascular, CEIPV), an alliance of 15 professional scientific societies supported by the Spanish Ministry of Health and the Carlos III Health Institute, was created in 2000 with the aim to adapt European guidelines to the national context and to provide healthcare professionals with a single consensus document to guide cardiovascular prevention.³⁷ The CEIPV has also created a summarised, annotated adaptation of the guidelines to facilitate their use in primary care, after it was found that the majority of general practitioners were not assessing patients' cardiovascular risk, mainly due to limited time.³⁸

In heart attack, the Spanish Society of Cardiology (Sociedad Española de Cardiología, SEC) has adapted CVD guidelines covering secondary prevention published by the European Society of Cardiology (ESC) since 2004. These guidelines are usually translated into Spanish and certain recommendations may be adapted to the Spanish context.^{22 23 39}

The SEC is also advancing the implementation of standardised cardiac rehabilitation.

Under the umbrella of the SEC-Calidad project – which aims to improve diagnosis, treatment and prevention of CVD – the SEC has developed standards and protocols for cardiac rehabilitation. It also offers an accreditation process for cardiac rehabilitation units across the country.⁴⁰ In addition to these standardisation efforts, the SEC's section for vascular risk and cardiac rehabilitation has launched several pilot projects in primary care to improve the implementation of cardiac rehabilitation and secondary prevention (see *Case study 1*, p. 26).

The SEC has created best-practice protocols for cardiac care, but despite promising efforts to promote them, implementation remains suboptimal.

The SEC set out integrated healthcare networks (Unidades Asistenciales del Área del Corazón) to promote more coordinated and comprehensive care for heart attack patients across different healthcare providers and medical specialisms. These networks aim to bring together different areas of the health system and set out best practice protocols for cardiac care.²⁴ Despite a range of medical societies and associations supporting the networks, so far only 17% of cardiac units in Spain provide an integrated care pathway.⁴

In stroke, the Spanish Society of Neurology (Sociedad Española de Neurología) also endorses the 2016 European guidelines on CVD prevention in clinical practice, but national guidelines including secondary prevention are not up to date. In 2009, the Ministry of Health published guidelines for the primary and secondary prevention of stroke in clinical practice, and included further recommendations for secondary prevention in primary care.⁴¹ However, they may require revision to be brought up to date.

In both heart attack and stroke, regional or context-specific guidelines also exist, which may compete with national guidelines. In heart attack, Valencia has specific guidelines for secondary prevention in primary care, which may be more influential than SEC-endorsed European guidelines.⁴² In the case of stroke, there are specific (and arguably competing) national guidelines for the management of stroke in primary care.⁴³

Adherence to CVD secondary prevention guidelines appears to be low. In stroke, for example, a study with 30 Spanish hospitals found that clinical records were not well kept, and rates of prescription of guideline-recommended therapies ranged widely from 57.3% to 82%.⁴⁴ Spanish physicians report a number of barriers to the implementation and adoption of ESC guidelines on CVD prevention in clinical practice, such as unrealistic objectives for long-term management set in the guidelines²² and a lack of time to attend to patients.²³

Table 4 outlines key guidelines that are used for cardiovascular secondary prevention in Spain.

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

| Heart attack | Stroke |
|---|--|
| <p>European Society of Cardiology (ESC) guidelines on cardiovascular disease (CVD) prevention in clinical practice (2016)⁴⁵ and their Spanish adaptation (2016)⁴⁶</p> | |
| <p>Comments on the ESC guidelines on CVD prevention in clinical practice (2016)⁴⁷ created by a Spanish Society of Cardiology working group</p> | <p>Clinical practice guideline on primary and secondary prevention of stroke (2009)⁴¹ published by the Ministry of Health</p> |
| <p>ESC guidelines on acute myocardial infarction in patients presenting with ST-segment elevation (2017) and commentary on the guidelines (2017)⁴⁸</p> | <p>Guidelines for the preventive treatment of ischaemic stroke and transient ischaemic attack: update on risk factors and lifestyle (2012).⁴⁹ Update of the Spanish Society of Neurology guidelines on prevention of ischaemic stroke and transient ischaemic attack</p> |
| <p>The SEC endorses a range of recently updated ESC guidelines, which place greater emphasis on management of key risk factors to reduce repeat events.⁴⁸ These include:</p> <ul style="list-style-type: none"> • diabetes, pre-diabetes and cardiovascular disease • dyslipidaemias • chronic coronary syndromes • arterial hypertension. | <p>Clinical practice guideline for the management of stroke patients in primary care (2010)⁴³ published by the Ministry of Health</p> |
| <p>Regional guidelines for primary care, e.g. Valencia: Guía de prevención secundaria del infarto de miocardio en atención primaria⁴²</p> | |

