Partnership for Health System Sustainability and Resilience

Sustainability and Resilience in the Portuguese Health System

Mónica D. Oliveira, Aida Isabel Tavares, Ana Vieira and Matilde Pacheco

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Authors

Mónica D. Oliveira, Instituto Superior Técnico, Universidade de Lisboa

Aida Isabel Tavares, Lisbon School of Economics & Management, Universidade de Lisboa

Ana Vieira, Instituto Superior Técnico, Universidade de Lisboa

Matilde Pacheco, Instituto Superior Técnico and Lisbon School of Economics & Management, Universidade de Lisboa

Contributors to recommendations

Adalberto Campos Fernandes, Alexandre Lourenço, Céu Mateus, Ema Paulino, Heitor Costa, João Gonçalves, Julian Perelman, Maria do Céu Machado, Maria do Rosário Zincke, Ricardo Baptista Leite and Victor Herdeiro

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Introduction

The COVID-19 pandemic caused a tremendous shock to the Portuguese National Health Service (NHS), thus revealing the fragility of the NHS and leading to a crisis in 2022. Portugal has experienced a high mortality rate due to COVID-19 relative to those in other countries internationally, and a high excess mortality rate with respect to pre-pandemic mortality rates. However, this pandemic has provided opportunities to identify weaknesses, learn from experiences, and identify future measures to ensure the future sustainability and resilience of the NHS.

We define sustainability as the health system's ability to provide key functions, such as ongoing provision of services, financial protection, resource generation, and responsiveness to population needs. Resilience refers to a health system's ability to identify, prevent, mitigate, and rebound from shocks while minimizing negative effects on population health, health services, and the wider economy.

As part of the Partnership for Global Health Resilience and Sustainability (PHSSR), this report uses COVID-19 as a critical event to analyse the sustainability and resilience of the health system in Portugal according to five key domains: governance; financing; workforce; medicines and technology; and service delivery. It also assesses two other domains of concern: population health and environmental sustainability. The report additionally includes two case studies examining two contrasting areas: (1) the Portuguese NHS's very positive response to the pandemic regarding COVID-19 vaccination and (2) the contracting and remuneration of physicians by the NHS, thus capturing systemic problems that were exacerbated by the pandemic and have threatened the health system's sustainability and resilience.

The report draws on recent health policy-related data and evidence in each of the domains used to identify the strengths and weaknesses of the system. Additionally, it presents a set of policy recommendations generated through a policy dialogue, in which Portuguese health stakeholders were involved in identifying, analysing, and selecting policy recommendations. Specifically, a core group of 11 stakeholders and experts has identified recommendations with high potential to increase the sustainability and resilience of the health system in each domain. These recommendations were discussed and analysed by 37 (top-level) health stakeholders through an interactive Delphi process. A total of 43 policy recommendations with broad consensus emerged among stakeholders and are presented in this report.

Findings: key themes for sustainability and resilience

The response to the COVID-19 pandemic has emphasized key strengths and underlying issues for the health care system in Portugal. Table 1 summarizes the key findings for the five domains, and Table 2 summarizes the two other domains of concern.

The Portuguese health system, with the NHS at the core of its structure, has key features that have contributed to its pandemic response. The NHS is centralized and not highly fragmented, thus allowing rapid and consistent decision-making to be applied throughout the country. It offers a wide (although not evenly distributed) network of primary care resources across Portugal, which have contributed to an efficient and effective response to patients with COVID-19, including in diagnosis, treatment, monitoring, and recovery, as well as incidence tracking earlier in the pandemic. This network was essential to achieving and ensuring timely vaccination of the population. The NHS structure enabled high mobilization and collaboration among institutions throughout the pandemic; redeployment and sharing of human resources; advances in information systems; and increased use of digital health (e.g., phoneline and telehealth). These benefits were inclusive and universal, and access to care was offered to immigrants/non-citizens.

Table 1: Sustainability and resilience – summary of findings by key domains

DOMAIN 1	GOVERNANCE	
Strengths	**Sustainability** ⬆ Clear governance system, mostly centralized and not highly fragmented, which enables decision-making; investments in information systems with potential for improved policymaking.	**Resilience** ⬆ A command and control system enabling rapid decision-making through the pandemic; high mobilization and cooperation of institutions during the pandemic; recognition of the role of science, with expert mobilization and effective daily reporting on the country's pandemic status.
Weaknesses	**Sustainability** ⬇ Low accountability in management; underdeveloped policy evaluation systems; fragmented information systems; challenges in implementing health in all and inter-sectorial policies; lack of interconnectedness among independent health institutions.	**Resilience** ⬇ Political resoluteness; often reactive rather than proactive pandemic responses; weak contingency planning; little reflection regarding learning and health system changes in the aftermath of the pandemic.
DOMAIN 2	FINANCING	
Strengths	**Sustainability** ⬆ Risk pooling and universal coverage, including care access to immigrants.	**Resilience** ⬆ New financial policy measures adopted to address the pandemic and respond to system financial needs; allocation of Recovery and Resilience Plan funding to improve the NHS.
Weaknesses	**Sustainability** ⬇ Excessive out-of-pocket payments contributing to inequities in access; systematic budget deficits and debt creation in NHS driving a form of retrospective financing; chronic low investment in equipment and professionals; lack of strategic financial planning and diversification in NHS revenue; lack of cost accounting information; excessive average time for paying NHS suppliers.	**Resilience** ⬇ Reactive spending under the pandemic; lack of consideration of the needs for financial reforms.

Table 1 (continued): Sustainability and resilience – summary of findings by key domains

DOMAIN 3	WORKFORCE	
Strengths	**Sustainability** ⬆ Strengthening of human resources in the NHS after the pandemic.	**Resilience** ⬆ High workforce adaptability during the pandemic, with redeployment and sharing of human resources.
Weaknesses	**Sustainability** ⬇ Lack of financial incentives to improve workforce productivity in the NHS, with low pay for physicians and nurses; low satisfaction and lack of career development opportunities for physicians and nurses; geographically inequitable distribution of the workforce; lack of workforce strategic planning; workforce fatigue; exiting physicians exceeding the number of newly trained physicians entering the NHS; high shortage of physicians in some medical specialties; instability of medical teams in some contexts because of high use of contracted physicians.	**Resilience** ⬇ No evidence of learning from the pandemic; unsustainable extra workforce costs during the pandemic
DOMAIN 4	MEDICINES AND TECHNOLOGIES	
Strengths	**Sustainability** ⬆ New data integration initiatives enabling higher efficiency in care delivery; effective cost containment measures for controlling pharmaceutical expenditure; established economic evaluation procedures.	**Resilience** ⬆ Adaptability and increase in telemedicine use; effective COVID-19 vaccination strategy and delivery
Weaknesses	**Sustainability** ⬇ Long times for medicine entry after market authorization; issues in information system integration; digital divide; little evaluation of health technologies other than medicine; low level of research and development; financial pressure from hospital medicines.	**Resilience** ⬇ Reliance on international markets for COVID-19 related equipment; financial risk related to health technology innovation; most telemedicine during COVID-19 based on telephone consultations.

Table 1 (continued): Sustainability and resilience – summary of findings by key domains

DOMAIN 5	SERVICE DELIVERY	
Strengths	**Sustainability** ⬆ Extensive primary care network throughout the country; investments in the 'SNS24' phoneline, which is increasingly important in the health system; emergence of more integrated delivery models, e.g., the National Network for Long-term and Integrated Care.	**Resilience** ⬆ Sharp increase in telehealth consultations during the pandemic; private sector supply complementary to the NHS, with a flexible supply.
Weaknesses	**Sustainability** ⬇ Low hospital admission rates, high readmission rates, and long lengths of stay with respect to those internationally; long waiting lists and waiting times in the NHS; high levels of false emergencies, partially reflecting inadequacies in primary care delivery; geographic inequities in health care delivery; continuing low focus on health promotion and prevention.	**Resilience** ⬇ Heavy decline in primary care face-to-face consultations and first consultations in hospitals during the pandemic; substantial increase in surgical waiting times in the past 2 years; restricted acute and ICU bed capacity.

Table 2: Sustainability and resilience: summary of findings in the two additional domains of concern

DOMAIN 6	POPULATION HEALTH
Strengths	**Sustainability and Resilience** ⬆ Good performance in the EU context regarding mortality and infant mortality rates, and preventable and treatable mortality; low barriers to health care access (and sometime social protection) among minority groups (including unregistered immigrants); widespread health programs in schools; overall high immunization of the population.
Weaknesses	**Sustainability and Resilience** ⬇ High burden of disease and low quality of life among older people; high health inequities; high inequalities and inequities in health determinants (and high poverty in the EU context); low health in lifestyle-related indicators (including overweight and obesity, and physical activity); high incidence of diabetes; high ageing rate and low fertility; COVID-19 pandemic affecting particularly vulnerable groups; lack of an effective strategy to address health inequities.

Table 2 (continued): Sustainability and resilience: summary of findings in the two additional domains of concern

DOMAIN 7	ENVIRONMENTAL SUSTAINABILITY
Strengths	**Sustainability and Resilience** ⬆ Ongoing initiatives and legal framework supporting environmental sustainability in general and the health system specifically; some initiatives for environmental sustainability led by the Ministry of Health in hospitals reaching maturity.
Weaknesses	**Sustainability and Resilience** ⬇ Environmental sustainability measures most centred in hospitals, and focused on energy, water, and waste; lack of policy actions to implement several strategies related to environmental sustainability; lack of assessment of policy benefits and costs in the area; scarce research on environmental sustainability regarding health in the country; lack of incorporation of environmental sustainability in multi-level decision-making in health (e.g., in purchasing equipment and resource allocation).

Generally, the NHS uses cost containment mechanisms (e.g., for controlling pharmaceutical expenditure) and has established economic evaluation procedures. The private health care supply has been increasing in the past decade [1], although its role was somewhat discrete during the pandemic. Portugal, given its wealth and resources, is broadly recognized to perform comparatively well in terms of most mortality-related indicators and in immunization rates.

Nonetheless, the Portuguese NHS is facing extreme pressure and appears to be at the brink of collapse after 2 years of the COVID-19 pandemic. The weaknesses of the NHS have been extremely visible in the past 2 years, and the system faces threats to sustainability and resilience in multiple areas. The system faces high and continual debt, and persistently struggles with under-budgeting; consequently, it has continued to receive extremely low investments in health structures, equipment, and medical facilities. Failures exist regarding the provision of health care, long waiting lists, and excessive out-of-pocket payments. Health professionals, particularly physicians and nurses, are underpaid and lack incentives to work for the NHS; therefore, the NHS faces a severe scarcity of human resources, and its workforce is fatigued, unsatisfied, and unmotivated. The NHS information and communication technology infrastructure is fragmented and is far from granting efficiency in overall functioning. A planning and policy evaluation culture is absent, and the NHS has critical accountability issues, with systematic deficits in annual budgets. Moreover, a critical need exists to promote inter-sectorial policies, and to interconnect health and health-related institutions. A lack of strategies to correct inequities has translated into persisting inequities in financing, the geographic distribution of resources, health across population groups, and access to novel health technologies. Throughout the pandemic, the system has faced critical problems in maintaining care for patients without COVID-19 and vulnerable groups. Novel initiatives for environmental sustainability are needed. Hence, a need for policies to address these weaknesses has emerged.

Recommendations

After involving a panel of health stakeholders in a policy dialogue built on a structured participatory process (detailed in Section 1), 43 (top-level) policy recommendations across the seven domains emerged with high consensus. These recommendations are shown in the following table, and the rationale set by health stakeholders is provided in Appendix A.

Table 3: Recommendations across the seven domains

DOMAIN 1	GOVERNANCE
1A	Ensure managerial autonomy of health administrations
1B	Enable a structure leading to integration of the care provided at various levels and by different sectors (public, private, and social)
1C	Optimize communication between primary and secondary care settings by improving referral protocols and mechanisms
1D	Ensure proper execution of strategic planning instruments in all NHS institutions and in the Ministry of Health
1E	Improve intersectoral coordination, to ensure its comprehensiveness and effectiveness, and provide continuity of care
1F	Implement a merit-based appointment system for people performing management tasks, supported by technical competence assessment and subjected to regular auditing
1G	Promote partnerships and collaborations in health care provision involving public, private, and social sectors of the Portuguese health system
1H	Separate the State's roles in finance, provision, regulation, and supervision, thus simplifying and empowering its administrative organization

DOMAIN 2	FINANCING
2A	End the backlog of payments to NHS suppliers
2B	Adopt multi-annual budgets in the NHS
2C	Implement a cost-based accounting model
2D	Review the contracting and financing system for health care providers in the public, private, and social sectors

Table 3 (continued): Recommendations across the seven domains

DOMAIN 3	WORKFORCE
3A	Decentralize human resource management within an updated standardized career model
3B	Increase recognition and integration of wider staff groups beyond physicians and nurses into health professional teams, e.g., pharmacists, health and diagnostic technicians, and clinical secretaries
3C	Improve the working conditions of health professionals through multiple actions (i.e., changing working hours, increasing flexibility, paying by performance, providing time for research, and improving workplace conditions)
3D	Improve human resources planning in the health sector
3E	Value human capital through integrated development strategies, thus contributing to talent retention

DOMAIN 4	MEDICINES AND TECHNOLOGY
4A	Ensure that patients have access to hospital medicines through home delivery or access at the nearest pharmacy
4B	Ensure that adoption of health technologies is based on evidence-based medicine
4C	Promote equitable access to innovative medicines for patients
4D	Promote Portugal as a major centre of excellence for biomedical innovation and clinical research
4E	Strengthen health technology assessment
4F	Review the medicine co-payment system currently in place

DOMAIN 5	SERVICE DELIVERY
5A	Focus on disease prevention by investing in population-based screening and early diagnosis
5B	Invest in domiciliary care and associated digital health
5C	Develop and strengthen population literacy, and health promotion and prevention strategies
5D	Advance local health care delivery through decentralizing, increased autonomy, and contracting
5E	Fully implement electronic health records across the health system
5F	Strengthen primary health care delivery (with greater responsiveness and diversity of services)

Table 2 (continued): Recommendations across the seven domains

DOMAIN 6	POPULATION HEALTH AND SOCIAL DETERMINANTS
6A	Invest in health promotion through initiatives (e.g., exercise and healthful diet) at the municipal level, following the transfer of responsibilities within the decentralization process
6B	Invest in the development of community-based health outcome metrics (focusing on improving health and well-being) and create incentives to improve those metrics, e.g., through developing a community-based health value model
6C	Ensure access to differentiated health technologies (e.g., hip replacements that avoid surgical revision procedures) to ensure higher quality of life for ageing people
6D	Develop cross-sectoral campaigns (involving health and education) to promote public literacy regarding modifiable risk factors
6E	Develop tools to implement a population-based approach to primary health care provision, on the basis of risk stratification, thus enabling proactive interventions targeting various groups
6F	Map the causes associated with poor quality of life of the population over 65 years of age, and identify specific actions to improve the quality of life of this population
6G	Increase salaries so that people have better living conditions and better health
6H	Regulate commercial activities and practices that affect health, such as advertising and easy access to harmful products (tobacco, unhealthful foods, and/or alcohol)

DOMAIN 7	ENVIRONMENTAL SUSTAINABILITY
7A	Continue to develop policy measures aimed at energy and water efficiency and decreasing waste production
7B	Develop a medical device reprocessing initiative
7C	Focus on commercial determinants of health (i.e., private sector activities that positively and negatively affect health), with special attention to those relevant to environmental sustainability
7D	Incorporate incentives and obligations related to environmental sustainability within public contracting mechanisms
7E	Map the current status regarding environmental sustainability (related to Ministry of Health activities and competencies) and within the next 5 years, progress in the commitment to improve the value of each indicator in key domains of environmental sustainability by 75%
7F	Reduce hospital medical equipment obsolescence

1. Introduction

To meet this report's objectives, the research team designed a fit-for-purpose policy dialogue whose motivation was to promote an inclusive discussion between key health stakeholders and experts in Portugal to identify, discuss, and select (top-level) policy recommendations with high potential to improve the sustainability and resilience of the Portuguese system. In developing these policy recommendations, participants were invited to consider the benefits, risks and costs, and implementation barriers associated with each policy recommendation. The new policy dialogue entailed several steps shown in Figure 1 and summarized below .

