Development and roll out of a national plan on cardiovascular health. Spain´s cardiovascular health strategy

Supplementary Material

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Supplementary Table 1. General and specific Objectives related to Critical Points selected in the Spanish National Cardiovascular Strategy

[GO: General objectives; SO: Specific objectives]

I. General and Specific Objectives related to Critical Points associated with strengthening the central strategic axes.

GO1. To stablish systems of prevention and health care for patients with CVD based on the most appropriate processes and care flows for quality, safety, and efficiency, coordinated both within and between levels, which are perceived in a satisfactory manner by patients.

- SO1.1. To design integrated care processes for the pathologies prioritised in the ESCAV.
- SO1.2. To promote the integration of the socio-health sphere throughout the entire CVD care process (prevention, care, and rehabilitation).
- SO1.3. To incorporate user perception into continuity of care management.
- SO1.4. To compare the results in Cardiovascular Health obtained in Autonomous Communities with different systems of organisation of the Continuity/Integration of their Health Services.

GO2. To promote and disseminate safe practices in the CVD environment.

- SO2.1. To promote safe practices in the safe use of medicines in the cardiovascular setting.
- SO2.2. Reinforce proper hand hygiene to prevent infections and the transmission of multidrug-resistant microorganisms.
- SO2.3. Promote and disseminate the safe use of medical devices in CVD.
- SO2.4. Strengthen programmes to promote safe surgical procedures in the cardiovascular field.
- SO2.5. Promote the reporting and analysis of safety incidents occurring in clinical units through the reporting system used in their Autonomous Community.

GO3: To design and consolidate a basic core of information to understand the state of cardiovascular health in the population and CVD care, including aspects that are currently unknown.

- SO3.1. To identify the necessary information, the sources for obtaining it and the most efficient way of collecting it to be able to analyse and interpret the state of cardiovascular health of the population, including the factors that condition it and CVD care.
- SO3.2. Use this information in the most efficient way to identify needs for improvement in health promotion and in the prevention, diagnosis, treatment, and rehabilitation of cardiovascular diseases.
- SO3.3. To monitor the 7 metrics of ideal cardiovascular health in the general Spanish population, according to the AHA.

II. General and Specific Objectives related to Critical points associated with health promotion, disease prevention and citizen empowerment in CV health.

GC4. To improve the ideal cardiovascular health of the Spanish resident population throughout the life course through healthy lifestyles, favouring the creation of healthy environments that make the healthiest choices the easiest and contribute to reducing the incidence of and mortality from cardiovascular disease.

- SO4.1. To strengthen population-based strategies for health promotion and disease prevention in the NHS, and in particular the Health Promotion and Prevention Strategy in the NHS and the NAOS Strategy.
- SO4.2. To advocate fiscal and pricing policies to promote healthy eating.
- SO4.3. To implement policies to promote physical activity integrated into daily life, such as active transport and leisure.
- SO4.4. To improve the regulation of advertising of food, unhealthy beverages, and alcoholic beverages.
- SO4.5. To improve the regulation of the food supply of public administration institutions, including health and sports facilities, and public and private educational establishments.
- SO4.6. To strengthen lifestyle counselling interventions in Primary Care, especially on physical activity, healthy eating, tobacco consumption and alcohol consumption.
- SO4.7. To enhance the community role of primary care, aimed at health promotion and disease prevention.

GO5. To achieve a reduction of smoking prevalence in Spain to <10 % by 2040, with a decreasing trend of at least 1 percentage point every two years.

- SO5.1. To delay or prevent the initiation of tobacco and related products use among young people.
- SO5.2. To improve the implementation of the measures set out in the WHO Framework Convention on Tobacco Control, in particular the provision of smoking cessation support by the health care system.
- SO5.3. To introduce advances in the current regulation of smoking.

GO6. To consolidate early detection, correct diagnosis, and control of HTN as the focus of primary cardiovascular prevention based on the control of biological risk factors.