Advocacy and awareness raising

Advocacy efforts to increase awareness around secondary prevention for heart attack and stroke appear to be extremely limited in Spain. The lack of awareness-raising activities is worrying given the policy and service gaps that currently exist in Spain in relation to secondary prevention. Patient organisations and advocacy groups, such as Cardioalianza, emphasise the importance of risk factor control, and aim to educate patients and the wider public on how to reduce their cardiac risk.⁵⁰ It seems, however, that there are no secondary prevention-specific campaigns or awareness-raising activities on a national scale. The last national awareness campaign for CVD prevention by the Spanish Ministry of Health took place in 2007.⁵¹

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Both patient associations and professional societies have made efforts to promote cardiac rehabilitation programmes, but they need support from policymakers at national and regional level to implement those programmes.

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Ensuring availability of comprehensive data

Indicators to monitor quality of care and outcomes have been developed at the national and regional levels, but overall political oversight and public accountability for quality of care in relation to secondary prevention is still too variable. Indicators mentioned in the national strategies for heart attack and stroke include the number of specialist stroke units and the percentage of health areas with a cardiac rehabilitation programme.^{7,19}

In heart attack, active monitoring and evaluation of cardiac care have been spearheaded by the SEC and the Spanish Society for Thoracic and Cardiovascular Surgery (Sociedad Española de Cirugía Torácica-Cardiovascular). The societies have developed quality indicators for cardiology in conjunction with the Ministry of Health. These encompass performance and outcome measures, and include indicators for cardiac rehabilitation.²¹

In stroke, quality-of-care indicators and a national stroke registry aim to advance comprehensive data collection. There have been efforts to develop comprehensive and standardised quality indicators, though primarily focused on acute care, that can be easily used in clinical practice across the country.⁵²⁻⁵⁴ These include indicators on patient education, early rehabilitation and needs assessment, but do not appear to cover long-term secondary prevention.⁵² The Spanish Society of Neurology has set up a national stroke registry to provide a common database with shared and standardised criteria for Spanish hospitals.⁵⁴

The decentralised organisation of healthcare in Spain means that the existing registries collecting data relevant to heart attack and stroke often lack comprehensive data coverage. A number of regional and some national registries exist, such as R-EuReCa, a cardiac rehabilitation registry.⁵⁵ The Registry of General Hospitals of the National Health System (Registro de Altas de los Hospitales Generales del Sistema Nacional de Salud), a national database for healthcare performance, encompasses data from all Spanish hospitals, but data quality has been questioned due to a lack of standardisation and quality control.²¹ See *Table 5*, which outlines some of the key national registries with relevance to CVD.

Table 5. Cardiovascular disease registries in Spain

| Registry | Description |
|---|---|
| Registry of General Hospitals of the National Health System⁵⁶ | Minimum dataset of all Spanish hospitals (last update 2014) |
| RECALCAR registry⁵⁷ | Registry of cardiac care |
| Spanish National Health Survey | Registry of the health status of the Spanish population, updated every five years |
| R-EuReCa⁵⁵ | Cardiac rehabilitation registry |
| Spanish registry for lipid control in high-risk patients⁵⁸ | Registry aimed at evaluating whether target levels for low-density lipoprotein (LDL) cholesterol are being achieved in patients at very high cardiovascular risk and to identify associated factors |
| Stroke: cross-regional (e.g. IBERICTUS)⁵⁹ and local registries (e.g. Catalonia Stroke Audit,⁶⁰ Registro Ictus Madrid,²⁰ Balearic Islands Registry³²) | Various frequencies, e.g. Catalonia Stroke Audit has been repeated twice (last available results from 2012); IBERICTUS has been running since 2012 (last available results from 2016) |

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Indicators to measure outcomes of secondary prevention are very clinical. It is important to include the indicators most relevant for patients, such as quality of life and psychosocial outcomes.