Figure 1: Design of the policy dialogue

EVIDENCE COLLECTION

1. Desk research, following the PHSSR framework, to collect data and evidence

2. Preparation of partial reports and summary 'Facts and Evidence' fact sheets

RECOMMENDATIONS DESIGN

1. Proposal and justification of recommendations for each of the PHSSR domains by a panel of stakeholders

2. Stakeholders improving communication of the proposed recommendations in a workshop setting

RECOMMENDATIONS EXTENDED DISCUSSION

1. Two-round Web-Delphi processes to collect level of agreement and comments about recommendations from an extended panel of stakeholders

RECOMMENDATION SELECTION AND VALIDATION

Analysis of the results of the Web-Delphi process and of recommendation synergies.

Informed selection of recommendations by the panel of stakeholders

Evidence collection
1. A review of recent data and available evidence for Portugal in each of the seven PHSSR domains was performed. The data and evidence were analysed and used as a starting point to explore strengths and weaknesses regarding sustainability and resilience in each domain;
2. Partial reports and 'Fact & Evidence sheets' for each of the seven domains were produced, with an emphasis on the analyses of strengths and weaknesses.

Design of recommendations
1. A panel of 11 health stakeholders with different backgrounds, experience, and perspectives individually identified policy recommendations (providing justifications) and then discussed them in a workshop setting.

2. These experts were instructed to make use of their own knowledge as well as the partial reports and the Fact & Evidence sheets.

Extended discussion of recommendations
1. The set of recommendations proposed and discussed by the 11 experts were used as input in a two-round Web-Delphi process, in which a diverse group of 37 top-level health stakeholders (from the public, private, and social sectors; from different gender groups; and with different job titles, including health decision-makers/ex-decision-makers, health professionals, and stakeholders from academia, industry, and from patient associations; Appendix B) completed the process and

stated their agreement, or disagreement, with the policy recommendations' having high potential to improve the sustainability and resilience of the health system. Within the Delphi process, the extended panel of stakeholders was asked to contribute to the discussion regarding the benefits, risks, and costs, as well as barriers associated with the policy recommendations, by providing individual comments. The Delphi process was developed in two rounds, wherein participants had an opportunity to reflect on, and learn from, their peers' opinions and comments.

Recommendation selection and validation

1. The same panel of 11 health stakeholders (described above) analysed and discussed the Web-Delphi results and agreed to select policy recommendations with very high agreement among the extended panel of stakeholders. These recommendations were deemed appropriate for inclusion in the final PHSSR report to enable a deeper discussion of the topic in Portugal. Hence, this report includes the subset of policy recommendations that were initially proposed by the 11 health stakeholders and were supported by an extended panel of health stakeholders.

Final report

The final PHSSR report was then produced, describing the complete set of policy recommendations that were clearly supported by the extended panel of stakeholders as having high potential to promote sustainability and resilience of the Portuguese health care system to future shocks.

The 11 health stakeholders who identified and validated the proposed policy recommendations are acknowledged as the contributors to recommendations in this report. The rationale for each policy recommendation included in this report, as defined by experts, is provided in Appendix A. The characteristics of participants who completed the Web-Delphi process, as well as the results of round 2 of the process, are provided in Appendix B.

Participatory processes were approved by the Ethics Committee of Instituto Superior Técnico (4/2022, CE-IST).

Table 4: Definitions of health system sustainability and governance underpinning the analysis

Health system sustainability	A health system's ability to improve population health, by continually delivering the key functions of providing services, generating resources, financing and stewardship, incorporating principles of financial fairness, equity in access, responsiveness and efficiency of care, and to do so in an environmentally sustainable manner.
Heath system resilience	A health system's ability to prepare for, absorb, adapt to, learn, transform and recover from crises born of short-term shocks and accumulated stresses, in order to minimise their negative impact on population health and disruption caused to health services.

Source: [2]

Although this report focuses on sustainability and resilience in the Portuguese health system, following the guidelines of the PHSSR project and given the structure of the Portuguese health system, particularly high attention is paid to the Portuguese NHS, which is the public health insurance, defined by the country's constitution, that is responsible for providing universal coverage. Currently, the NHS represents 61% of current health expenditures (details on financing in Table 6, Section 3.1.1), covering, e.g., approximately 80% and 59% of inpatient and outpatient spending, respectively, of the total current health expenditure [3], despite the observed increase in private sector provision [1].

Governance

2.1 Sustainability

2.1.1 Governance structure and leadership

Since 1979, Portugal has had a health system based on an NHS that is highly centralized, in which the Ministry of Health (MoH) is responsible for developing health policy, overseeing and evaluating its implementation, and directly and indirectly administrating and managing many institutions, as depicted in Figure 2.

Institutions with key roles in the administration of the system are the Directorate-General for Health (DGH), with key responsibilities in health promotion, disease prevention, and planning and coordinating health care activities and public health programmes; the Central Administration of the Health System (ACSS), with key responsibilities in managing financial, human, and equipment resources; and Regional Health Administrations (RHAs), with key responsibilities in implementing national health policy regionally and in coordinating all levels of health care.

Figure 2: Organizational chart of the Portuguese Ministry of Health
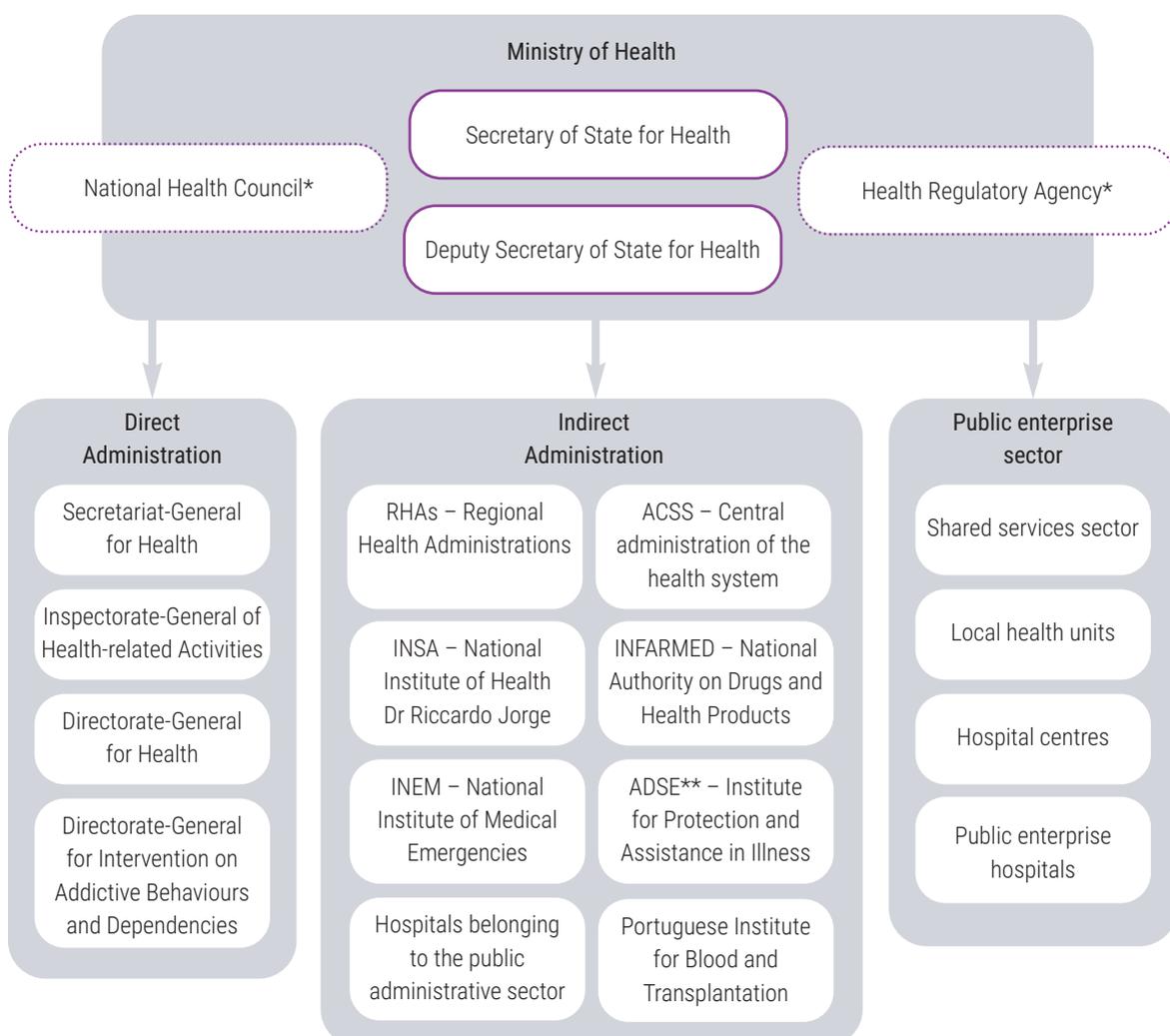
* Has some degree of independence from the Ministry of Health.

** ADSE is under the indirect administration of both the Ministry of Health and the Ministry of Finance.

Source: [9]

The NHS is funded mostly through general taxation, and the MoH is responsible for managing and coordinating spending of the government budget for the NHS, allocating resources to the institutions according to the financial flows depicted in Figure 3.

Figure 3: Key institutions and main financial flows within the Portuguese health system
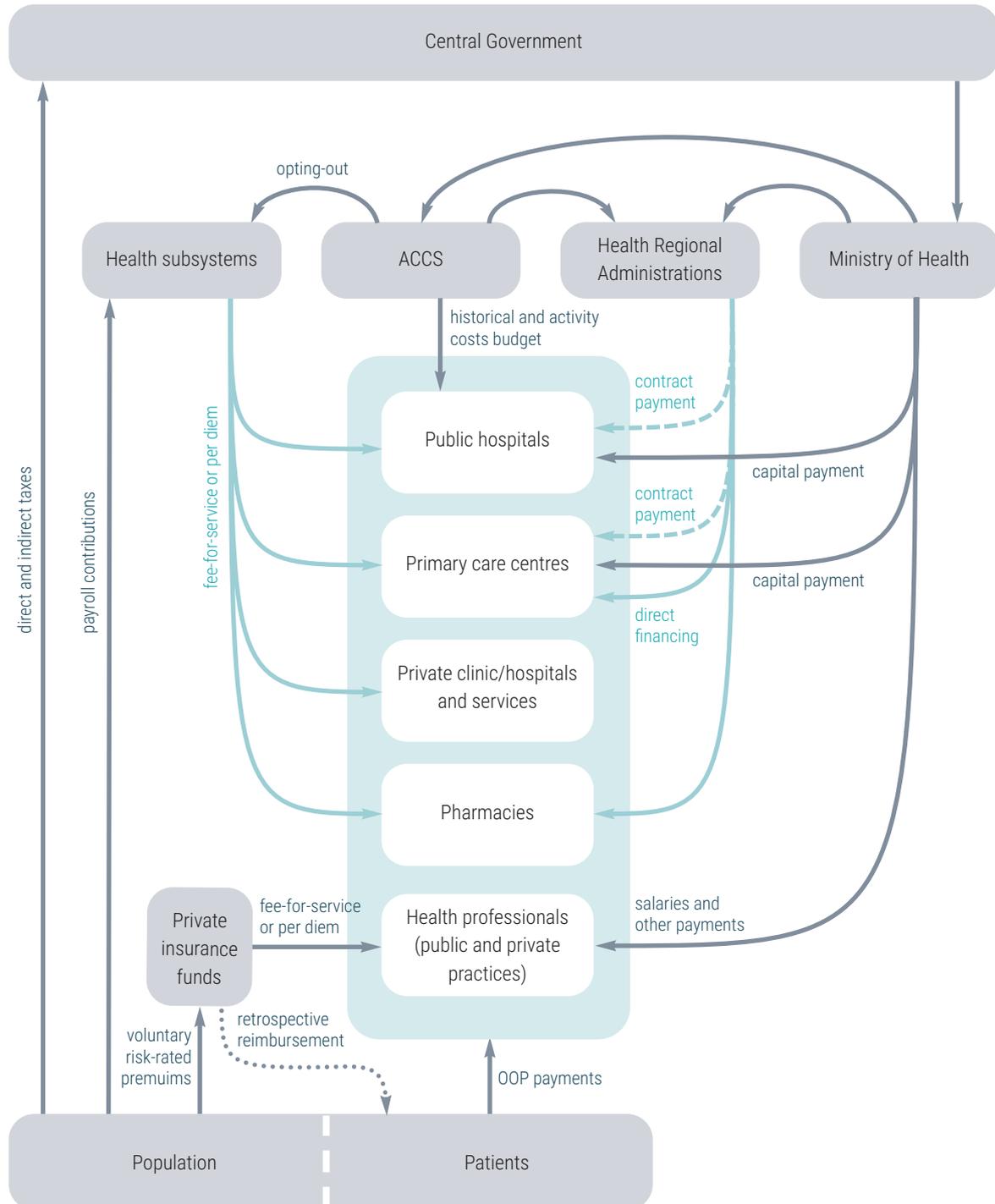
Health policy needs are considered by several public sector institutions, many of which are outside the MoH (Table 5), and cooperation among health institutions and other public sector institutions is common in multiple areas, e.g., in school health programmes, food safety, and social care. Nevertheless, intersectoral institutional structures are lacking, and health impact assessments are not institutionalized [4]. Scope exists for promoting health more extensively in all policies.

Table 5: Institutions with key responsibilities within the Portuguese health system

	Legislation	Planning	Licensing/ accreditation	Pricing/tariff setting	Quality assurance	Purchasing/ financing
Public health services	MoH	MoH	MoH	MoH	MoH HRA	MoH
Ambulatory care (primary and secondary care)	MoH	MoH (for the public sector)	MoH (for the public sector) HRA (for the private sector)	MoH (for the public sector)	MoH HRA	MoH (for the public sector) Patients
Inpatient care	MoH	MoH (for the public sector)	MoH (for the public sector) HRA (for the private sector)	MoH (for the public sector)	MoH HRA	MoH (for the public sector) Patients
Dental care	MoH	None	HRA	Depends on the provider	HRA Portuguese Dental Association	Patients Voluntary health insurance Health subsystems
Pharmaceuticals (ambulatory)	MoH	Legislation defines pharmacy locations	INFARMED	INFARMED	INFARMED	Patients Voluntary health insurance Health subsystems
Long-term care	MoH MoL	MoH MoL	MoH MoL	MoH MoL	MoH MoL	MoH MoL
University education of personnel	MoS	Public and private universities	MoS	MoS Universities	MoS Universities	MoS Students (fees)

MoH = Ministry of Health; MoL = Ministry of Labour, Solidarity & Social Security; MoS = Ministry of Science, Technology & Higher Education; RHA = Health Regulatory Agency.
Source: (9)

The 2012–2016 National Health Plan (NHP) was extended to 2020. This Plan was the strategic instrument used to orient and align health policies in four main strategic axes – health citizenship; equity; appropriate access to health care; quality; and healthy living [5] – and attempting to promote intersectoriality, participation, and more Health in All policies by using the policy framework Health 2020 as a reference [6]. The NHP is complemented by more technically oriented sectorial health programmes, including several medium-term targets; however, not all targets are measurable, and difficulties exist in producing data to monitor the accomplishment of these targets. Nevertheless, to effectively use the NHP as a strategic instrument, according to the World Health Organization (WHO), important steps include reviewing legislation to restructure the plan and link its elements with its vision, prioritizing actions, defining mechanisms to allocate resources to actions, adding a medium-term planning process, and increasing the involvement of stakeholders to enhance plan implementation [7]. Additionally, a greater focus on the distribution of the wider determinants of health and on equity related issues and adaptation of the plan to regional and local contexts has been recommended. The most recent NHP has been approved for 2021–2030. It is the first Plan looking ahead 10 years, and it focuses on promoting sustainable health, as previewed by Agenda 2030 of the UN Sustainable Goals. One of the NHP sustainable goals with particular health relevance is decreasing inequities in health. A potential limitation has been noted regarding this NHP, in that a well-defined strategy for creating and improving health system resilience is lacking [8].