- SO6.1. To improve the early detection, diagnosis and monitoring of early detection, diagnosis, and monitoring of HTN control from Primary Care in accordance with the guidelines and recommendations of the main clinical practice guidelines.
- SO6.2. To understand and improve the control of HTN through the strengthening the programmes carried out in Primary Care.

GO7. To boost the training and awareness of healthcare professionals and other professionals throughout their training cycle in health promotion and prevention, from a comprehensive and multidimensional perspective.

- SO7.1. To increase the number of professionals who are up to date and aware of the importance of cardiovascular health promotion and the development of preventive activities, especially in Primary Care.

GO8. Promote the acquisition of knowledge by the public regarding the adoption of healthy lifestyles in cardiovascular health, raising awareness of their impact and importance.

- SO8.1. To promote health education and promotion at school through the Health Promoting Schools: promotion of healthy eating, physical activity, emotional wellbeing and sustainability, prevention of sedentary lifestyles, tobacco, alcohol, and other addictive substances.
- SO8.2. To ensure the availability of reliable, accessible, and understandable information to the entire population, with special attention to the most vulnerable groups.

III. General and Specific Objectives related to Critical points associated with knowledge management, research, and innovation in CV health.

GO9. Facilitate the acquisition of training for health professionals throughout their training cycle, with an integrating and interdisciplinary vision, appropriate to their needs and care profiles, to improve cardiovascular health outcomes.

- SO9.1. To develop training programmes that enable healthcare skills to be learnt to improve cardiovascular health outcomes.

GO10. To facilitate the acquisition by citizens of adequate knowledge of cardiovascular health to enable them to self-manage CVD.

- SO10.1. To promote that patients and carers receive complete and easily understandable information on their cardiovascular health or on their care processes to facilitate shared decision-making with the healthcare team that attends them and the appropriate use of healthcare resources.

GO11. To improve the health care of patients with cardiovascular disease (CVD) based on international recommendations that include patient-reported health outcomes.

- SO11.1. To incorporate patient-reported health outcomes into systematic indicators for monitoring and updating ESCAV.

GO12. To identify the needs and problems in cardiovascular disease (CVD) that require R&D&I to influence Spanish and European R&D&I programmes.

- SO12.1. To create a map of R&D&I needs in cardiovascular health that arises from the objectives of the Cardiovascular Health Strategy (ESCAV), assesses previous R&D&I results and is periodically updated.
- SO12.2. To facilitate the participation of all agents in the identification of needs.

GO13. To promote research and innovation projects in cardiovascular health, incorporating the opinions of patients and associations.

- SO13.1 Incorporate the opinions and experiences of patients and professionals into cardiovascular professionals into cardiovascular health research projects.

GO14. To ensure that R&D&I projects that respond to the needs identified in to the cardiovascular health needs are incorporated into R&D&I programmes at regional, national, and European level.

- SO14.1. To identify the European, national, and regional R&D&I programmes and calls for proposals that fund the health sector, as well as those responsible for these calls for proposals and programmes.
- SO14.2. To identify research projects that cover the needs identified in cardiovascular health, the associated expenditure/investment and the patents generated.

GO15. To encourage research in the NHS and promote the participation of teams or researchers in R&D&I calls for proposals, fostering collaboration between teams and centres in different Autonomous Regions.

- SO15.1. To identify cardiovascular health research teams and centres that are likely to apply for European, national, and regional calls for proposals to encourage and stimulate their participation.

GO16. Improve the transfer of R&D&I to clinical practice, in accordance with the updating procedure established in the framework of the NHS common portfolio of services.

GC17: To incorporate and consolidate the sex/gender perspective and other determinants of inequality (digital divide, territory, etc.) in CVD research.

- SO17.1. Population epidemiology addressed from a sex/gender perspective.
- SO17.2. Clinical epidemiology with a gender orientation.
- SO17.3. Population epidemiology approached from perspectives of other non-sex/gender determinants of inequality.
- SO17.4. Clinical epidemiology approached from perspectives of other non-sex-gender determinants of inequality.

GO18. To facilitate accessibility for patients with CVD through e-health platforms with appropriate identification, validation of effectiveness and safety ("of possible prescription"), evaluation and replication in the NHS.