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Initiation of secondary prevention in the acute care setting



There is much more emphasis on primary prevention and acute care. We are used to a system that cures, but given the rising number of chronic diseases, we need a system that is prepared to care for chronic patients, like those with cardiovascular diseases.

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In both heart attack and stroke, specialist-led care is accepted as the benchmark for acute crisis care, ideally in specialist cardiology and stroke units. Effective crisis management and specialist acute care are vital, not only for timely stabilisation (and thus improving patient outcomes), but also to serve as the setting in which secondary prevention efforts should commence.^{7,61}

In heart attack, the national 30-day mortality rate following hospital admission has significantly improved as a result of changes in specialist acute treatment and the timely application of secondary prevention measures. The 30-day mortality rate (standardised, in people aged 45+) dropped by around 5% between 2007 and 2017 and remains significantly below the EU average.² High numbers of patients are now receiving medicines to prevent repeat events during the acute stage, with recent research finding that over 90% of elderly patients (aged 80+) were discharged on statins after being admitted for a non-ST segment elevation acute coronary syndrome.⁶²

The availability of specialist-led care varies substantially between regions and hospitals, which is contributing to significant differences in 30-day mortality.

A number of autonomous communities see mortality rates twice as high as their counterparts.² The availability of specialist acute and critical cardiovascular care (ACCC) units in cardiology departments varies by region, despite evidence that departments with ACCC units have a lower in-hospital risk-adjusted mortality and higher discharge rates than cardiology departments without ACCC units.⁶ In 2012, only around 36% of cardiology departments in teaching hospitals led an ACCC unit and availability varied across the autonomous communities, with low numbers in the south east and no unit in Aragón.

There is evidence of age-related inequalities in patients' access to specialist acute care. Heart attack patients aged 75 and over are less frequently managed by cardiologists, and when treated in hospitals they are less often deemed as high complexity, despite both of these interventions being associated with lowering the risk of mortality in older patients.⁶³

In stroke, while acute care patient outcomes have improved, care gaps remain, with specialist units not available across the whole country. Between 2003 and 2015, the 30-day mortality rate (standardised, in people aged 45+) for stroke patients was substantially reduced.³³ However, only 11 of the 17 autonomous communities currently have stroke units in place and even in regions with better availability, such as Catalonia, access rates can be low.^{7,8} This is despite the fact that the national stroke strategy states that clinical secondary prevention must be initiated in the stroke unit to ensure adherence in the outpatient setting.⁷ Direct admission to a stroke unit has also been positioned by experts as the most important existing intervention for acute stroke.

Securing participation in structured secondary prevention programmes

In heart attack, the provision of cardiac rehabilitation for secondary prevention is improving, but significant gaps remain. Cardiac rehabilitation has been proven to prevent repeat events,⁶⁴ yet a lack of specialist centres has resulted in an estimated annual unmet need of 165,000 cardiac patients.^{9,65} A recent ESC survey found the combined uptake rate of inpatient and outpatient phase II cardiac rehabilitation after a heart attack to be below 25%.¹²

Significant geographic variations exist in access to comprehensive cardiac rehabilitation.^{57,66} Programmes are predominantly located in urban areas and the availability and provision of equipment and staff, for example cardiologists, vary across autonomous communities.^{40,67} Andalusia, Madrid, Valencia, Murcia and the Basque Country have the most cardiac rehabilitation centres.^{10,11} Still, in Andalusia, an autonomous community with the highest availability of cardiac rehabilitation, only 43.7% of cardiac rehabilitation units provide a long-term outpatient programme (phase III).¹⁰

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The lack of cardiologists, in particular, presents a problem, because they should be delivering cardiac rehabilitation immediately after the event when secondary prevention will be most impactful. We know that starting prevention as early as possible will have positive long-term effects because many patients later lose the awareness of the seriousness of their disease, which makes it more difficult to achieve risk-factor control.