2.1.2 Multi-level governance

Portugal is one of the most centralized countries in Europe [10]. The MoH steers the Portuguese health system, and concentrates on planning, regulation, and management responsibilities [11]. Regional and local level governance focuses on the delivery of primary care and of public health services. In theory, RHAs are responsible for implementing national health goals and therefore are responsible for coordinating public hospitals, public primary care centres, and the long-term care network, and integrating private health care units and pharmacies [4]. In practice, however, they lack instruments and resources, and assume a secondary role by linking entities that are under the command and control of the MoH [10]. Although municipalities are expected to assume key roles in promoting collaboration within health networks, their roles tend to be limited to projects largely related to healthful behaviours, environmental health, and child oral health [4]. A recent trend has involved the decentralization of responsibilities to municipalities that accept such additional roles. Municipalities may be responsible for the operational and financial management of primary health care units; i.e., they are expected to perform maintenance, conservation, and management of equipment and logistical support services, and to manage operational assistant workers. In June 2022, approximately 51 of the 308 municipalities had accepted these additional responsibilities [12].

Factors underlying the low level of integration of care have included a lack of interconnectedness among independent health institutions (for example, between public hospitals and primary health care centres, and between health and social care providers), difficulties in sharing information, and a lack of funding and incentives for collaborative activities [4]. Key attempts to improve integration and collaboration have been the creation of Local Health Units, which incorporate specialized and primary care in specific areas; the creation of a long-term care network in 2006 (in partnership with the Ministry of Labour, Solidarity and Social Security); and the creation of coordinated disease-based units and services within hospitals, primary care centres, and groups of health care centres, such as the centre for diabetes [13]. The recent implementation of the app MySNS has offered several services including access to individual personal information (medical prescriptions and vaccination certificates) and scheduling medical appointments [14].

2.1.3 Accountability, integrity, and trust

Health policymaking occurs primarily within the government, and procedures are often adopted to consult institutional stakeholders. Under the auspices of the MoH, the Inspectorate-General of Health-related Activities is responsible for auditing and inspecting health care delivery; as an

independent consulting body, the National Health Council can, by its own initiative or when requested by the government, perform analyses and provide advice on health policies. Other public institutions assume key roles in promoting transparency and accountability in health policy implementation and execution: the Court of Auditors, the state supreme body responsible for external control of public finance, motivates auditing and managerial-related analyses; the Corruption Prevention Council is an independent entity that works with the Court of Auditors in developing activities to prevent corruption and related offenses (for instance, highlighting conflicts of interest). All hospitals and public entities should have plans to prevent corruption and related offences [15].

Assessment of trust indicators has indicated that in 2021, 57.6% of the population reported having confidence in the national government [16], as later confirmed in the beginning of 2022, when the Socialist party, led by António Costa, won a majority in the parliamentary elections. Additional data have indicated that in 2020, 61% of Portuguese people trusted the government, representing a 16 percentage points increase since 2007 [17]. However, during the first wave of the pandemic, changes were reported in government trust. In April/May of 2020, trust in the government scored an average of 6.1/10, whereas in June/July, this score decreased to 5.4/10. This decrease was larger than that observed in OECD countries, where this score decreased from 5.2 to 4.8/10 [17].

2.1.4 Evaluation of programmes and policies

No current practice in Portugal uses systematic, structured, and transparent (ex-ante or ex-post) approaches to evaluate polices. Fragmented information systems often do not enable data collection and monitoring; moreover, costing of policies and interventions is hindered by the lack of available and updated cost accounting information.

Most public hospitals have a management accounting system either partially or fully implemented through use of a costing method by service; only several have a costing management team [18]. Management accounting is difficult, owing to the lack of robust information systems and the lack of human resources [18].

Nonetheless, serious efforts have been made to make a larger amount of information available with the creation of an NHS monitoring platform that organizes and displays available information [19]. In the COVID-19 pandemic, advances have been made in the development of weekly reported pandemic-related performance indicators, which have enabled better understanding of NHS performance [20].

2.2 Resilience

2.2.1 COVID-19 preparedness and response

The Centre for Public Health Emergencies was established in 2016 (within the scope of the DGH) to design the national response to public health emergencies [21]. However, information regarding its activity is lacking.

Two national winter and summer seasonal response plans enabling contingency responses to respiratory infections and to high temperatures and heat were developed before the pandemic. The winter plan includes aspects related to the coordination of public health, hospital services, and surveillance [22]. This plan was in place when the COVID-19 outbreak occurred in Portugal [23]. Addressing the pandemic crisis required the adoption of more limited and geographically targeted containment measures and extension of these plans.

The National Epidemiological Surveillance System (SINAVE) is the public health surveillance system that identifies risk situations. It collects, analyses, and disseminates data on communicable

diseases and other health risks, and enables the preparation of plans to address emergency situations including public calamities [24]. To address the lack of data and the pandemic, BI SINAVE was developed jointly by the DGH and Shared Services of the MoH to more dynamically and quickly address larger volumes of data, including updated laboratory data and integration of data from several sources, as well as to provide data to inform several health stakeholders, including citizens, local intervention teams, academia, and policymakers. Improvements in SINAVE should enable better policymaking.

Portugal's response to COVID-19 has benefited from having a centralized chain of command (as depicted in Figures 2 and 3), which enabled a unified and coordinated emergency response, and a more rapid and broad implementation of lockdown measures [10,25]. Nevertheless, public health structures are usually underfunded. At the national level, the DGH and the Dr. Ricardo Jorge National Institute (INSA) share public health responsibilities. INSA participates in several national programs and works collaboratively with local, regional and national organizations (with a focus on laboratory and epidemiological components) in response to emergencies and risk assessment [26].

The DGH assumed leadership in the monitoring and surveillance of the COVID-19 pandemic. Epidemiological surveillance, contact tracing, and public health measures were coordinated by the DGH and INSA. The DGH issued a daily report on the country's epidemiological status and reported data to the European Centre for Disease Prevention and Control, WHO, and other organizations.

RHAs were responsible for communicating with hospitals and primary health care units, and coordinating the response at the regional and local levels [23]. The DGH worked with other NHS entities and with public institutions, such as municipalities, to mitigate the effects of the pandemic, and promote contingency plans and safety practices [27]. The government, employers, and unions agreed to apply wage compensation and employment maintenance measures; loans were made available to sectors particularly affected by the pandemic [23]. Local responses to the pandemic were influenced by the size; managerial capacity; and human, financial, and organizational resources of municipalities (e.g., Lisbon and Porto acquired medical and protective equipment [28]). Policies and interventions were adjusted during the pandemic, although sometimes reactively rather than proactively [29].

To address the pandemic, the government created a taskforce composed of experts with diverse backgrounds from multiple institutions, which assumed advisory responsibilities on public policies, to provide evidence, and report the implementation, piloting, and assessment of strategies to communicate with citizens and change behaviours [23].

In some periods of the pandemic, the taskforce met on a weekly basis, and key results from the discussion were communicated; experts discussed the results of ongoing studies [30]. Despite the availability of information and data, discussions included the lack of pandemic data, data quality issues, and mechanisms to make data available to researchers. The efforts to effectively communicate public health messages were often considered inefficient because of public fatigue.

Although challenges existed in the coordination among institutions (for instance, public and social organizations, different types of health care units, municipalities, and government), several measures were implemented across health institutions and/or as a result of the collaborations among organizations. For instance, dedicated areas to address patients with COVID-19 were implemented across health centres and hospitals; visits were suspended across nursing homes, hospitals, and prisons; the Trace COVID-19 tool assisted public health and primary care physicians [20]; and the provision of teleconsultation services in real time was enhanced by technologies in the public hospital network [20]. Other measures implemented in the NHS, including increases in acute care capacity and in human resources, are discussed below.

Political stability until the end of 2021 and government popularity at the beginning of the pandemic aided in policymaking by the government [10]. Approximately 70% of the public reported trust in the government and the health authority, in a poll conducted early in the pandemic [31]. According to a

2021 survey, the management of the pandemic contributed to improving the image of the health authorities among Portuguese people and consequently increasing confidence in the NHS [32].

2.2.2 Learning and adapting

The government's response to the pandemic has shown NHS's ability to adjust (for instance, through the implementation of contingency plans; improvement of information systems, procurement of equipment, strengthening of networks of laboratories and testing capacity; increasing the autonomy of health care institutions; hiring more professionals; and digitalizing the health sector), as well as to draw on expertise and scientific knowledge during the pandemic. Nonetheless, the extent to which these improvements will be maintained, and whether organizational and managerial learnings have been captured, is unclear. Although the pandemic has changed the relationship between political power and other social actors, no evidence indicates improvements in planning competences or in a widespread advice culture, and issues related to integration of care are ongoing [29].

To our knowledge, no substantial governmental analysis has assessed the policy and health system response during the pandemic, and little reflection has been made on the learnings and health system changes in the aftermath of the COVID-19 pandemic. Whether advances in institutional collaborations will be maintained is unclear.

2.3   Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 1A
Ensure managerial autonomy of hospital administrations
(97% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 1B
Enable a structure leading to integration of the care provided at various levels and by different sectors (public, private, and social)
(87% agreement)

RECOMMENDATION 1C
Optimize communication between primary and secondary care settings by improving referral protocols and mechanisms
(95% agreement)

RECOMMENDATION 1
Ensure proper execution of strategic planning instruments in all NHS institutions and in the MoH
(97% agreement)

RECOMMENDATION 1E
Improve intersectoral coordination, to ensure its comprehensiveness and effectiveness, and ensure continuity of care
(97% agreement)

RECOMMENDATION 1F
Implement a merit-based appointment system for people performing management tasks, supported by technical competence assessment and subjected to regular auditing
(100% agreement)

Promote partnerships and collaborations in health care provision involving public, private, and social sectors of the Portuguese health system
(87% agreement)

Separate the State's roles in finance, provision, regulation, and supervision, thus simplifying and empowering its administrative organization
(92% agreement)

Financing

3.1 Sustainability

3.1.1 Revenue generation

The Portuguese NHS is funded mainly by taxes, which are pooled into the government budget and then allocated and transferred to the NHS. Analysis of health expenditure (Table 6) has indicated that the total health expenditure as a percentage of gross domestic product (GDP) decreased between 2012 and 2016, then began to increase slowly until 2019, to approximately 6.5% of GDP; governmental health expenditure has been fairly stable, at approximately 5.8% of GDP. Health financing and patterns in the past decade should consider the bailout in 2011, when financial assistance was requested in the form of a €78 billion loan conditional on the adoption of the Economic and Financial Adjustment Programme, which entailed a drastic reduction of public expenditure, including in health, between 2011 and 2014 [33].

Table 6: Selected financing indicators, 2012–2019

	2012	2013	2014	2015	2016	2017	2018	2019
Total health expenditure (% GDP) [34]	6.6	6.5	6.3	6.2	6.1	6.2	6.5	6.5
Governmental schemes and compulsory contributory health care financing schemes (% GDP) [35]	5.9	5.9	5.8	5.8	5.8	5.7	5.8	5.8
Governmental schemes and compulsory contributory health care financing schemes (% of CHE) [35]	61.3	62.4	61.9	61.7	61.7	61.2	61.2	60.9
Household out-of-pocket payments (% of CHE) [35]	29.6	28.8	29.3	29.6	29.4	29.7	29.9	30.5
Governmental budget for NHS (€million) [36]			8,623	8,653	8,942	9,310	9,462	10,099
Share of governmental budget for NHS (% government budget) [37]							22.9	23.6
NHS expenditure (% GDP) [38]		5.2	5.1	5.0	4.9	4.9	4.9	5.0
Health budget deficit (€million) [36]			8,872	9,025	9,243	9,600	10,194	10,727
NHS provider debt* (€million) [38]		1,644	1,574	1,437	1,574	1,870	1,561	1,589
Capital expenditure in health (€million) [36]			106	149	106	126	136	161

* NHS considers three types of debt: debt to suppliers, overdue debt, and late payments [38].

Public health expenditure, as a percentage of current health expenditure (CHE), has been fluctuating around 61% of current health expenditure, whereas out-of-pocket payments, as a percentage of CHE, have been increasing and reached almost 31% of CHE in 2019. This figure has raised concerns, because the country had a poverty rate of 16.2% in 2020 [39] and poverty has been associated with inequities in health care financing [40].

The share of the health budget with respect to the government budget has increased slightly from 23% in 2018 to nearly 24% in 2020, corresponding to approximately 7.2% of the GDP in 2020 [36]. Current expenditures have been directed mainly toward paying for health professionals, external services, and supplies, as well as stocks of pharmaceuticals and clinical material [36], representing approximately 95% of the NHS budget. Approximately 42% of NHS expenditure supports the payment of human resources, whereas approximately 37% pays for supplies and external services [36]. Capital expenditure represents only approximately 1.5% of total NHS health expenditure [36], thus indicating a low level of investment in infrastructure and equipment.

An analysis of health expenditure by functions in 2019 indicated that the share of health expenditures in curative and rehabilitative care, long-term care, and preventive care was approximately 65%, 5%, and 2%, respectively [41]. NHS revenues have been structurally lower than NHS expenditures, thus generating systematic budget deficits. In 2020, the NHS debt amounted to €1,589 million, and the pandemic occurred during a time of financial fragility of the Portuguese NHS [36].

Portugal has one of the oldest populations in Europe, as shown in Table 7 [42]. Owing to this demographic trend, government health expenditure is expected to increase by 2.4 percentage points of GDP between 2016–2070 [43]. The combination of a falling birth rate and successive negative migratory balances since 2010 has resulted in a marked decrease in the working population (15–64 years of age) [44]. However, an increase in work participation rates has been observed in recent years, partly explained by the increase in women in the formal labour force (53.6%); the continuation of this trend is expected to decrease the gender gap in the participation rate [43,44].

Table 7: Proportion of people older than 65 years of age, 2012–2020

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Proportion of people over 65	19.0	19.4	19.9	20.3	20.7	21.1	21.5	21.8	22.1
Old-age dependency ratio	28.8	29.4	30.0	31.1	31.8	32.5	33.3	33.9	34.5

Source: [45]

Funding sources of the Portuguese NHS are not diverse: most funding is obtained through the governmental budget. This budget is funded primarily through direct (mainly progressive) and indirect (regressive) taxes, and represented approximately 44% and 56% of the government's revenue, respectively, in 2020 [46]. This funding structure therefore reflects some level of regressivity. Multiple fiscal deductions (including health related deductions) apply to direct taxes of household income and may benefit higher income families, thereby introducing regressivity in the funding system [4]. No updated information is available regarding the current level of regressivity and its effects on health care access and health outcomes.

A recent report on the risks to the sustainability of the public budget has indicated that the European Commission (EC) projects an increase in total health spending of 1.6 percentage points of the GDP between 2019 and 2070 – the fourth largest in the European Union (EU) – and an increase in long-term care spending of 0.4 percentage points [47]. The report also indicates a need for structural policies to address the increasing dependency ratio, the declining fertility rate, and the expected

increased spending in health and pensions (details in the EC Ageing report) [44]. The two main risks associated with health expenditure that influence the future of the public finances are the rapid aging of the population and the costs of providing care [47].

On the one hand, resource allocation strategies within the health sector have begun to shift from strategies based on disease burden to those considering efficiency and incentives [4]. In contrast, the allocation of the governmental budget to health is not based on disease burden, or the consequential economic and social costs of disease. Despite the use of activity-based, incentive-based, and prospectively set hospital contracts, NHS providers face soft budgets, and budgets are overspent each year (Table 6) (since 2017, capital injections have been made to the NHS in an amount equal to or greater than €500 million), thus creating debt to be paid in the future. Soft budgets are also common for other types of NHS providers. The average time for paying NHS providers is too long, ranging from 140 (in 2017) to 95 (in 2020) days [37]. A trend toward a decrease in all types of debt has been observed from 2018 to 2020, although the reductions have always been lower than the amounts of capital injections made [37].

Ex-ante and ex-post evaluation of health policies is not frequently performed; the main exception is INFARMED decisions on contracts with technology providers (related to prices, co-payments, risk sharing, monitoring for additional use, utilization conditions, and other contractual conditions of medicines), which are informed by the work of the National Health Technology Assessment System (SiNATS) and cost effectiveness analysis.

Reviews of public spending have been conducted since 2016 [37], according to EC guidelines, to target efficiency gains. Reviews have estimated 0.8% and 1% potential savings in the NHS, in 2019 and 2020, respectively. Nonetheless, that procedure has not been assessed recently, and the pandemic has hindered the review process.

3.1.2   Coverage and resource allocation

The Portuguese NHS provides universal coverage, wherein all residents and national citizens are entitled to care regardless of their socioeconomic, employment, or legal status, and migrants are covered. Some gaps exist in health care coverage, but in some cases, these gaps are overcome through NHS contracts with the private sector, as is the case for oral health, physiotherapy, psychology, diagnostic services, renal dialysis, and rehabilitation [4]; several practical access barriers (mostly bureaucratic ones) for undocumented immigrants have been addressed during the pandemic [48].