- SO18.1. Identify and evaluate e-health tools that use Artificial Intelligence technology to improve cardiovascular health.

GO19. To foster the identification, validation, evaluation, and replication in the NHS of tools for the improvement of cardiovascular health with patient-reported health outcomes methodologies (PROMs and PREMs).

IV. General and Specific Objectives related to Critical points associated with equity and gender in CV health.

GC20. To incorporate a gender perspective in promotion and prevention actions to achieve gender equity in cardiovascular health outcomes.

- SO20.1. To empower women in their self-care.
- SO20.2. To raise awareness in society as a whole and specially among women about the relevance of cardiovascular disease in women.
- SO20.3. To improve primary and secondary prevention of CVD in interventions aimed at women.
- SO20.4. To incorporate the gender perspective in the training of patients and their environment in self-care and co-responsibility for their cardiovascular health.

GO21. Acquire and assess competencies in the detection of differential aspects of CVD.

GO22. To improve the detection and treatment of CVRFs, as well as the care and treatment of women with established CVD.

- SO22.1. Use sex-standardised diagnostic test values.
- SO22.2. To design and implement protocols and procedures with a gender perspective.
- SO22.3. To improve the implementation of clinical practice guidelines in a gender-equitable manner for men and women with equal health needs.

GC23: To integrate health equity into all actions of the strategy.

- SO23.1. To integrate, using a checklist, addressing social inequalities in health in all ESCAV actions.
- SO23.2. To incorporate disaggregation by socio-economic variables in the monitoring and evaluation of ESCAV.

V. General and Specific Objectives related to Critical points associated with the comprehensive management of persons with acute and chronic ischemic heart disease.

GO24. To improve access to Cardiac Rehabilitation (CR) and secondary prevention programmes on an equal basis for men and women after AMI, after coronary revascularisation by angioplasty or surgery, extending them to patients with non-revascularizables coronary artery disease, establishing a network that includes the hospital itself, referral hospitals and PC, and patient organisations, to improve morbidity and mortality and quality of life.

- SO24.1 To ensure and facilitate the provision of Secondary Prevention and in-hospital CR programmes in Phase II to patients with ischaemic heart disease and moderate-high risk as soon as possible after suffering an acute event (AMI, percutaneous revascularisation, or cardiac surgery).
- SO24.2 To promote continuity of care through structured Secondary Prevention and CR programmes in PC in Phase III and Phase II in patients at low risk, establishing indicators to assess effectiveness and taking advantage of new technologies.
- SO24.3 To establish specific measures to facilitate access to and implementation of complete CR programmes for women.

OG25. To improve the accessibility and functioning of care networks for acute myocardial infarction (AMI).

- SO25.1. To improve the morbidity, mortality, and prognosis of AMI, optimising the functioning of specific care networks for the immediate care of the maximum number of patients with suspected STEMI and ensuring access to a timely invasive strategy for patients with high-risk NSTEACS, mainly NSTEMI, admitted to centres without haemodynamic facilities.
- SO25.2. To increase access to these networks for the most vulnerable people with high-risk NSTEACS (elderly, frail and/or with comorbidities) and increase and accelerate reperfusion rates in women with suspected NSTEACS.

VI. General and Specific Objectives related to Critical points associated with the comprehensive management of persons with acute and chronic heart failure.

GO26. To boost the early diagnosis of heart failure (HF) in the different care settings (primary care and hospital) to improve the prognosis and quality of life of HF patients.

- SO26.1. Develop protocols or systems that allow early diagnosis of HF to be made regardless of the setting in which it is suspected (primary care or hospital).

GO27. To foster the implementation of multidisciplinary care organisational models coordinated between levels and within levels of care that favour comprehensive care for all people diagnosed with HF and their families and carers.

- SO27.1. To develop structured multidisciplinary programmes between the different care settings that include patient education, optimisation of treatment, psychosocial support and improvements in access to car
- SO27.2. To implement multidisciplinary care units/programmes (community, specialised or advanced) adapted to the characteristics of the healthcare setting and the population being cared for.