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When cardiac rehabilitation is delivered, multidisciplinary teams are mandatory for SEC-accredited rehabilitation programmes. Published processes describe the different roles among the care team. The importance of nurses in reinforcing secondary prevention measures is emphasised, as they have direct and frequent contact with patients.⁴⁰ The working group on prevention and cardiac rehabilitation of the Spanish Association of Cardiology Nurses (Asociación Española de Enfermería en Cardiología) advocates for strengthening the role of specialist nurses in cardiac rehabilitation and offers courses on secondary prevention for nurses.⁶⁸ Furthermore, the successful EUROACTION study has shown that a specialist nurse-coordinated CVD-prevention programme is feasible in the Spanish healthcare context and has a positive impact on medication adherence rates, diet and smoking cessation.⁶⁹ A recent Spanish pilot study confirmed these findings, showing that a nurse-coordinated intensive lipid-lowering intervention implemented after hospital discharge for patients with acute coronary syndrome (ACS), including heart attack, significantly improved management of cholesterol levels compared with standard care.⁷⁰

In stroke, there appear to be limited data on the provision of structured secondary prevention after the acute event; however, the existing evidence suggests relatively good availability of structured follow-up care. In 2008, 12 autonomous communities were found to have multidisciplinary stroke teams in the community coordinated by a neurologist or another stroke specialist, and 61% of stroke patients were followed up in a nurse-led, home-based care programme.⁷

Increasing primary care capacity for long-term risk management

Evidence suggests that there is a worrying drop-off in the use of medication for the secondary prevention of CVD once patients enter primary care. National case studies and registries draw a varied picture of the use of medication during patients' long-term management.^{71,72} A cohort study in 21 primary care centres in 8 Spanish regions found that adherence to European clinical practice guidelines for secondary prevention of CVD (CHD, stroke and/or peripheral arterial disease) was low, with only 38.6% of patients receiving guideline-recommended medications.¹³ In heart attack, of patients discharged on dual antiplatelet therapy (DAPT), only 73% continue to take their medications at 12-month follow-up, with significant variation found between hospitals.⁷³

The underuse of guideline-recommended medications for secondary prevention during patients' long-term care is increasing their risk of dying. A large cohort study of CVD patients in Valencia (60.5% stroke, 30.6% heart attack, 8.9% revascularisation) found that only 42.7% of patients were taking the three main types of medications for secondary prevention (antiplatelets, renin-angiotensin system blockers, statins) at one year follow-up. Patients who were not taking any cardiovascular preventive medications had a 7.4% higher risk of another cardiovascular event compared with those fully adhering to the risk-reducing medication.¹⁴

Changes to the Spanish healthcare co-payment structure may be affecting access and adherence to medication in people post-heart attack or stroke. In 2012, the cost-sharing scheme for pharmaceuticals in Spain was reformed and has resulted in higher co-payments for people in employment, as well as higher payments for pensioners and for people with chronic illnesses, who previously did not have to contribute.⁷⁴ A recent study found that cost sharing had an immediate impact on people for whom more expensive medicines – such as statins – were prescribed, with non-adherence increasing by 7.8%.⁷⁵

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There is a lack of awareness about the risks after a heart attack among both patients and healthcare professionals. Huge improvements in cardiology and acute care have led to the perception that a heart attack is an acute event which, after being successfully treated, does not have any long-term implications.

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Phase III of cardiac rehabilitation (long-term outpatient care) often appears not to be available, which presents a barrier to achieving long-term secondary prevention.

A patient representative noted that this phase is crucial after a heart attack for patients to maintain lifestyle changes long term.³⁰ To promote the provision of phase III programmes in Spain, a senior expert suggested that better incentivisation and novel forms of delivery needed to be explored. For example, programmes could be run outside of hospitals and health centres, under the supervision of primary care in gyms and sports centres.⁶⁷

To tackle the problem of long-term medication adherence, the SEC endorses the use of a polypill.⁷⁶ The polypill combines three types of medication for the secondary prevention of CVD in one pill at a fixed dose. In 2016, the SEC published a consensus document recommending the use of the polypill in certain groups of heart attack and stroke patients, as studies in the Spanish context had shown that it increased medication adherence, and most likely also effectiveness and cost-effectiveness, for post-heart attack patients over the age of 65.^{76 77}