The access to NHS is nearly free, because only moderate fees must be paid. Given the level of poverty and income inequality, a large list of exemptions applies to user charges. Until 2022, nearly 60% of people had been exempted for reasons including household income insufficiency, chronic diseases, age under 18 years, and pregnancy [37]. In 2022, user charges were abolished in the entire NHS, except for cases of emergency care without referral or emergency care without inpatient care [49]. In contrast, the share of direct payments by families is high. A high level of out-of-pocket payments (30% of CHE) contributes to catastrophic health spending in some families. As shown in Table 8, approximately 8.1% of households face catastrophic health spending, and nearly 6% of these households are poor [50].

Table 8: Share of households with catastrophic health spending by consumption, 2015.

Poorest 1st quintile	2nd quintile	3rd quintile	4th quintile	Richest 5th quintile	Overall
5.9	1.4	0.6	0.2	0.0	8.1

Source: [50]

Most of the 2021 government budget to the NHS has been allocated to hospitals and vertical programs (national organized programs) (59.3%), followed by funding directed to RHAs (37.5%) [51]. The National Network for Long-term and Integrated Care (RNCCI) remains highly dependent on informal care provided and/or financed directly by families, and thus represents too small a portion of public expenditure [47].

3.1.3 Paying providers

Direct prospective payments and contract-based payments can be observed in some payment mechanisms. Nevertheless, as stated above, systematic deficits from NHS units introduce a retrospective payment component; and a weak link between financing mechanisms and needs assessment.

Regarding payments to primary care units and specific health programmes, the MoH allocates funds to the RHAs on the basis of a combination of historical expenditure and capitation (with an increasing component based on capitation, which is adjusted by demography and disease burden associated with hypertension, diabetes, stress, and arthritis) [4]. Primary care units are then financed on the basis of capitation and performance indicators; some are entitled to receive institutional and individual performance incentives. However, these financing mechanisms have been ineffective in ensuring access and promoting efficiency in care delivery [52], for instance, in decreasing waiting lists in primary care and improving patient choice.

NHS hospitals' prospective contracts are built through a mixed payment system based on a set of predetermined activities. Some activities consider prices per patient treated, per diem, per visit, or hospitalization episode, calculated on the basis of the Diagnosis Related Group and adjusted to the hospital case mix; a broad range of incentives and penalties are used. Incentives are related to benchmarking performance and patient satisfaction. Penalties are related to prescribed drugs, including payments related to telemonitoring for chronic obstructive pulmonary disease, acute myocardial infarction, and heart failure (with payments per treated patient covering investment, home visits, telemedicine consultations, and data monitoring costs) [53,54], and specific funding related to oncology, human immunodeficiency virus (HIV), and chronic kidney disease [55].

Value-based payment models have scarcely been used, with some exceptions including INFARMED negotiations for some treatments, and a project on cataract surgery involving public and private hospitals and industry [56].

Critical cost accounting information is available to inform decision-making. Despite the launch in 2007 of a hospital activity costing system project in five NHS pilot hospitals for calculating the costs of hospital activities, the project revealed methodological weaknesses [57] and was suspended by ACSS [58]. Publication of an analysis of hospitals' analytical accounting was stopped by the MoH a decade ago.

3.2 Resilience

3.2.1 Preparedness

To our knowledge, no health care financing projections have been prepared to analyse alternative epidemics/pandemics future scenarios, nor are specific public funds planned for use during crisis. In fact, the lack of preparedness, planning, and experience to address public health crises such as the COVID-19 pandemic has been identified as an area of concern [29].

3.2.2 Response

Development of fiscal policy to prepare the country for the economic and fiscal consequences of an unfavourable shock has not been possible [47]. The pandemic crisis has revealed NHS weaknesses, including a critical lack of health professionals, a low number of intensive care beds, difficulties in the supply of individual protections during the first pandemic wave [37], and critical financial constraints [29].

In response to the pandemic, in 2020, the health budget increased, and the government approved an additional exceptional monetary allocation to the NHS budget as well as an NHS programme for paying professionals and purchasing goods and services [48,59,60]. Again in 2021, the budget for NHS benefited from an increase in revenues and expenditures [51,52,53]

3.2.3 Learning and adapting

The adoption of budgetary measures in response to the COVID-19 pandemic and the effects of automatic macroeconomic stabilizers were associated with a contraction in the Portuguese GDP (approximately -7%) and a redefinition of current expenditure on health, with an increase in public expenditure (0.4%) and a significant decrease in household expenditure [37,61].

The Recovery and Resilience Plan (PRR) for Portugal includes a component to reinforce the NHS, specifically an investment of €1,398 million for reforming primary care, mental health, and public hospital governance, and for investments in digital health transition, the RNCCI, hospital equipment, and Madeira and Azores regional services [37,62].

To our knowledge, little change has been observed in contingency financing in light of the pandemic.

3.3 Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 2A
End the backlog of payments to NHS suppliers
(95% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 2B
Adopt multi-annual budgets in the NHS
(92% agreement)

RECOMMENDATION 2C
Implement a cost-based accounting model
(81% agreement)

RECOMMENDATION 2D
Review the contracting and financing system for health care providers in the public, private, and social sectors
(86% agreement)

4. DOMAIN 3
Workforce

4.1 Sustainability

4.1.1 Key data on the health workforce

The number of doctors and nurses per 1,000 population has been steadily increasing in the past decade (Table 9) and is higher than the European average for physicians, but lower for nurses (although the number of physicians is overestimated by inclusion of all physicians with a license to practice); the number of formally registered long-term care workers has substantially increased over the same period (Table 10) [63].

Despite the lack of a definition for informal care workers, informal carers have key roles in Portugal: because the country has one of the lowest long-term care expenditures (as a percentage of the GDP or per capita) in Europe, and care for older people and other dependent people is provided mostly by informal care. The number of informal care workers varies among surveys, partly because of the adoption of different definitions of 'informal carer'; however Portugal's figures tend to be among the highest in Europe. A 2014 European Social Survey has indicated that 34% of people self-reported as suppliers of some type of informal care, and approximately 11% reported providing this care more than 11 hours per week [64].

Table 9: Number of physicians and nurses per 1,000 population, 2012–2019

	2012	2013	2014	2015	2016	2017	2018	2019
Physicians	4.2	4.3	4.5	4.7	4.9	5.0	5.2	5.4
Nurses	6.2	6.3	6.4	6.5	6.7	7.0	7.2	7.4

Source: [65]

Table 10: Number of long-term care workers in the formal sector, 2014–2020

	2014	2015	2016	2017	2018	2019	2020
Long-term care workers in the formal sector	14,681	16,022	15,769	16,454	17,266	18,405	20,239

Source: [63]

4.1.2 Basic information on payments and remuneration

Most NHS professionals are paid fixed salaries as civil servants. In addition to this fixed salary, physicians receive pecuniary supplements, such as meal subsidies, additional hours, emergency hours, and permanent availability status complements. One exception is that GPs working in one type of Family Health Units (USF-B type) in the NHS are paid primarily through performance schemes.

Physicians' NHS salaries in Portugal are lower than those in other EU countries, and thus physicians face decreasing purchasing power [42]. In 2022, for physicians in civil servant NHS contracts who work 35 hours per week, monthly wages can range from €1,407 to €3,800 depending on their position in the salary table [66]; selected salary figures at lower pay levels are presented in Table 11. Nurses' salaries under civil servant NHS contracts are below those paid in most EU countries [42]

and are low with respect to the Portuguese costs of living (where the minimum wage was established at 705€ in 2021), as indicated by the hourly rates in Table 12. For both nurses and physicians, a substantial amount of salary is obtained through overtime payments and/or extra work performed in the private sector.

An overview of selected workforce indicators is provided in Table 13. Low salaries, lack of career progression, heavy workloads, early retirement, and difficulties in finding NHS vacancies contributed to the emigration of physicians and nurses, as well as other health professionals, such as diagnostic and therapeutic technicians; furthermore, there have been movements of physicians from the NHS to the private sector. In fact, the economic and financial status of the country has hindered the ability of the NHS to hire health professionals [67], whereas the private sector has absorbed and contracted NHS and newly qualified physicians [68]. To counteract these movements, in 2016, legal changes created incentives for retired physicians to work in the NHS [69].

Table 11: Gross salaries for physicians, 2022

Category (lower grade)	35 hr/week (full time)		35 hr/week (exclusive dedication)		42 hr/week (exclusive dedication)	
	Month (€)	Hour (€)	Month (€)	Hour (€)	Month (€)	Hour (€)
Consultant (head of service)	2,736.21	18.04	3,800.29	25.06	5,016.37	27.56
Junior doctor	2,267.14	14.95	3,148.81	20.76	4,156.42	22.84
Trainee doctor	1,876.26	12.37	2,605.90	17.18	3,439.80	18.90

Source: [66]

Table 12: Gross salaries for nurses, 2022

Category (lower grade)	NORMAL WORKING HOURS Daytime on weekdays 35 hr/week		OVERTIME Daytime on weekdays, Saturdays before 8pm		OVERTIME Sundays, holidays and rest days, Saturdays after 8pm	
	Month (€)	Hour (€)	First hour (€)	Subsequent (€)	First hour (€)	Subsequent (€)
Nurse manager	2,362.37	15.58	19.48	23.37	35.06	38.95
Specialist nurse	1,424.38	9.39	11.74	14.09	21.13	23.48
Nurse	1,215.93	8.02	10.03	12.03	18.05	20.05

Source: [66]

Table 13: Overview of selected workforce data, various years

Category	Rate/number	Year	Source
Practising nurses per 1,000 population	7.4	2019	[65]
Practising physicians per 1,000 population	5.4	2019	[65]
Practising dentists per 1,000 population	1.1	2018	[71]
Practising pharmacists per 1,000 population	0.9	2019	[72]
Practising physiotherapists per 1,000 population	0.14	2018	[73]
Practising long-term workers	20,239	2020	[63]
Percentage of foreign-trained physicians	No data available		
Percentage of foreign-trained nurses	1.8	2017	[74]
Mean annual basic pay by category	**Full-time equivalent**	**Year**	**Source**
General practitioner	€19,698	2022	[66]
Consultant (head of service)	€57,148	2022	[66]
Junior doctor	€38,906	2022	[66]
Nurses	€17,010	2022	[70]

4.1.3 Workforce training

Despite substantial increases in the number of open vacancies in medical schools in the past decade, as well as efforts to increase capacity for specialist training [4,69], not all medical students can obtain specialist training, and specialist training vacancies in some specialties have not been filled (e.g., for internal medicine in 2021) [75].

4.1.4 Migration-related findings

Some studies have reported a lack of information and monitoring of health professionals' migration flows [76]. An increase in the inflow of annual foreign-trained physicians occurred between 2017 and 2018, with 327 and 357, respectively [77], and the percentage of foreign human resources registered in the MoH was 2.4% in 2010 and 2016 [78]. In 2015, most foreign health professionals working in Portugal were Spanish (36%), Brazilian (26%), Czech (6%), British (5%), or Ukrainian (5%) [78].

Regarding physicians' emigration, in 2019, approximately 400 certification requests were made to work abroad [79], whereas in 2015, this number was approximately 475 [80]. The main destination country for Portuguese physicians is the United Kingdom [80]. Nurses have frequently sought to emigrate: in 2021, more than 1,200 nurses requested certification to emigrate [81].

After a decrease between 2010 and 2013, health workers' absence from work has been consistently increasing since 2014, at non-negligible levels, as indicated in Table 14. In 2018, 35% of absences were registered for nurses, 25% for operational assistants, and 20% for physicians and interns [69].

Table 14: Reasons for absence from work, 2014–2018

Cause of absence (% of absent days by reason)	2014	2015	2016	2017	2018
Illness	45.7	46.4	46.6	46.3	46.7
Parenting protection	31.1	31.7	32.8	32.9	31.5
Strike	2.6	2.3	1.9	3.2	4.4
Accident on the job or occupational disease	6.0	5.4	0.1	4.5	4.3
Assistance to family members	0.8	0.8	1.0	1.0	1.0
Student worker	0.7	0.7	0.8	0.8	1.0
Death of a family member	0.9	0.8	0.8	0.8	0.8
Marriage	0.8	0.7	0.7	0.7	0.6
Unjustified	0.3	0.0	0.5	0.6	0.5
Vacation	1.0	0.7	0.5	0.5	0.4
Loss of salary	0.1	0.0	0.0	0.1	0.0
Execution of disciplinary penalty	0.0	0.0	0.0	0.0	0.0
Others	10.0	9.9	9.1	8.7	8.7
Total number of absence days in year	3,053,005	3,394,120	3,698,608	3,788,556	3,970,985

Source: [69]

4.1.5 Key workforce indicators in the workplace

An overview of selected workforce indicators is shown in Table 13. Although the global supply of physicians is not low, shortages in some specialties, including anaesthesiologists [82], internal medicine and GPs, are frequently reported.

Several factors have precluded the establishment of a proper strategy for long-term workforce planning: (1) issues related to the quality of workforce data [83]; (2) a lack of consensus regarding the future needs for physicians and other health professionals [84]; and (3) few advances in creating a strategy for staff retention, and increasing staff motivation and satisfaction in the NHS [76,85].

4.1.6 Workforce analysis

In Portugal, the composition of the physician workforce differs from that in other EU countries; for instance Portugal has a greater number GPs but fewer gynaecologists/obstetricians and psychiatrists (see the case study below). In addition, the distribution of health workers across the country is highly imbalanced [86]. Task shifting between health professionals is very limited.

A 2018 study on primary care health professionals in Portugal has concluded that both GPs and nurses show general job satisfaction; however, some evidence suggests burnout, which is more likely to occur among GPs than nurses [87]. Studies assessing job satisfaction among hospital health professionals are lacking. The high number of professionals exiting the NHS and moving to the private sector can be interpreted as a sign of job dissatisfaction (regarding salaries, schedules,

teams, balance between personal life and work, and other factors). GPs in the northern, and Lisbon and Tagus Valley regions appear to have higher levels of burnout than GPs in other parts of the country; a contributing factor may be that a high proportion of patients in these areas are not enrolled with a GP, yet GPs remain responsible for their care needs in these densely populated areas. Intern physicians appear to be satisfied overall; however, asymmetries exist by region and specialty [88]. Nurses in the northern region are more likely to face burnout than those in other regions [87], and nurses' satisfaction varies among working contexts [89]. The case study below presents a brief analysis of how the payment system to NHS physicians is an unsolved problem that is now causing new problems in the aftermath of the COVID-19 pandemic.

CASE STUDY: NHS PHYSICIANS' WORKING CONDITIONS – UNSOLVED OLD PROBLEM, GROWING NEW PROBLEM

Context and challenge

Before the COVID-19 pandemic, the Portuguese NHS was facing several workforce challenges, including substantial shortfalls and serious difficulties in retaining physicians. International data show that the number of physicians has been increasing and exceeds that in many other countries. Although approximately 50% of Portuguese physicians were GPs in 2018, almost twice the EU27 average [3], the numbers of some specialists tend to be low. For instance, the numbers of gynaecologists/obstetricians, anaesthesiologists, intensivists, and psychiatrists are lower than those in Austria, Germany, Italy, and France [90].

Despite substantial increases in the number of vacancies in medical schools in the past decade, as well as efforts to increase capacity for specialist training [4,69], a bottleneck exists in the number of vacancies for specialist training, which is provided in public hospitals, conditional on Medical Professional Association approval. Furthermore, consistent issues have been encountered in filling those vacancies; e.g., of 2,462 candidates in 2021, approximately 600 withdrew before or during the allocation process, and 50 of 1,920 vacancies at the national level were not filled; moreover, many of those 50 vacancies were in internal medicine [75].

Public providers, particularly hospitals, are not allowed to make long-term contracts with physicians without prior approval from the Ministry of Finance. Therefore, under short-term pressure for specialists, hospitals often contract specialists for very short-term (on the scale of hours) work at very high cost.

Low salaries, lack of career progression, heavy workloads, early retirement, exit from the NHS into the private sector, and difficulties in finding NHS vacancies have contributed to the emigration of physicians. In fact, the economic and financial status of the country has made NHS hiring of health professionals difficult [67], as the private sector has absorbed and contracted NHS and newly educated physicians [68]. To counteract these movements, in 2016, legal changes created incentives for retired physicians to work in the NHS [69].