GO28. To organise a networked system at regional level for cardiogenic shock (CS) care that facilitates the administration of advanced treatments that have been shown to improve survival to patients who can benefit from them.

- SO28.1. Determine the criteria for patients with CS who can benefit from advanced treatments within the framework of the common portfolio of NHS services and who are referred to specialised centres.
- SO28.2. Develop a protocol for activation, referral, and transport ("shock code") that includes the criteria for referral, receiving centres, appropriate means of transport and times.

VII. General and Specific Objectives related to Critical points associated with the comprehensive management of persons with acute and chronic valve heart disease.

GC29. To boost the early diagnosis of prevalent valve heart diseases.

- SO29.1. To propose the systematic performance of cardiac auscultation in the population over 65 years of age.
- SO29.2. To analyse the evidence for the performance of echocardioscopy by non-cardiologists in primary care and hospital care to identify patients with possible valvular heart disease.
- SO29.3. To design protocols for referral to hospital care of patients with suspected valvular heart disease and for follow-up in primary care.

GO30. To improve the comprehensive approach to the patient with severe aortic stenosis.

- SO30.1. To create multidisciplinary working models for assessment that meet minimum standards.
- SO30.2. To adapt the use of valve replacement to the evidence according to risk and potential benefit.

VIII. Critical points associated with arrhythmias/sudden death.

GO31. Increase survival with good neurological recovery of patients who suffer cardiac arrest (CRA).

- SO31.1. Create a national reference framework for out-of-hospital CRA care that includes:
    - a) Understanding the health outcomes of our health system: survival and neurological sequelae of CRA in our country;
    - b) Extending early defibrillation (facilitation + equipment); to reach a consensus on common criteria for the use of automated external defibrillation (AED); to increase the number of AEDs;
    - c) To increase training in early resuscitation, basic life support (BLS) and AED training for first responders; BLS training for the general public;
    - and d) To extend post-resuscitation care and rehabilitation to patients who recover a pulse after CRA.

GC32. To reduce the prevalence of people with unknown AF in the Spanish population.

- SO32.1 Early detection of AF by opportunistic pulse taking in primary care in people aged 65 years or older, especially in patients with hypertension, diabetes mellitus, obesity, or heart failure, and performing an EKG if the pulse is irregular.

Supplementary Table 2. Priority indicators by Critical Points selected to monitor the effective implementation of ESCAV.

I. Indicators related to Critical Points associated with strengthening the central strategic axes (continuity of care, patient safety, cardiovascular health information).

- Promotion and strengthening of care continuity as a key element of high quality, efficient and safe healthcare for patients with CVD.
  Indicator:
  *Differential evolution in patients included and not included in integrated programmes, referred to:

  a) Mortality.
  b) Quality of life data.
  c) PROMs/PREMs.
  d) Access times to invasive therapy, when applicable.

- Improvement of the access to reliable information to identify comprehensively the status of cardiovascular health and CVD care in the Spanish population.
  Indicator:
  *Percentage of people with all 7 AHA metrics in adequate range.

  a) Percentage of individuals who have used tobacco in the last 12 months.
  b) Percentage of people with BMI in normal range.
  c) Prevalence of people with moderate and high level of physical activity.
  d) Percentage of people with a balanced diet.
  e) Percentage of people with cholesterol in normal range.
  f) Percentage of persons with blood pressure in normal range.
  g) Percentage of persons with fasting blood glucose in normal range.

II. Indicators related to Critical points associated with health promotion, disease prevention and citizen empowerment in CV health.

- Public empowerment to adopt healthy lifestyles.
  Indicators:
  *Percentage of schools that develop programmes on adoption of:
  a) healthy lifestyles: physical activity and healthy eating, wellbeing, and health,
  b) emotional, affective-sexual education, safety, and risk prevention prevention, injuries and accidents, alcohol and
  c) accidents, education on alcohol, tobacco, and other addictive substances.
  b) Indicadores de promoción, prevención y capacitación ciudadana

III. Indicators related to Critical points associated with knowledge management, research, and innovation in CV health.

- Inclusion of patient reported outcomes and experiences in institutional reports of patient outcomes.
  Indicator:
  *Percentage of cardiology services reporting measurements of patient-reported outcome reports of patient perception of care, processes, or personal impact of the disease.