For many post-heart attack patients, major risk factors, particularly cholesterol, do not seem to be well controlled. Data from the national REPAR registry show that only 26% of patients with CHD in treatment with a cardiologist reach their lipid target.⁵⁸ In a study of patients one year after a heart attack, only 29% had their low-density lipoprotein (LDL)-cholesterol within the targeted levels and only 62% had adequate blood pressure control.⁷⁸ Blood pressure appeared to have been better controlled in patients with established cardiovascular diseases in primary care (in 78.2% blood pressure was optimal); however, cholesterol remained poorly controlled, with only 20.6% of patients achieving optimum cholesterol levels.⁷⁹ Further data suggest that blood pressure control may be poorer among older adults.⁸⁰

Patient education about behavioural risk factors for repeat heart attack needs to be better emphasised. Unhealthy behaviours are being continued by too many people post-heart attack, despite the fact that these actions are putting them at an increased risk of further events.⁸¹ Experts have suggested that the human resources available for patient education are not enough to meet patient need, with general practitioners (GPs) and practice nurses not having enough time to adequately address behavioural risk factors.⁸¹ A study of ACS patients, including those after a heart attack, readmitted to an intensive care unit found that 63.5% presented with the same behavioural risk factors as at first admission (smoking, obesity, sedentary lifestyle, alcohol consumption).¹⁵ A further study found that 40% of heart attack patients who were smokers at the time of a heart attack were still smoking one year later.⁷⁸ A cross-sectional study of patients with established CVD conducted in primary care practices also found significant gaps in lifestyle-related risk factors. For example, while 82.9% of patients had been advised by a health professional to increase their physical activity, only 45.9% had followed this advice since their cardiovascular event.⁷⁹

The need for better integration of primary care with specialist cardiac (acute) care appears to be well recognised as a priority to help improve patients' long-term management. In recent years, several models have been developed and trialled to increase primary care involvement in long-term secondary prevention after a heart attack.⁸² Currently, 52% of heart units have a cardiologist assigned to liaise with primary care, and the aim is to further improve collaboration.⁵⁷ Recent improvements in the use of electronic health records are reported to be further facilitating integrated care by improving the process of sharing patient information between care sectors.⁸¹ However, a national expert noted that patient records are still not routinely transferred from cardiologists and other specialists to primary care, which hinders access.³⁰

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Cardiologists often have good relationships with primary care physicians. They act as consultants and try to ensure that secondary prevention in primary care follows the same guidelines that are used in hospitals.

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In stroke, primary care has an important role to play in long-term secondary prevention. This is laid out, for example, in the Stroke Strategy of the Spanish National Health System 2008⁷ and the stroke care programme in Aragón.⁸³ Primary care has been involved in formulating the stroke strategy. It is responsible for assessing patients after discharge and keeping risk factors under control in the chronic phase.⁸³ A study in Catalonian primary care centres showed that a clear majority of patients also see a physician, though fewer patients receive follow-up care from a nurse, which suggests that the potential of the nurse's role in managing risk factors and supporting patients is not fully realised.⁷¹

Primary care does not appear wholly ready as a platform for consistent best practice in CVD secondary prevention. For example, while most primary care professionals in Spain are aware of ESC guidelines, one study noted that in their daily clinical practice, only one third use the ESC guidelines on CVD prevention, and fewer than half use CVD risk assessment tools.²³

Stroke risk-factor management in this setting has been found to be suboptimal, so risk of repeat events is high. For example, in a study evaluating secondary stroke prevention in primary care, too few post-stroke patients had their risk factors adequately controlled, with 34% not achieving blood pressure targets, 59% not reaching cholesterol targets and 24% continuing to smoke.⁷¹ Worryingly, few patients appeared to have their risk factors regularly monitored – despite 95% of patients having some record of blood pressure or cholesterol levels, in 20% of cases these records had not been updated in the past 18 months.

Risk factor management and care provided have been found to be poorer for younger stroke patients. Results from a 2017 study showed that control of three major risk factors was worst in the youngest group of patients and best in the middle-age group. Younger patients are less likely to receive regular assessments and follow-up, and to be seen by a nurse.⁷¹

OUTLOOK

In Spain, heart attack and stroke patients are being put at an unnecessarily high risk of repeat events through the inconsistent application of guideline-recommended measures for secondary prevention. Opportunities exist to improve patient outcomes and reduce costs by tackling these care gaps.