Planning and managing the physician workforce in the NHS has long been recognized as a challenge, whose extent has been fully uncovered by the pandemic; the NHS now faces potential collapse.

Relevant domains
Workforce and financing

Analysis

Critical issues related to physicians' management in the NHS are as follows:

- Training of physicians faces difficulties in terms of open vacancies for each medical specialization (lack of capacity for training in the NHS for several specializations).

- Vacancies for physicians' training in several specialties are not always filled (the procedure of matching vacancies to physicians' individual aims is highly inefficient).

- Physicians' salaries, working hours, and work assignments, as well as career prospects and other organizational issues, make the NHS unattractive. Physicians' satisfaction in the NHS is low.

- Private providers' activity has increased; the private sector competes with the public sector for trained physicians by offering better salaries.

- International hiring is difficult, and a solution has not been laid out.

- Public providers are not allowed to make long-term contracts for human resources without prior approval from the Ministry of Finance.

- No multi-year human resource planning exists, and short-term solutions are often used to address the lack of specialists in hospitals (this solution is called the 'contracting of taskers').

- A high retirement rate in the next decade among NHS physicians may worsen the situation in many specialties.

- Limited task shifting occurs.

Several policy recommendations that emerged during the policy dialogue presented in this report are aimed at addressing these issues (Section 4.3).

4.2   Resilience

4.2.1   Preparedness

At the onset of the pandemic, major gaps existed in the workforce – for instance, in internal medicine and public health specialists – thus hindering the ability of the NHS to respond to urgent needs. In March 2020, the Contingency Plan was activated so that additional workforce could be mobilized to cope with the surge in demand, and several changes were introduced [48].

4.2.2   Response

The following policy measures were taken at the beginning of the pandemic [48]: facilitating hiring of professionals; contracting retired health care workers and medical students; removal of existing caps for payment for extra hours worked; allowing NHS institutions to buy services and hire workers directly for as many as 4 months; and renewing short-term contracts. Student unions and professional associations helped in establishing volunteer banks to collaborate in the national response.

Accordingly, the number of workers answering telephone calls at the SNS24 contact centre was doubled, and the number of physicians answering the medical support line was quadrupled; more than 10,000 health professionals were hired under exceptional contractual conditions between March 2020 and July 2021 [48].

Each health care unit was responsible for scheduling and redeploying human resources according to needs, and providing them with equipment [48].

In Portugal, similarly other countries, health professionals have been subjected to a high workload; have been exposed to multiple psychosocial stressors [91]; and have experienced high rates of depression and anxiety (mental health) issues during the pandemic [86]. The pandemic has required health professionals to adapt in multiple contexts, including [48] the use of telemedicine and distance monitoring for triage and referral of patients with COVID-19; provision of care through the free NHS telephone line (SNS 24), which was adapted to integrate the testing and tracing policy; and patient follow-up (Trace COVID-19).

The Cyber-Physical System for Telemedicine and Intensive Care was successfully implemented during the first pandemic wave for intensive care treatment of patients with COVID-19, to ensure sufficient diagnosis and treatment while simultaneously decreasing the risk of infection [92]. For instance, nurses were involved in transforming nursing consultations into remote consultations; despite scarcely being used, this resource was perceived as valuable in facilitating access to services [93].

In the first 12 months of the pandemic (until February 2021), approximately 28,000 health professionals, including 9,000 operational assistants, 7,500 nurses, and 3,500 physicians, had being infected with COVID-19, of whom 19 died [94].

The government announced that, under emergency, calamity, or contingency status, MoH and NHS professionals working under a contract and directly or indirectly exposed to potentially infected and infected persons would benefit from an extraordinary subsidy [51]. Despite governmental efforts to avoid an exodus of professionals from the NHS, between May and October of 2021, more than 400 physicians abandoned the NHS [95].

4.2.3 Learning and adapting

Several examples demonstrate initiatives to increase the workforce and adapt within the COVID-19 response. For instance, pharmacists were authorized to perform tests and administer vaccines [96], and medical students were used in health care delivery.

In the legislative elections campaign at the beginning of 2022, several parties recognized the need to improve workforce planning and the careers of the physicians and nurses; most parties claimed more autonomy for health institutions to hire professionals, as well as the need to ensure that all members of the population had a designated GP [97].

Whether learnings from the pandemic – e.g., redeploying workers to work in different settings or rotating between facilities – will be consolidated into practical measures and well-funded strategies remains unclear. Some policies, such as shifting more resources towards primary and community care, are expected to be applicable as long-term strategies [92] that can be re-deployed in different settings or rotated among facilities [98].

4.3 Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 3A
Decentralize human resource management within an updated standardized career model
(84% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 3B
Increase recognition and integration of wider staff groups beyond physicians and nurses into health professional teams, e.g., pharmacists, health and diagnostic technicians, and clinical secretaries
(84% agreement)

RECOMMENDATION 3C
Improve the working conditions of health professionals through multiple actions (i.e., changing working hours, increasing flexibility, paying by performance, providing time for research, and improving workplace conditions)
(89% agreement)

RECOMMENDATION 3D
Improve human resources planning in the health sector
(92% agreement)

RECOMMENDATION 3E
Value human capital through integrated development strategies, thus contributing to talent retention
(89% agreement)

Medicines and technology

5.1   Sustainability

5.1.1   Adoption of health technologies

Decisions regarding health technologies are a strategic competence of INFARMED, which coordinates SiNATS. By law, SiNATS is responsible for all matters related to the assessment, pricing, reimbursement, and issuing of recommendations on health technologies, and it consists of a set of entities and means to assess and reassess all health technologies. SiNATS enables a technical, therapeutic, and economic evaluation of health technologies and provides information on the quality, economy, efficiency, and effectiveness of the use of technologies [68]. Within SiNATS, the Commission for Evaluation of Health Technologies is in charge of providing recommendations, analysing economic evaluation studies, and proposing actions relevant to public health and the adoption of technologies in the NHS [99].

Since 1998, INFARMED has gradually introduced economic evaluation of medicines to progressively inform reimbursement decisions, systematically re-evaluate reimbursed medicines, and evaluate hospital medicines [99]. INFARMED carries out cost-effectiveness analyses from the perspective of the NHS, which is complemented by a budget impact analysis [100]. No cost-effectiveness thresholds have been officially disclosed. The current guidelines apply to medicines but are not particularly suited to other health technologies (e.g., medical devices), and no specific procedures inform the de-adoption of low value medicines decisions. Central purchasing mechanisms apply to a small number of expensive hospital medicines (including HIV/AIDS, C hepatitis, immunomodulators, and some oncological drugs). In the case of earlier access to medicines without market authorization [101], special financial-based arrangements are negotiated at a central level, and some are outcome based.

Portugal has a low level of spending on medicines per capita with respect to that throughout the EU [102], but in the past 5 years, a large increase has been observed in pharmaceutical expenditure, owing to the growth in dispensing of prescription medicines and of medicines reimbursed by the NHS [61], in terms of volume and value [103]. In 2019, a 10.8% growth was observed in sales of reimbursable medical devices, representing an increase of almost €10 million [103].

In the past 2 years, generic drugs accounted for almost half of all pharmaceutical sales (by volume) and 63% of the ambulatory market under competition; these figures have been stable and lower than those in other reference countries [104]. In primary care, more generic medicines have been prescribed (approximately 50% generic share), particularly for the control of chronic diseases [103].

Several policies have been adopted to promote the use of biosimilar drugs [105]. In 2016, some biological medicines were replaced with biosimilar drugs. In 2018, guidelines were published to encourage the substitution of some biosimilar drugs through an analysis of costs and benefits, and NHS hospital contracts started to integrate performance indicators related to the use of biosimilars in 2017. Hospital adoption of biosimilar drugs increased by 20 percentage points between 2017 and 2020, reaching 57.1% in 2020 [105]. Scope remains for further increasing the generics and biosimilar drug quota [51].

Since 2015, therapeutic innovation has been prioritized [106], and new medicines launched on the market accounted for €21 million in 2019, among which five new molecules in the area of diabetes represented €5.7 million (sell-out value), and a new combination of statins represented €4.5 million (sell-out value) [103]. Fluctuations in the introduction of new drugs have been due to innovation and cost containment pressures [102], as well as regulatory changes in reimbursement and shifting consumption patterns [103] (Table 15). In 2020, access to therapeutic innovation was increased through the approval of 151 new medicines (justified by the increase in assistance activity registered in 2019) [51].

Table 15: Approval decisions related to medicines with new active substances and/or therapeutic indications, 2012–2018

	2012	2013	2014	2015	2016	2017	2018
Outpatient medicines	5	24	22	24	24	18	9
Prior assessment (ex-ante evaluation)	13	7	23	13	27	42	31
Total	18	31	45	37	51	60	40

Source: [102]

Market access time is extensive [107]. Between 2016 and 2019, the average time for a medicine to become available to users after authorization for marketing was 641 days (varying from 554 days for combination therapies and 807 for orphan medicines) – 137 days more than the EU average (504 days) [108]. Most medicines approved in 2019 were oncological, and a higher approval rate for orphan drugs occurred between 2016 and 2019 [108].

Although economic evaluation guidelines are aimed at all health technologies, information systems and mechanisms related to the evaluation of other health technologies (medical devices, equipment, and apps) are far less advanced and are used relatively infrequently. INFARMED has been developing initiatives to increase participation among the public and patients (e.g., INCLUIR project), although much remains to be done in this area [109].

The new Medical Devices Regulation [110], which came into force on May 2021, introduced new procedures for medical devices on the European market, with approval on the basis of technical, clinical, and biological equivalence, and a more judicious a benefit-risk assessment [111]. Small and medium-sized companies are encountering challenges in performing this benefit-risk assessment [111].

Investment in medical equipment in the past decade has been low and has translated into a large increase in the proportion of aged equipment. For instance, from 2008 to 2020, the percentage of computer tomography and magnetic resonance imaging equipment more than 10 years old increased from 7% to 28%, and from 12% to 24%, respectively [112]. This increase is partly explained by cuts in health spending and a decrease in investment after the 2011 bailout (described in Section 3.1.1), and is concerning, given evidence of lower availability of some equipment in Portugal than other EU countries [112]. Furthermore, evidence of obsolescence can undermine the capability to screen for and diagnose some diseases (e.g., cancer and cardiovascular diseases) in the population; and given technological advances, the opportunity to adopt often safer, more effective, or more cost-effective equipment, as well as to deliver safer and more effective care, is lost [113].

5.1.2 Digital health

Multiple advances have been made in the adoption of digital technologies. Investments have been made in computer application architecture to enable new communication and interoperable channels for professionals and health care users, and effective e-prescribing solutions [51]. In 2016, an NHS portal, called MySNS, was launched to allow users to access and manage their own health information and access relevant information (e.g., waiting times for emergency surgical care), and to use linked mobile applications [67]. NHS has made several apps related to health available: MySNS, MySNS Tempos, SNS24, Telemonit SNS24, eMed, and Dador [114]. Several other NHS and private pilot projects have been exploring the use of remote patient monitoring in hospital care delivery.

Several initiatives have been aimed at promoting literacy and addressing inequalities in the access to digital health. For instance, the 'INCoDE.2030' government program allocated €8 million to initiatives creating communities for digital inclusion, promoting opportunities for girls and women in information technology, and providing general access to online public services, and €6 million to increase access to digital skills infrastructure and training in schools [115]. An 'ICT and Society Network' program was developed to promote digital inclusion and literacy in the most vulnerable and information-excluded populations, within the National Strategy for Inclusion and Digital Literacy (2015–2020) [116].

Electronic health records (EHRs) are used by all primary health care providers and most hospitals, and some interoperability has been achieved among different EHR systems [67]. Investments coordinated by Shared Services of the Ministry of Health have been made so that the data infrastructure uses common unique patient identifiers that enable recording information in the Portuguese Health Data Platform (Plataforma de Dados da Saúde). This platform includes Patient, Professional, Institutional, and International Portals in the NHS website (www.sns.gov.pt) for different types of users, and offers functionalities related to electronic prescriptions, scheduled appointments, disease-specific registers, and information from the long-term care network [4]. Despite these advances, not all information can be linked and accessed, and difficulties exist in following patients across health care settings (e.g., primary care physicians cannot access all data from patients' hospitalizations because of data formats) [4].

5.1.3   Research and development

Research and development (R&D) enables the development of health technologies but has some limitations, despite some successful cases in pharmaceutical companies (e.g., Bial), selected medical equipment (e.g., protheses, beds), and laboratories (e.g., military laboratories), as well as high quality R&D centres and laboratories focusing on infectious and genetic diseases, nutrition and food safety, chronic diseases, and environmental and health determinants [67]. The capacity for developing health technologies has been recognized [107].

In 2021, the National Medicines Laboratory received a €185 million investment and assumed the responsibility for ensuring a strategic reserve of medicines to supply the country. The laboratory produces methadone for the NHS's programs to combat addictive behaviour and dependence, as well as medicines for hospitals on request (orphan drugs, rare diseases, and poisoning antidotes) and antibiotics for the zoo's penguins, and it is the only laboratory in the country producing isoniazid (an antibiotic for tuberculosis) [117].

R&D in health is an area of focus in Portugal, but the economic value of that investment remains lacking [107]. R&D expenditure has increased over the past 5 years and reached €32 million in 2020, representing 1.6% of the GDP (low by European standards), owing to increases in its private component (entailing 57% of total R&D expenditure), and partly reflecting qualified employment and technological capacity [118]. The remaining research is performed mainly in public universities with masters and doctoral programs.

To implement a strategy to leverage clinical trials, the Clinical and Biomedical Research Agency (AICIB) was created in 2018, with the participation of INFARMED and of the Portuguese Foundation for Science and Technology and industry partners [107]. The number of clinical trials has been increasing, with phase III trials at their greatest extent in 2021, and investigator-initiated trials having a residual value, which represents a limitation for the increase in trials promoted by the pharmaceutical industry (Table 16). Most clinical trials have been sponsored by a commercial entity.

Table 16: Clinical trial statistics, 2012–2021

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Total number of clinical trial applications submitted	118	114	127	137	142	137	159	142	187	175
Clinical development phase I	3	10	10	15	26	30	27	29	41	39
Clinical development phase II	25	20	24	24	26	24	38	33	36	32
Clinical development phase III	82	75	81	90	82	75	90	69	99	99
Clinical development phase IV	8	9	12	8	8	8	4	11	11	5
Commercial sponsor	112	98	115	124	132	132	148	128	167	167

Source: [119]

In 2018, the pharmaceutical industry in Portugal was represented by 151 companies with low human resource employment (approximately 8,000 workers) [107]. Private companies have claimed high delays in state payments, thus resulting in high opportunity costs (e.g., in terms of R&D or value creation) and high energy costs [107].

Portugal has successfully positioned itself as a technology hub in the Smart Health area (including real world data, virtual assistance, laboratory applications, and robotics), thus attracting foreign investment projects, which have tripled (from 15 to 42), and increasing the number of jobs created from 1,610 to 3,766 in 2019 [107].

5.2 Resilience

5.2.1 Security of supply

The National Medicines Laboratory is responsible for managing the strategic reserve of medicines and medical devices in disasters [117]. At the beginning of the pandemic, the government decided that NHS hospitals should increase their stocks of medicines, medical devices, and personal protective equipment by 20%. Simultaneously a national (strategic) central reserve for these products was created and acquired by the DGH, and it should be adapted in light of the pandemic's evolution [120]. Despite this temporary move to centralized procurement of personal protective equipment and testing kits, this task was relinquished to local authorities after the first wave of the pandemic [121].

In collaboration with international institutions, INFARMED has monitored the availability of medicines (including industry stocks) to avoid shortages, paying special attention to medicines essential for COVID-19 [122]. The country faced unprecedented difficulties in purchasing personal and protective equipment, testing kits, and pharmaceuticals in the first wave of the pandemic [25]; one explored solution was liaison with the national industry to produce masks, gloves, gowns, visors, suits, and swabs [122]. The National Medicines Laboratory produced large amounts of alcohol gel according to the needs and requests of the Ministries of Health and Defence [117].

5.2.2 Vaccination roll-out

A national approach was taken for the procurement and roll-out of COVID-19 vaccines. Portugal invested approximately €200 million to acquire more than 22 million doses [123], and vaccination was free, universal, and voluntary. Both the organization of the vaccination system and the communication strategy contributed to the high vaccination rate with respect to the EU average [48,124], despite some initial hesitancy regarding the priority criteria [29]. In the second week of October 2021, the administration of the third dose of the vaccine started [125] in parallel with flu vaccination [126].