- To identify areas of research and innovation in cardiovascular health that arise from health system needs or problems and that consider health outcomes.
  Indicator:
  *Percentage of projects incorporating cardiovascular health needs identified in ESCAV.

IV. Indicators related to Critical points associated with equity and gender in CV health.

- To promote awareness and self-care of women's cardiovascular health.
  Indicator:
  *Percentage of annual increase in coverage of primary and secondary prevention activities in women and comparison with the increase in men.

- To train all NHS professionals on the specific aspects of CVD (diagnosis and treatment) in women and gender inequalities.
  Indicator:
  *Implementation of initiatives and protocols in the last year with a gender perspective.

V. Indicators related to Critical points associated with the comprehensive management of persons with acute and chronic ischemic heart disease.

- To develop cardiac rehabilitation and secondary prevention programmes in hospital and in primary care according to the risk of patients
  Indicator:
  *Percentage of patients with AMI who are included in the CR and SP programmes.

VI. Indicators related to Critical points associated with the comprehensive management of persons with acute and chronic heart failure.

- To improve early detection and diagnosis of heart failure.
  Indicators:
    *Natriuretic peptide testing in primary care.
    *Existence of multidisciplinary teams for HF comprehensive care.
- To organise HF care through multidisciplinary HF units/programmes, coordinated with the participation of all professionals involved at all levels of care.
  Indicator:
    *Existence of regional programmes for multidisciplinary cardiogenic shock (“shock code”).

VII. Indicators related to Critical points associated with the comprehensive management of persons with acute and chronic valve heart disease.

- Boosting early diagnosis of prevalent heart valve diseases.
  Indicator:
    *Existence of a registration system for the compulsory verification ("Check box") of cardiac auscultation in the over 65s in primary care EHRs, with systematic registration in all the Autonomous Regions.
- To optimise treatment selection for severe aortic stenosis (AoS) through comprehensive multidisciplinary assessment.
  Indicator:
  *Hospital multidisciplinary working models for decision making in patients with severe AoS. in patients with severe AS.

VIII. Indicators related to Critical points associated with arrhythmias/sudden death.

- Improving the effectiveness of access to cardiopulmonary resuscitation.
  Indicators:
    *Existence of a National CPR Care Plan.
    *Percentage of patients recovered from CPR without severe neurological damage.