The national undersupply of specialist heart attack and stroke units represents a missed opportunity to improve care for secondary prevention during the acute stage. Cardiac rehabilitation, while being proven to significantly reduce repeat events in CVD patients, is also underused, in part due to a lack of facilities. Opportunities also exist during patients' long-term management, with guideline-recommended medications for the prevention of repeat events not currently used to their fullest potential, and a need for increased patient education around behavioural risk factors.

To take advantage of these opportunities, both national and regional leadership will likely be needed. Updates to national strategic plans covering secondary prevention may be required to encourage the development of regional policy and in turn address the significant differences in care standards that exist between the Spanish regions. Considerable expansion of national data collection around secondary prevention may also be required, to inform policy development and improve the monitoring of service performance across regions.

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

CASE STUDIES

1.

Proyecto ACER-C-AP – best practice for the integration of cardiology and primary care

The aim of this project from the Spanish Society of Cardiology is to take secondary prevention out of hospitals and integrate it into primary care, where patients can receive long-term support.⁸⁴ This requires an improvement in communication and integration between cardiologists and GPs.

Currently, there is a disconnection between cardiology and primary care. In some cases, patients leaving acute care do not have a discharge plan, and it is difficult for GPs to communicate with their patients' cardiologists. This may lead to insufficient care and may also duplicate work.

Several autonomous communities and hospitals are participating in the project, developing different solutions for the integration of cardiology and primary care: virtual sessions, telemedicine, new platforms for communication, community activities and awareness-raising campaigns.

An example is the COLIPAR programme for the improvement of lipid control among the population with a high cardiovascular risk in the department of Arnau de Villanova-Illiria.⁸⁵ On average, only 44% of cardiovascular patients had their cholesterol levels measured within the first year of the cardiac event. The number of blood tests for those who received any varied widely, from only one (41%) to more than seven (9%). Results from the audit were fed back to each community health centre, flagging patients whose cholesterol was the worst controlled. Each centre received up to eight educational sessions to discuss ways to improve this. One year after the programme, cholesterol control had improved from 31.6% to 41.3%, on average.

MasXMenos (More 4 Less)

2. This ongoing study involving several autonomous communities is testing the effectiveness of running more intensive cardiac rehabilitation programmes over shorter periods of time.⁸⁶ The aim is to determine whether programmes with particular emphasis on education that are run over two weeks, for five days a week – as opposed to the usual eight-week programmes, which run for three days a week – are more effective in achieving lifestyle change and improving medical markers such as cholesterol.

It is hoped that the intensive programme will be more effective and cost-effective, and will help patients to be reintegrated into working life much sooner than the current programmes.

Stroke care programme in Aragón

3. In response to rates of mortality, morbidity and disability that were higher than the national average, in 2008 the Aragón autonomous community developed a stroke care programme to improve acute care and establish secondary prevention measures in primary care: Programa de Atención al Ictus en Aragón, PAIA.⁸³

It set out a protocol of activities that general practitioners and nurses were to undertake and quality indicators to which they could refer. Multidisciplinary teams were strengthened, and care networks established. An evaluation of the period between 2009 and 2014 showed significant improvements in quality of care and outcomes: stroke mortality decreased by 38%, while the number of years of potential life lost in Aragón decreased from 144 to 67.7 years.

APPENDIX

Leading organisations and data sources consulted for this report

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

Sociedad Española de Cardiología, SEC (Spanish Society of Cardiology)

Comité Español Interdisciplinario para la Prevención Vascular, CEIPV (Spanish Interdisciplinary Committee for Vascular Prevention)

Fundación Española del Corazón (Spanish Heart Foundation)

Sociedad Española de Arteriosclerosis (Spanish Atherosclerosis Society)

Sociedad Española de Neurología (Spanish Society of Neurology)

Federacion Española de Ictus (FEI) (Spanish Stroke Federation)

Revista Espanola de Salud Publica

Revista Espanola de Cardiologia

Gaceta Sanitaria

Neurología

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>

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