The Portuguese COVID-19 vaccination experience is, in fact, a case study of success, as briefly described and analysed below.

CASE STUDY: THE PORTUGUESE COVID-19 VACCINATION EXPERIENCE

Context and goal

The first vaccines administered in Portugal, against smallpox, date to the beginning of the 19th century. The first National Vaccination Plan was introduced in 1965, when the individual vaccination card was also created; thus, vaccination has long been part of Portuguese public health culture [127].

Against the threat of COVID-19, the national approach to implement a mass vaccination was centralized and based on a taskforce created for this specific purpose. Soon after the taskforce started work in November, the leadership was assumed by Vice-Almirante Henrique Gouveia e Melo, and the taskforce included members from the national defence, internal administration, and health sectors. The taskforce assumed the responsibilities of setting the vaccination strategy, ensuring the logistics and distribution of vaccines, ensuring electronic registration of administered vaccines, performing surveillance of adverse reactions, and promoting transparent communication regarding the vaccination process [124].

The entire logistical process of administering vaccination was well organized. Vaccination centres were created by primary care units in a joint efforts with municipalities, the Civil Protection Unit collaborated in this process, and many young health professionals volunteered [29]. Each vaccination centre was organized according to a tested layout to ensure one-way movement of people through entrance, waiting, inoculation, waiting, and exit, and a group of people oversaw the disinfection of chairs and tables.

Additionally, the ICT infrastructure showed good performance, mainly in online self-scheduling and effective SMS confirmation messages to manage the place, date, and hour of vaccination, thus preventing long waiting times and build-up of people at vaccination centres. Information was made readily available to the public, and communication regarding the vaccine was well co-ordinated, and minimized the effects of 'fake news' and anti-vaccine movements.

The goal to vaccinate most of the population with a free and non-compulsory vaccine was successfully achieved.

Relevant domains

Service delivery and population health

The success case
Key indicators:

- By the end of August 2021, 74% of the Portuguese population had received two doses (or equivalent) of the COVID-19 vaccine, and 84% had received one dose [48].

- At the beginning of March 2022, more than 92% (9 million) of the population of Portugal had received the complete vaccination schedule (two doses), and almost 6 million had received a booster dose [128].

- Only 3% of vaccinated people refused to receive a booster dose [128].

Analysis
Factors for success:

- Public culture of vaccination

- Strong taskforce leadership

- Centralization of vaccination decisions and planning

- Efforts to clearly communicate with the public

- Simple and well-functioning ICT system for scheduling and confirming the place, date, and hour of vaccination

- Good coordination and joint efforts between primary care units and municipalities in the creation of vaccination centres

- Use of analytical methods, for instance to understand optimal vaccination centre layouts with one-way passage of people

- Close monitoring and analysis of events influencing population registration and use of that knowledge

5.2.3 Digital technologies

Digital health advances were observed during the pandemic, although not all technologies were successful. Positive advances were achieved in shifting from face-to-face consultations to alternative digital health solutions for both users and health professionals [129]. A 2020 survey [130] indicated that teleconsultations were used by most NHS physicians (94% respondents), from several specialties and across age groups; most teleconsultations were provided via phone, and only 8% of physicians reported using video calls, mostly through informal platforms (WhatsApp, Zoom, or Skype) and residually through specific and safe teleconsultation platforms; half the physicians agreed that the quality of teleconsultations was comparable to that of face-to-face consultations in most or some situations; and the physicians highlighted several difficulties commonly associated with the delivery of distance-based care (users' or caregivers' adaptation; access to those technologies; and issues in performing physical examinations, and in transmitting or understanding clinical information).

The STAYAWAY COVID-19 app was developed to identify potential exposures to people infected with COVID-19 and to alert other users who had been near infected users [131]. However, the app faced technical issues and did not identify contacts in several contexts [132]. One in three Portuguese residents had downloaded the app as of April 2021, but 60% of users uninstalled the app in May after data storage and protection issues were highlighted. Until 15 January 2021, only 2,708 infections had been reported through the app [133].

Several effective health information systems related to COVID-19 infection and vaccination were developed during the pandemic. Through SNS24, the public was able to access the COVID-19 Digital Certificate of the EU, which presented vaccination, test, and recovery certificates [134]. The Trace COVID-19 platform, developed by the DGH and Shared Services of the Ministry of Health, worked as a telehealth support tool that integrated multiple functions, generated automatic tasks, and assisted in monitoring infected users and performing surveillance [135]. A self-scheduling portal for vaccination, created in April 2021, helped users choose vaccination centres and dates [136]. The national telephone line 2424 was used to send SMS messages confirming vaccination, medical prescriptions, and scheduled appointments [137].

5.2.4 Learning and adapting

The following policy actions related to medicines and technologies were taken during the pandemic [51] and may contribute to health system changes: updating the National Medicines Form, reinforcing the role of the National Commission of Pharmacy and Therapeutics, and enhancing the conditions to address shortage and disruption in supply of medicines; implementing international cooperation measures for information sharing and joint negotiation regarding innovative medicines; improving electronic medicine prescription; and developing a strategy to modernize information systems, through the implementation of eHealth in the NHS and development of EHR systems [51].

The 'Green Light Operation' was created for the supply of medicines dispensed exclusively in hospitals, as a way of ensuring therapeutic continuity for patients who visited hospitals to receive their medications [138] and who began to access those medicines in community pharmacies.

5.3 Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 4A
Ensure that patients have access to hospital medicines through home delivery or access at the nearest pharmacy
(100% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 4B
Ensure that adoption of health technologies is based on evidence-based medicine
(95% agreement)

RECOMMENDATION 4C
Promote equitable access to innovative medicines for patients
(78% agreement)

RECOMMENDATION 4D
Promote Portugal as a major centre of excellence for biomedical innovation and clinical research
(94% agreement)

RECOMMENDATION 4E
Strengthen health technology assessment
(95% agreement)

RECOMMENDATION 4F
Review the medicine co-payment system currently in place
(87% agreement)

6. DOMAIN 5

Service delivery

6.1 Sustainability

6.1.1 Efficiency measures

Several indicators have suggested significant differences with respect to the OECD average and some inefficiencies in the delivery of care in the NHS. Admissions rates in NHS hospitals tend to be low by international standards. For instance, rates of hospital admissions for congestive heart failure, asthma and chronic obstructive pulmonary disease in adults, in 2017 were 110.7, 12.9, and 76.9 per 100,000 population, respectively (3-year average age-sex standardized rate), as compared with 232.9, 41.8, and 183.3, respectively, in OECD countries [139]. Portugal has one of the highest prevalence rates of diabetes in Europe (9.8% of adults in 2019) [140], but diabetes-related hospital admissions in adults are low and have decreased, from 89 hospital admissions per 100,000 population (3-year average age-sex standardized rates) in 2011 to 52 in 2017 (compared with 129 in OECD countries) [139]. This finding may raise concern, given the high rates of major lower extremity amputation in adults with diabetes: 10.4 amputations per 100,000 people (3-year average age-sex standardized rate) in 2017 compared with 6.4 in OECD countries [141].

Although readmission data have not been available for recent years, a study from 2013 has indicated an increase in the rate of readmissions (as measured by admission up to 30 days of a discharge) between 2000 and 2008; in 2008, approximately 4.7% of unplanned admissions were readmissions [142].

In addition to low admission rates, hospital discharge rates have been steady, at approximately 110 discharges per 1,000 population (as compared with 146.2 for OCDE countries in 2019) [42], whereas the number of beds per 1,000 population in 2019 was relatively low (equal to 3.5) with respect to the EU average (5.3) [48]. In 2018, Portugal had the second highest occupancy rate of curative (acute) care beds (82.1%) among the EU21 countries, when the EU21 average was 73.5% [143]. The number of adult intensive care beds was 8.9 per 100,000 population in 2019 – substantially lower than the OECD 14.1 average [144].

The average length of stay has increased in the past decade, and reached 9.4 days in 2019 (e.g., compared with 5 days in the Netherlands) [145]; the rate is relatively high for heart failure (10.3 days) and low for respiratory diseases (8.8 days), and is higher for men than for women [146].

Portugal has the second highest incidence of hospital infections in the EU. The percentage of hospitalized patients with at least one health care-associated infection is 9.1%, as compared with a European average of 5.8% [42].

Specific programmes have targeted efficiency gains. In two examples – SNS24 and the Coronary Green Way – the SNS24 Call Centre [147] has served as a first point of contact to the NHS, operating as a gatekeeping point, and enabling triage, counselling, and guidance for people in need of clinical and non-clinical services. Complementarily, a MySNS app allows users to access information on NHS and health care units, assess the quality of services, and respond to information queries from the SNS24 Contact Centre, among other functions [14]. The Coronary Green Way was designed to rapidly assist people with acute myocardial infarction; in 2020, approximately 696 cases had been registered, for which 72.4% received assistance within less than 2 hours after the onset of first symptoms [148].

The percentage of patients on the waiting list within the maximum waiting times target decreased from 86% to 81% in the 2019–2021 period [149], and the median waiting times for elective surgery [150], measured in days, was higher than the average in OECD countries (Table 17) before the start of the pandemic. The Integrated System to Manage the Surgical Waiting List waiting list recovery program gives NHS patients who have waited longer than the clinically acceptable waiting times a surgical voucher for transfer to another public or private hospital [151], but this system has not been effective in handling waiting lists under the pandemic.

Table 17: Median waiting times for selected elective surgery (days) in Portugal and OECD countries, 2018

	Cataract surgery	Hip replacement	Knee replacement	Hysterectomy	Prostatectomy	Coronary bypass
Portugal	119	126	204	77	81	5
OECD average	92	113	189	56	51	24

Source: [152]
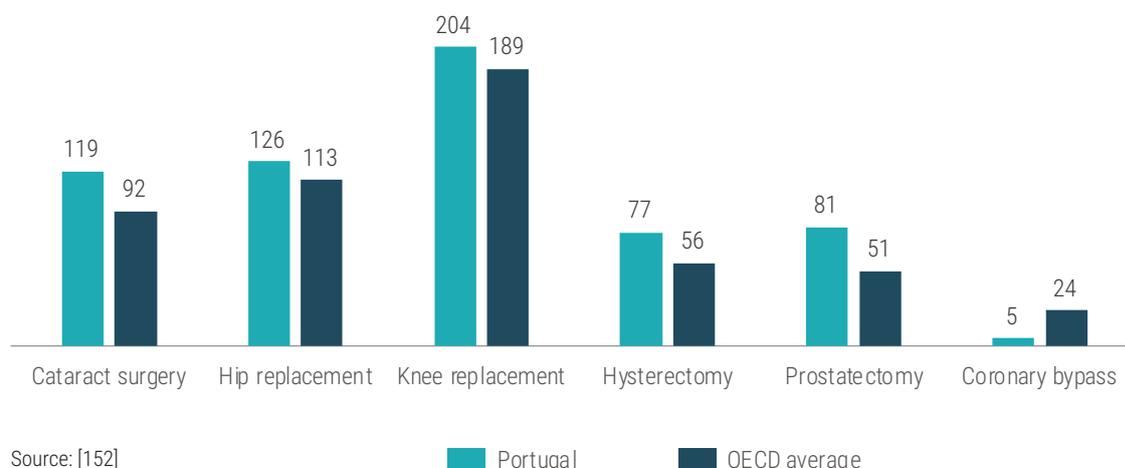
6.1.2 Quality

Quality of care is framed by the National Strategy for Quality in Health 2015–2020, which sets out objectives and priorities to improve the quality of organizational and clinical practice [153]. Its priorities include improving clinical and organizational quality, increasing adherence to clinical guidelines, enhancing patient safety, permanently monitoring quality and safety, recognizing the quality of health providers, proving transparent information to the public, and increasing capacity building [153]. Contracting of care to several NHS providers includes multiple indicators related to the quality of care.

Primary care is the main gatekeeping point of the Portuguese NHS (the other entry points are the SNS24 telephone line and emergency care). GPs refer patients to specialized and hospital care. The primary care network is extensive and offers nationwide coverage. Multi-level coverage is non-negligible: a substantial percentage of the population benefits from occupation-based insurance and makes use of direct access to specialists in the private sector [154,155].

Owing to increasing difficulties in access to specialized care, the rate of emergency entries has been high and entails a substantial level of 'improper emergencies' [156]: in 2019, approximately 43% of 6.4 million emergency episodes in NHS hospitals were classified as improper [157]. Such improper use of NHS services is partly explained by easy access to emergency care (guaranteed, rapid, and with flexible schedules), its low cost, and existing barriers in accessing primary care. Some strategies have been proposed to address improper use of emergency services, including privileged access to hospital care after calling the SNS24 phoneline (e.g., including user charge exemptions), financial incentives within NHS hospital contracts that consider indicators related to the type of emergency episode [156], and ensuring that primary care providers offer emergency consultations.

From an organizational perspective, quality is monitored by several entities (as described in Table 5) according to their specific responsibilities. For instance, the Health Regulatory Agency monitors several aspects related to health care provision; INFARMED monitors pharmaceutical and medical device quality; and INSA has a triple role as the State health sector laboratory, national referential laboratory, and national health observatory. During the pandemic, the use of SINAVE was critical, as described earlier. This system aims to operationalize the compulsory notification of infection diseases and is integrated in the European Epidemiological Surveillance System (TESSY) under the responsibility of the European Centre for Disease Prevention and Control.

6.1.3   Coordination of care and new care models

Delivery of care and NHS management is fairly compartmentalized into primary, hospital, and long-term and palliative care. Multiple challenges exist in coordinating the joint delivery of care and encouraging providers to collaborate. Nevertheless, some initiatives have been pursued to improve the integration of care.

First, the RNCCI network (composed largely of not-for-profit providers) combines teams providing long-term care, social support, and palliative care, on the basis of its origins in community services. This network covers hospitals, grouping of primary care centres, local and district social security services, and municipalities [4]. Home-based patients may be entitled to home care provided by integrated continuous care (multidisciplinary) teams from primary, social, and community care [158].

Second, several local health units composed of primary and hospital providers pursue care integration [4].

Finally, some vertically integrated care models have been in operation. For example, the HIV program has been operating with institutional collaboration between several organizations [159], and diabetes programs have been using an innovative organizational model to provide prevention, diagnosis, treatment, and rehabilitation care to patients with diabetes [160]. This model uses specialized diabetology consultations in an outpatient clinic, with standardized processes and procedures, multidisciplinary involvement, and dedicated times and spaces, in both primary health care and hospitals [160].

6.1.4   Distribution of, and access to, service provision

Health care provision in mainland Portugal is concentrated in large urban areas (Lisbon, Oporto, Coimbra, and other medium sized cities). Rural areas and the inland areas of the country face some shortages in health care professionals, specifically physicians. People in these areas face health care access problems related to distance and transport [139]. Access to primary care is affected: approximately 1,156,988 people were not enrolled with a GP in 2022 [161].

Socio-economic disparities are observed regarding unmet needs, which are greater in Portugal than in many other countries: in 2019, approximately 3.5% of the poorest people reported unmet health care needs due to cost, distance, or waiting time, as compared with only 0.2% of the richest people [139]. Further evidence of socio-economic related health inequities is presented in the population health section.

6.1.5   Focus on prevention and chronic diseases

Historically, the Portuguese NHS has emphasized acute and hospital care [162]. More recently, attempts have been made to introduce changes to improve primary care and health promotion; a set of priority programs to promote healthy lifestyles, and prevent chronic and infectious diseases have been developed [163]. These programs include tobacco prevention and control, promotion of healthful eating, diabetes, cerebrovascular diseases, oncological diseases, respiratory diseases, viral hepatitis, HIV/AIDS infection, and tuberculosis; a program is also aimed at the prevention and control of infections and antimicrobial resistance [160].

Several policy measures have been set in these programs, including fiscal, advertising, preventive, and health promotion. For instance, in 2007, indoor smoking was banned; in 2017, the NHS covered 37% of the cost of smoking cessation medication and introduced a sugar tax; in 2019, advertising of unhealthful food products to children under 16 was restricted [139]. Additionally, since 1990, cervical cytology testing has been provided in primary care [164]. In 2016, Portugal launched a National Cancer Plan [165] to ensure early diagnosis and treatment of cancer among all residents [48].

Despite the importance of these prevention and health promotion programs, many of these programs lack allocated resources for policy actions and have faced challenges in continually monitoring program indicators [160].