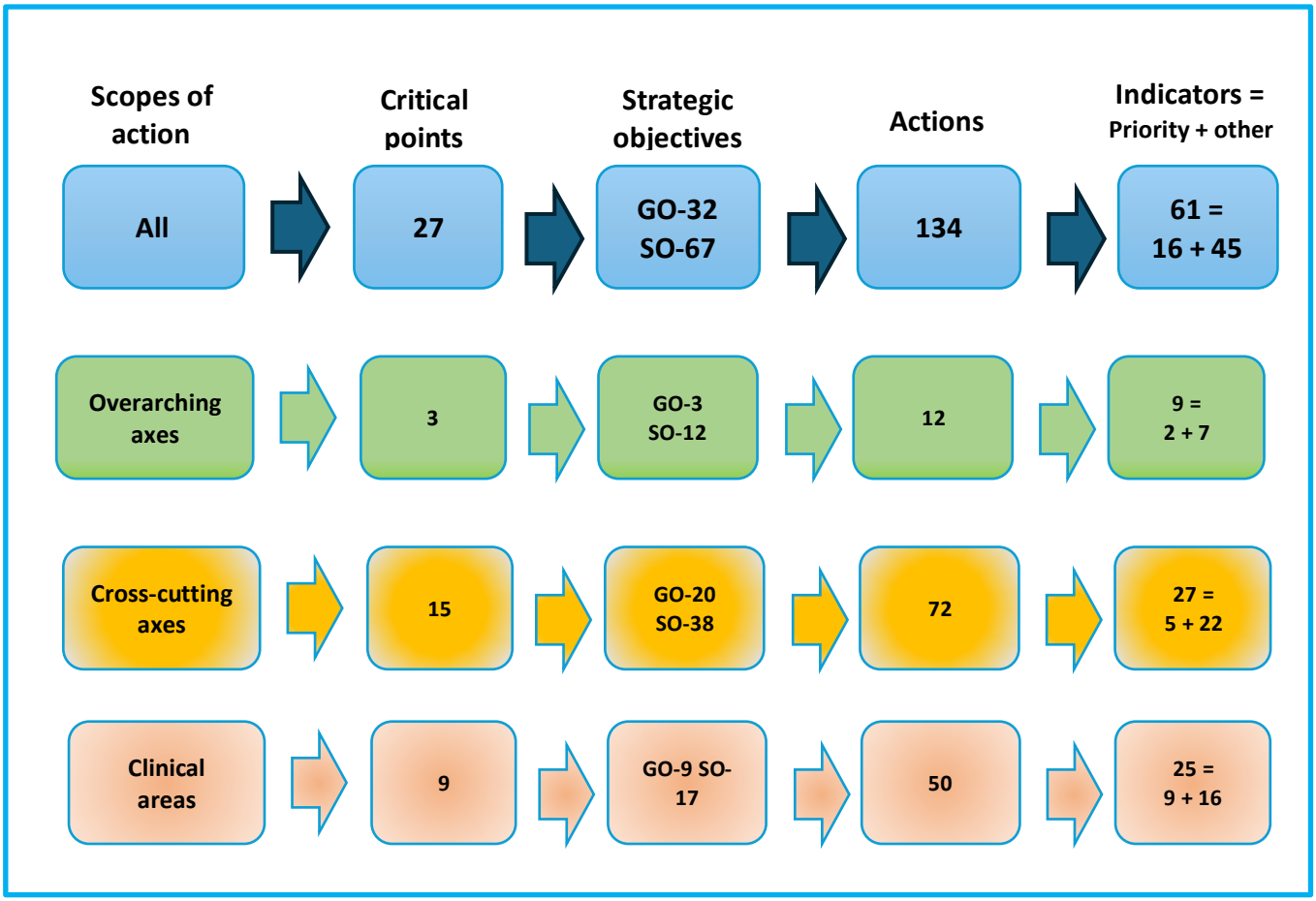
- Promoting early diagnosis of atrial fibrillation (AF).
  Indicator:

*Existence of a registration system ("Check box") for the compulsory verification of pulse-taking in over-65s in Primary Care EHRs with systematic registration in all the Autonomous Regions.

Supplementary Table 3. The eight best specific actions selected in the First Call for ESCAV-related Best Practices 2023

PROJECT	Presenting Autonomous Region
• Implementation of a territorial programme of integrated and transitional care for community heart failure in the Southern Metropolitan Territorial Management Area of ICS	Cataluña
• Codi AMI Registry (Acute Myocardial Infarction code registry in Catalonia)	Cataluña
• MAICA-RM Programme (Improvement of Outpatient Heart Failure Care in the Region of Murcia)	Murcia
• Care and training project between Cardiology and Primary Care in the Region of Murcia (CarPriMur Project)	Murcia
• Optimisation of the TAVI programme: Comprehensive approach implementing the role of the TAVI nurse.	Castilla y León
• PreveCardio: Screening of cardiovascular risk factors in the population between 50 and 75 years of age.	Madrid
• Cardiopulmonary resuscitation (CPR) project in schools (RCP A L'ESCOLA). Project for the dissemination of CPR in schools.	Baleares
• Extended cardiac telemonitoring (Cardioplan system): proposal for a care route after acute coronary syndrome and continuity of care in primary care.	Comunidad Valenciana

Supplementary Figure 1. Structure and content of the Spanish National Cardiovascular Strategy



Abbreviations: GO: General objectives; SO, Specific objectives