A comprehensive national vaccination program is in place for children, thus significantly affecting their health and well-being [166,167]. Delivery is supported by vaccination monitoring in school enrolments. Tetanus vaccination is compulsory for all people signing employment contracts in the public sector. The national program was extended in 2018 to include meningitis B, rotavirus, and human papilloma virus vaccination coverage [166].

6.2 Resilience

6.2.1 Maintaining services in a crisis

A large decline in face-to-face primary care medical appointments occurred during the pandemic, and was accompanied by a large increase in non-face-to-face appointments (Table 18 and Table 19; appointments include telephone calls provided by GPs under the COVID-19 trace program). Consequences of these changes have included a decline in diabetes (foot examinations and retinopathy) and cancer screening examinations [168]. In January 2021, the Portuguese League against Cancer estimated that more than 1,000 cervical, breast, and colorectal cancers were not diagnosed [169]. Breast cancer screening was stopped for 3 months (6 months in the north region), and screening for cervical and colorectal tumours nearly stopped [169].

Table 18: Number of primary care appointments (millions), 2018–2021

	2018	2019	2020	2021
Face-to-face medical appointments	20.5	20.7	12.7	14.6
Non-face-to-face or unspecified medical appointments	8.9	9.2	18.5	20.2
Home medical appointments	191.8	197.5	130.5	159.9

Source: [170]

Table 19: Number of specialized or hospital medical appointments (millions), 2018–2021

	2018	2019	2020	2021
Medical appointments	14.7	3.6	14.5	15.4
First appointments	4.2	8.6	4	4.4
Subsequent appointments	10.4	3.6	10.5	10.9

Source: [170]

Waiting times for elective surgery grew during the pandemic, and COVID-19 has disrupted health care for people with other needs. For instance, the number of days of waiting for knee replacement more than doubled between 2019 and 2020, and reached 300 days in 2020, and the waiting times for hip replacement surgery increased from 137 to 241 days [42]. By the end of 2021, the non-urgent cardiothoracic surgery waiting time was as many as 264 days, whereas that for non-urgent paediatric surgery was as many as 508 days [171].

Hospital capacity faced severe constraints during the pandemic: pre-pandemic hospital capacity was lower than the OECD average in terms of beds, intensive care unit (ICU) beds, and ventilators [48]. The number of hospitalizations for COVID-19 soared from April 2020, reaching a maximum on 16 April, with 1,073 hospitalized, and on 5 February 2021, a maximum of 904 patients were admitted to the ICU [172]. During the peak of the second pandemic wave, most NHS hospitals rapidly became overcrowded and, on several occasions, patients were transferred to hospitals in less affected regions [25]. To mitigate these effects, NHS hospitals received donations and loans of ventilators to expand ICU capacity from private companies [25], but some equipment may not have been received meanwhile, failing the public contracting of these equipment.

In response to the demand pressure for ICU beds, the NHS increased the number of beds from 587 to 1,015 between March 2020 and March 2021, by decreasing the number of elective surgery beds; during the peak of the second pandemic wave, the NHS requested 984 beds from the private sector [48]. Emergency attendance declined in 2020 by 28% [42].

6.2.2 Co-ordination of care during a crisis

The MoH created a taskforce for studying and managing COVID-19 related policy actions [48], which worked jointly with the GDH to implement the National Plan for Preparedness and Response to the New Coronavirus Disease and to respond to the crisis, and coordinate regional and local health authorities, and other relevant stakeholders [173].

6.2.3 Learning and adapting

With the pandemic, the NHS had to find new ways to meet the needs of the population. One solution was the rapid expansion of teleconsultations [48]. During the first half of 2020, the number of remote consultations doubled, and by the end of the same year, approximately 2 million teleconsultations were occurring per month [48].

The activity performed by primary health care is an essential pillar for the health of the population. Consequently, the 2021 contracting process will continue to encourage the improvement of access to primary care, including activities related to follow-up of patients with COVID-19, surveillance of chronically ill people, vaccination, screening, early diagnosis, and family planning programs [55]. The same strategy will be adopted in hospitals [55].

Public investments from PRR are now being made available to improve e-health care, for instance by increasing teleconsultations and telemonitoring of chronic diseases from an integrated perspective within the NHS [174].

6.3 Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 5A
Focus on disease prevention by investing in population-based screening and early diagnosis
(95% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 5B
Invest in domiciliary care and associated digital health associated
(97% agreement)

Develop and strengthen population literacy, and health promotion and prevention strategies
(97% agreement)

Advance local health care delivery through decentralizing, increased autonomy, and contracting
(95% agreement)

Fully implement EHRs across the health system
(97% agreement)

Strengthen primary health care delivery (with greater responsiveness and diversity of services)
(95% agreement)

Population health and social determinants

7.1 Sustainability

7.1.1 Key indicators of population health

Portugal performs well regarding key population health indicators [42] but shows weaknesses in several other population health-related indicators (Table 20).

Regarding socioeconomic factors, population health in Portugal should consider the 17.2% (2019) relative poverty, with a per capita GDP (approximately €23,062, in PPP, 2020) lower than the European average (€29,801 PPP), and an unemployment rate in 2020 (6.9%) close to the European average (approximately 7.1%) [48].

The health indicators in which Portugal performs particularly well (mostly mortality-related indicators) include a life expectancy at birth of 81 years [175] and an infant mortality rate, in 2020, of 2.4 per 1,000 live births [176]. The age standardized premature mortality in 2018 was 331.6/100,000; 25% of these deaths were considered treatable, and 42% were preventable. The treatable and preventable mortality rate in 2018 was 83 and 138 per 100,000 people, respectively, in Portugal, whereas these numbers in the EU were 92 and 160, respectively [177].

In contrast, morbidity is high, and the quality of life is low, as captured by some other indicators [42]: whereas life expectancy at age 65 is 21.5 and 17.8 years for women and men, respectively [178], healthy life years account for 31% and 43% of the life expectancy. The life expectancy in Portugal is higher than the OECD average, but the number of healthy life years is substantially lower.

In 2019, approximately 43% of the resident population in Portugal 15 years of age and older declared being fairly or not at all satisfied with life [177]. In the same year, almost 50% of people 16 years of age and older reported being in poor health, compared with approximately 30% across the EU [48].

Table 20: Selected population key indicators, various years

Population key indicators	Portugal	EU Average
Relative poverty	17.2% (2019)	16.5% (2019)
GDP per capita (ppp)	€23,062 (2020)	€29,801 (2020)
Unemployment rate	6.9% (2020)	7.1% (2020)
Life expectancy at birth	81 years (2021)	80.4 years (2020)
Infant mortality (per 1,000)	2.4 (2020)	3.3 (2020)
Treatable mortality (per 100,000)	83 (2018)	92 (2018)
Preventable mortality (per 100,000)	138 (2018)	160 (2018)
Birth rate (per 1,000)	8.4 (2019)	9.1 (2020)
Fertility rate	1.4% (2019)	1.5% (2019)

ppp = Purchasing Power Parity

7.1.2   Demographic trends

Portugal has one of the oldest populations among countries in Europe. In 2019, the number of older people increased with a concomitant decrease in the number of young people and the working population. The aging rate has thus increased: for every 100 young people, there are approximately 163 older people (2019). Alentejo is the oldest region in the country (206 older people/100 young people) [177]. The longevity index has been stable and, in 2019, for every 100 people 65 years of age or older, there were 48.6 people older than 75 years of age [177].

The gross mortality rate has been increasing in the past 11 years; in 2019, the rate was 1,086.7 per 100,000 inhabitants. In turn, in 2019, because of aging of the population, the age-standardized mortality rate (925.0/100,000) and premature mortality rate (under 75 years of age; 353.0/100,000) decreased [177]. In 2018, a large increase occurred in maternal mortality (approximately a 10.3% increase over that in 2017), but in 2019, this value again decreased to 10.4 per 100,000 live births [177]. Between 2018 and 2020, the infant mortality rate was 2.9 per 1,000 live births, whereas the neonatal and perinatal mortality rates were 1.9 and 3.7 per 1,000 live births respectively [177]. In turn, the late foetal mortality rate was 2.4 per 1,000 live births over this period.

In 2019, Portugal had the fifth lowest birth rate in the EU (8.4 per thousand inhabitants) [179]. Fertility has been low, at 1.4% (2019), a value below that in the EU overall (1.5%) [48]. Therefore, the replacement of generations continues not to be ensured [177]. However, regarding fertility, a 19.5% increase in the proportion of live births born to foreign women has been observed (12.3% in 2019) [177]. The number of live premature births has been increasing, and reached a national average of 8% in 2019, as has the proportion of live births with low birth weight (5.8%) [177].

7.1.3   Risk factors

One-third of 2019 deaths have been attributed to behavioural risk factors [139], and poor performance has been observed in multiple lifestyle indicators. Nearly one-quarter of the population is overweight or obese [180] and approximately 20% of teenagers 15 years of age self-report being overweight [42]. The annual alcohol consumption is approximately 10.4 litres per capita among people older than 15 years of age [181]. The diabetes incidence in Portugal is the second highest in Europe; 9.8% of adults (20–79 years) had this disease in 2019 [140,182]. More than 40% of adults in Portugal have high blood pressure [183]. A total of 46% adults are likely to be insufficiently active, and the proportion of 11 year olds who achieved the recommended 60 minutes of moderate to-vigorous physical activity per day was below 15% in 2016 [42]. A total of 41.7% adults consumed vegetables daily in 2019; 14% adults smoked daily; and 20 people per 100,000 died prematurely due to pollution in 2019 [42].

7.1.4   Main causes of death

The main causes of death in 2019 were cardiovascular diseases (stroke: 9.9% and ischaemic heart diseases: 6.4%), malignant tumours (25.5%), respiratory diseases (particularly pneumonia: 5.1% and chronic obstructive pulmonary disease: 2.7%), and digestive system diseases (10.9% and 4.3%, respectively) [184]. In 2020, the top five deadliest malignant tumours affected the colorectum (17.4%), breast (11.6%), prostate (11.2%), lung (9%), and stomach (4.9%) [185]. The burden of cancer is substantial in Portugal despite being lower than the EU average [48].

7.1.5   Population immunization

Immunization rates are very high in Portugal [4], although vaccinations are not mandatory [139]. In 2018, child vaccination rates for diphtheria, tetanus, pertussis, and measles (99%) surpassed the WHO target of 95% and substantially exceeded the EU average (94%) [139].

Portugal has among the highest levels of seasonal influenza vaccination for the population over 65 years of age in Europe, with a value of 61% (2017), compared with 40% throughout Europe [48]. However, the level remains below the WHO target (75%).

Pneumonia has a high burden of morbidity and mortality [186], causing an average of 16 deaths per day [167]. However, vaccination against pneumonia has a low coverage rate, mainly because of the lack of information [167] and low household incomes among older people [187]. The vaccine costs between €28 and €33 [187], and is free for some patients with high-risk chronic conditions, such as those with HIV, some obstructive lung diseases, and lung cancer [188].

7.1.6   Inequalities in health and in health determinants

Extensive evidence indicates unmet health care needs and access difficulties among several types of inequities in health determinants, for example:

- The poorest people tend to report poor or very poor health more frequently, and more than four fifths of people 65 years of age or older report their health to be fair, poor, or very poor [42].

- A substantial gap exists in the population self-reporting unmet health care needs by income level (0% for the highest income quintile, almost 4% for the lower income quintile in 2019) [42]. A 34% unmet health care need was observed during the first 12 months of the pandemic, compared with 21% in EU27 countries [48].

- Low coverage of care exists, as measured by government and compulsory insurance spending as proportion of total health spending by type of care (2019 data): 61% for all services, 79% for hospital care, 57% for outpatient care, and 54% for pharmaceuticals [42].

- A large percentage of people, mainly older people, live in old houses and face energetic poverty, wherein they are unable to pay for home cooling during summer and heating during winter [189]. In Portugal, an association exists between extreme temperatures and mortality [190].

- Historical geographic inequalities in the distribution of physicians in the Portuguese territory persist [4]. A large portion of the population lives in the metropolitan areas of Lisbon (27.9%) and Oporto (16.9%) [177], where the population density is 957 and 852 inhabitants/km^2, respectively, thus contributing to the aging of the interior regions (half of the Portuguese population lives in only 31/308 coast municipalities) [191]. Those living in the interior and/or less urban regions face barriers to accessing health care [192]. Between 2017 and 2019, in Alentejo, Algarve and Centre Region, the age-standardized mortality rate was significantly higher than the national average [177]; similar findings have been observed for premature mortality (less than 75 years of age) [177].

- Despite the decreasing trend in child obesity, the percentage of child obesity is high. In 2019, 12% of children 6–8 years of age were obese [177].

- According to the National Food and Physical Activity Survey, between 2015 and 2016, food insecurity affected approximately 10% of the population, ranging from 5.8% in Alentejo to 13.4% in Azores [177].

A systematic strategy to address health inequalities has been lacking, and research does not appear to have consistently addressed the link between health and key Portuguese social problems [193]. Although legal documents make the equity objective explicit, interest in health equality has been practically non-existent in the country [193].

7.1.7 Education and health literacy

Education and health literacy have been on the political agenda, and a Health Literacy Action Plan has been established for active public participation in health care decisions. A 2019 survey from the DGH indicated that 70% of the respondents had sufficient or excellent literacy, but more than 50% of respondents had problematic or inadequate literacy in digital health and in health system navigation [194], below the general health literacy levels [195].

Portugal has had school health programmes for some time [196]. Since 2014, it has run a Health Promotion and Education Support Program focusing on (1) mental health and violence prevention; (2) food education and physical activity; (3) addictive behaviours and dependencies; and (4) relationship and sexuality education [197]. In recent years, the GDH has worked with the Ministry of Education towards changing the food offered in schools. Legislation in 2021 established new rules for the preparation of healthier school menus and the types of food sold in schools [198].

7.1.8 Minority groups, immigrants, and refugees

Ethnic minority groups are difficult to identify in Portugal, given issues related to the use of ethnic-racial questions in the census, owing to the National Constitution Law [199]. Mostly through the work of local authorities, Romani people [200,201], immigrants, and refugees [202] can be identified.

In 2019, legal immigrants comprised nearly half a million people, approximately twice those in 2014 [177]. The largest immigrant communities were from Brazil (25.6% of the total foreign population); the United Kingdom, Romania, Ukraine, and Moldova (which together made up 17% of the total); Cape Verde, Angola, Guinea Bissau, and Sao Tome and Principe (which together made up 15% of the total); and China (4.7%) [177]. The Lisbon metropolitan area had approximately 51% of the immigrants in all of Portugal [177].

Since 2003, a positive evolution has been seen in setting policies and practices for welcoming and integrating immigrants at the national level and by local authorities, civil society organizations, and immigrant communities [203]. Given the social nature of the NHS [48] and its representation throughout the territory (in the form of hospitals or primary health care centres), Non-citizen residents of Portugal have had the same access as Portuguese citizens [204]. In the case of immigrants, a specific law was created in 2012 [205] to ensure access [4]. Some municipalities have defined specific initiatives for minority groups; e.g., the Cascais municipality developed a 2016–2020 local strategy to promote health among the most vulnerable people [206].

During the COVID-19 pandemic, temporary residency rights were granted to all immigrants and asylum seekers who applied before 18 March 2020; consequently, these individuals were fully entitled to social and health benefits [207]. By the end of March 2022, approximately 17,500 Ukrainian refugees had come to Portugal to escape war [208] and received temporary protection, including temporary residence, and access to health and social protection schemes [209]; this number continues to increase.

7.2 Effects of COVID-19 on population health

In 2020, the death rate due to COVID-19 accounted for 5.7% of the total deaths [48], mostly among people 80 years of age and older. Among EU countries, Portugal had a high rate of COVID-19 and related mortality, and the life expectancy decreased by 0.8 years [48]. The negative effects of COVID-19 were disproportionately high among vulnerable groups such as older people and migrants [210]. The lockdown caused major changes in the lifestyles of most older people, forcing them to adopt an unprecedented isolated and sedentary lifestyle, thus contributing to an increase in anxiety and stress, and leading to missing to scheduled medical appointments for fear of infection [210].

The pandemic has negatively affected mental health [48]; symptoms of depression, post-traumatic stress disorder, and moderate to severe anxiety symptoms have been reported by almost 27% of the population studied in a 3-month national survey between May and July 2020 [211]. According to the 2021 Survey on Income and living conditions, 26.6% of individuals 16 years of age or older reported negative effects of the pandemic on their mental health; the percentage was higher among women (30.2%) [212].

In Portugal, in comparison to EU countries, a high adherence to COVID-19 vaccination was achieved [48]. In 2021, an exceptional reimbursement scheme for the pneumonia vaccine was approved, and vaccination rates increased from 37% to 69% for people 65 years of age and older [213].

7.3 Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 6A
Invest in health promotion through initiatives (e.g., exercise and healthful diet) at the municipal level, following the transfer of responsibilities within the decentralization process
(95% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 6B
Invest in the development of community-based health outcome metrics (focusing on improving health and well-being) and create incentives to improve those metrics, e.g., through developing a community-based health value model
(95% agreement)

RECOMMENDATION 6C
Ensure access to differentiated health technologies (e.g., hip replacements that avoid surgical revision procedures) to ensure higher quality of life for ageing people
(87% agreement)

RECOMMENDATION 6D
Develop cross-sectoral campaigns (involving health and education) to promote public literacy regarding modifiable risk factors
(95% agreement)

RECOMMENDATION 6E
Develop tools to implement a population-based approach to primary health care provision, on the basis of risk stratification, thus enabling proactive interventions targeting various groups
(95% agreement)

RECOMMENDATION 6F
Map the causes associated with poor quality of life of the population over 65 years of age, and identify specific actions to improve the quality of life of this population
(100% agreement)

RECOMMENDATION 6G
Increase salaries so that people have better living conditions and better health
(84% agreement)

Regulate commercial activities and practices that affect health such as advertising and easy access to harmful products (tobacco, unhealthful foods, and/or alcohol)
(89% agreement)

Environmental sustainability

8.1 Sustainability and resilience

8.1.1 Key information on the environmental costs and benefits of health system activities

The MoH has had key responsibilities in environmental sustainability since 2011 [214]. ACSS has a team coordinating the Strategic Plan of Low Carbon (PEBC) and the Energetic Efficiency Program of the Public Administration (Eco.AP) in the health sector, in collaboration with RHAs and the Agency for Energy [215], answering to European and national legislation [216]. The PEBC and Eco.AP programs aim at reducing greenhouse gas emissions and increasing efficiency in the consumption of electricity, water, and gas, and in the production of waste through measures that translate into economic benefits and improved service delivery [215]. According to quarterly monitoring reports, between 2011 and 2018 improvements were made, as measured by efficiency in the consumption of energy, water, and waste production in NHS hospital entities [215]. According to the 2017 ranking of Energy and Water Efficiency developed by ACSS, the total cost, including utilities, of 92% of NHS hospital entities totalled approximately €77 million: 63% for electricity, 16% for gas, and 21% for water [215]. A 2018 report indicated that all PEBC and Eco.AP goals had been met, and that more efficient consumption of MoH entities resulted in a savings of approximately €33 million [215].

8.1.2 Programs and evidence related to carbon footprint

The National Energy and Climate Plan 2030 (PNEC 2030) was approved in 2020 [217] with the main objective of achieving carbon neutrality by 2050, and becoming the main national instrument of energy and environmental policy for a carbon neutral future [214], following the creation of the Roadmap for Carbon Neutrality 2050 (RNC 2050) in 2019 [218]. Several other programs for a carbon neutral economic transition have been approved, such as the National Strategy for Hydrogen [219].

8.1.3 Waste management and measures to reduce waste production

The legal framework states the relevance of minimizing hospital waste by preventing its production through purchases and service contracts, including sustainability criteria, and through the use of waste management plans [220]. In addition, internal management systems should be used to minimize the storage of products with short expiration dates and to encourage the use of efficient stock management systems [220].

In 2013, a guide to good practices in the health sector was prepared to help reduce water and energy consumption and waste production [221]. The PO SEUR – Operational Program for Sustainability and Efficiency in the Use of Resources – has made progress in mitigating the environmental impacts of institutions responding to the challenge of changing to a low carbon economy [214] with short- and medium-term goals. Some notable actions related to the implementation of good practices include the following:

- acquisition of equipment with lower energy consumption in three hospital entities
- preference for recycled computer consumables in one hospital entity; use of more efficient lightbulbs in 10 NHS organizations
- installation of flow reducers in the taps in 11 NHS entities
- replacement of conventional water taps with timed taps in three hospital entities

Despite all these actions to promote energy efficiency, such measures are far from widespread, and the incorporation of environmental sustainability concerns in multi-level decisions in the health sector is not extensive. For instance, scarcely any evidence of sustainability considerations exists regarding the purchasing of medical devices and equipment at the central level, and in resource allocation decisions.

8.1.4   Programs and evidence related to air quality

The Portuguese Environment Agency is responsible for implementing environmental policies ,and assessing and managing air quality, to protect public health and promote quality of life. Accordingly, the Portuguese Environment Agency monitors pollution, which must be in accordance with European and international obligations [222]. Some authors consider the Portuguese legislation (based on EU target values) less strict than the values of the WHO [223].

Despite improvements since 1990 [224], air quality problems still persist in some locations, notably in densely populated urban areas where concentrations of NO_2 and PM10 are higher; in some locations, long-term ozone targets are not always respected [225]. Air quality plans are usually local or regional, and entail actions for emissions reduction that are defined on the basis of consideration identified emission sources. The National Plan for the Reduction of Atmospheric Pollution sets objectives and commitments for 2030 for the anthropogenic emissions of SO_2, NO_x, VOCNM, NH_3, and PM2.5 pollutants, and distinguishes actions by sector [222].

8.1.5   Evidence of environmental risks to health

The National Air Strategy (ENAR 2020) was defined in 2015 according to international commitments [226]; it entails three pillars – 'assess', 'anticipate', and 'act' – and advocates for the use of renewable fuels, reduction of industrial activity (efficient use of natural resources and raw materials), introduction of emissions control technologies, and use of more efficient technologies (e.g., renewal of car parks) [226]. However, according to the Court of Auditors, although Portugal has pursued the objectives set in international agreements, specific policy actions and information on the outcomes to analyse the effects of the implemented measures are lacking [226]. For instance, benefits and costs of air quality policies have not been assessed, and the health effects of air pollution actions have not been monitored [226].

The Portuguese territory has been shown to be vulnerable to climate change [227]; for instance, air levels of aeroallergens [228] have contributed to the development of respiratory and cardiac diseases [229]. The number of deaths related to ozone are continually increasing [190], and an ozone concentration increase by an additional 6% is expected by the end of the century (2071–2100) [190]. Extreme temperatures have already been associated with fatal illnesses, such as heat stress or hypothermia [190], and have been found to negatively affect mental health [214]. Lisbon, where many densely populated urban centres are located, is particularly expected to face more severe health risks related to increasing monthly maximum temperatures and heat waves [190,230]. The effects of extreme cold temperatures have not been estimated, but the highest mortality rates in Portugal occur during winter [231], owing to a significant increase in the incidence of infectious diseases (particularly seasonal flu) and greater exacerbation of chronic respiratory and cardiovascular diseases potentiated by low temperatures [232].

Regarding the direct costs of extreme weather events, six priority risks have been identified as worthy of special attention [47]: risks related to floods and to alterations of coastal zones; rising temperatures; shortages in public water and energy supplies; effects on natural capital (including land, coastal, marine and freshwater ecosystems, soils, and biodiversity); food production and global distribution chains; and new pests, diseases, and non-native invasive species.

8.2   Recommendations

Please find below the recommendations relevant to this Domain. Fuller context for each recommendation is provided in Appendix A.

RECOMMENDATION 7A
Continue to develop policy measures aimed at energy and water efficiency and decreasing waste production
(97% agreement in the Web-Delphi panel; Appendix B)

RECOMMENDATION 7B
Develop a medical device reprocessing initiative
(89% agreement)

RECOMMENDATION 7C
Focus on commercial determinants of health (i.e., private sector activities that positively and negatively affect health), with special attention to those relevant to environmental sustainability
 (78% agreement)

RECOMMENDATION 7D
Incorporate incentives and obligations related to environmental sustainability within public contracting mechanisms
(97% agreement)

RECOMMENDATION 7E
Map the current status regarding environmental sustainability (related to Ministry of Health activities and competencies) and within the next 5 years, progress in the commitment to improve the value of each indicator in key domains of environmental sustainability by 75%
(84% agreement)

RECOMMENDATION 7F
Reduce hospital medical equipment obsolescence
(95% agreement)

9. Acknowledgements

10. Acronyms

ACSS	Central Administration of the Health System
CHE	current health expenditure
DGH	Directorate-General for Health
Eco.AP	Energetic Efficiency Program of the Public Administration
EHR	electronic health record
EU	European Union
GDP	gross domestic product
GP	general practitioner
HIV	human immunodeficiency virus
ICU	intensive care unit
INSA	Dr. Ricardo Jorge National Institute
MoH	Ministry of Health
NHP	National Health Plan
NHS	National Health Service
PEBC	Strategic Plan of Low Carbon
PRR	Recovery and Resilience Plan
RHA	Regional Health Administration
RNCCI	National Network of Long-Term Care
R&D	research and development
SiNATS	National Health Technology Assessment System
SNS24	NHS Call Centre
SINAVE	National Epidemiological Surveillance System
WHO	World Health Organization

Policy recommendations and rationale

Table 21: Governance – policy recommendations and their rationale

DOMAIN 1	GOVERNANCE
1A	**Ensure managerial autonomy of health administrations**
	Ministry of Finance blocks on budget expenditure by health administrations affects the autonomy and management capacity of these organisations, creating variations in their fulfilment of financial and performance targets. The central administration needs to demonstrate higher levels of trust in public management, while holding them accountable for their decisions
1B	**Enable a structure leading to integration of the care provided at various levels and by different sectors (public, private, and social)**
	There is some fragmentation and misalignment of health provision at both structural and professional levels. The newly approved NHS Statute creates an Executive Directorate that aims to improve the co-ordination of the different NHS health organisations. However provision of care also relies on bodies from the private and social sectors, some of which are contracted with the NHS. Co-ordination and supervision at that higher level is necessary to allow for a more efficient health system that avoids service gaps and service redundancies/duplications.
1C	**Optimize communication between primary and secondary care settings by improving referral protocols and mechanisms**
	Measures should be taken to develop (and implement) protocols and mechanisms for referral between primary and secondary healthcare settings to reduce waiting times and improve quality of care. Research has shown that GPs do not always feel confident in prescribing examinations to their patients before referring them to hospital specialists. The same research shows that specialist physicians report that patients have not always performed the necessary examinations before their first appointment. This recommendation aims to improve patients' referral process with gains for the NHS, reduction of waiting times, improve care provided, and increase patient satisfaction.
1D	**Ensure proper execution of strategic planning instruments in all NHS institutions and in the Ministry of Health**
	There should be measures taken to ensure proper execution of strategic planning instruments, namely the 3-year Budget and Activities Plan, the annual Programme-Contract, and the management contracts signed by members of the Board of Directors. These should ensure alignment between health policy priorities and proper management of hospital resources (with strengthened autonomy and responsibility of the Management Boards and intermediary structures). They should describe the efficiency and productivity gains that ensure sustainability of the institutions and lasting reductions in financial arrears.

1E   **Improve intersectoral coordination, to ensure its comprehensiveness and effectiveness, and provide continuity of care**

Defining more patient centric health care pathways, and integrating health and social services, is an essential goal in improving the quality of life of patients and their caregivers, in turn offering health gains. The health system should continue to improve co-ordination between health and social affairs (social security) at policy level (for example the long-term care network and, more recently, the approach to co-ordination recommended in the Informal Caregiver Statute). Better co-ordination among the various levels of health care provision and between these and social affairs (social security), as well as with non-profit sector social responses (Residences for Older People, Day Centres, and Social Support Services) is important for health care integration and patient health care pathways that ensure care continuity.

1F   **Implement a merit-based appointment system for people performing management tasks, supported by technical competence assessment and subjected to regular auditing**

Political appointments to management boards within the NHS should end, and a merit-based appointment system for management officials based on competence, accountability and responsibility should be implemented. This should be managed with continual assessment and support.

1G   **Promote partnerships and collaborations in health care provision involving public, private, and social sectors of the Portuguese health system**

Partnerships between public (NHS), private and social sectors should be promoted to improve the sustainability of the Portuguese health system.

1H   **Separate the State's roles in finance, provision, regulation, and supervision, thus simplifying and empowering its administrative organization**

The following should be considered:

(a) The need to overcome conflicts among the different roles of the State in health, particularly the lack of separation among branches of the State that finance, regulate, and supervise health care provision, and rationalizing the organization, management, and operation of the health system.

(b) The excessive centralization and bureaucratization of the Public Administration, with difficulty in strategically co-ordinating an NHS that is siloed with weak intersectoral relationships between health care, public health, and social affairs; silos between some organizations and government agencies; and a disconnect between service providers that lack integrated infrastructures.

(c) The need to create intersectoral dynamics and partnerships between the public, social, and private sectors, with increased joint efforts between care providers, and development of formal partnerships, including communication networks and collaborative initiatives between Ministries (e.g., Health and Social Security) and the private sector.

(d) The response to emerging health needs (home, community, moderate and long inpatient stays, and palliative care) is insufficient and must be strengthened..

Table 22: Financing – policy recommendations and their rationale

DOMAIN 2	FINANCING
2A	**End the backlog of payments to NHS suppliers**
	Portugal lags behind Europe in the average timelines for paying suppliers (approximately 250 days). Adopting a similar approach to that taken by the Spanish Government in 2016, i.e., the creation of an effective payment plan for suppliers (Plan de Pago a Proveedores) that definitively resolved hospital debts, is recommended.
2B	**Adopt multi-annual budgets in the NHS**
	One way to mitigate chronic underfunding of the health sector would be implementing multi-annual financial management from a medium-term perspective, instead of the existing short-term approach (economic/civil year). In this way, financial stability and continuity of investment would be achieved regardless of political cycles or the mandates of the management bodies.
2C	**Implement a cost-based accounting model**
	Measures should be taken to implement a management, cost, or analytical accounting model enabling more adjusted budgeting and potentially supporting health care contracting. Cost measurement supports budgeting, measurement of system efficiency, and comparisons of costs among units, thus aiding in decision-making processes and promoting transparency..
2D	**Review the contracting and financing system for health care providers in the public, private, and social sectors**
	Measures should be taken to review the financing and contracting system, particularly: to review the indicators used; to provide autonomy and accountability to managers; and to reward health care units with better health outcome performance. Priority should be given to outcome indicators rather than process indicators.

Table 23: Workforce – policy recommendations and their rationale

DOMAIN 3	WORKFORCE
3A	**Decentralize human resource management within an updated standardized career model** Measures should be taken to develop local career programmes to promote professionals' satisfaction and alignment with the strategic planning of each health care unit.
3B	**Increase recognition and integration of wider staff groups beyond physicians and nurses into health professional teams, e.g., pharmacists, health and diagnostic technicians, and clinical secretaries** Healthcare teams comprise physicians and nurses, but also other health professionals. Better mapping of these health professionals and their skills/qualifications (scope of practice) is needed, to identify the level at which care can be provided, and by whom, in the most efficient and safe way (exploring the possibilities of distribution of tasks among all health professionals).
3C	**Improve the working conditions of health professionals through multiple actions (i.e., changing working hours, increasing flexibility, paying by performance, providing time for research, and improving workplace conditions)** To retain staff in healthcare (including in the NHS), many issues need to be addressed. These include changes in working hours, increasing flexibility, paying on the basis of objectives and performance, providing time dedicated to research and academic careers (according to the interest of the professional), and improving workplace conditions. Accounting for each of these aspects is essential. Currently, health professionals working in a specific hospital cannot provide additional services to that same hospital beyond what is permitted by law, nor can they enjoy the payments made to 'freelancer/locum' staff members who work side-by-side with them. This restriction incentivizes professionals to work as freelancers/locums in other hospitals, where they are not members of the professional staff.
3D	**Improve human resources planning in the health sector** Measures are required to implement the National Inventory of Health Professionals and, with this programme, to create a unit exclusively dedicated to planning and valuing NHS human capital. Improved planning is essential to ensure adequate human resource capacity and adapt the current workforce to new models of care delivery.
3E	**Value human capital through integrated development strategies, thus contributing to talent retention** Within the NHS, health professionals must be adequately distributed, recruitment strategies must be developed, and retention and stability of human resources must be ensured. Moreover, the need to link remuneration and recognition with performance, and to promote accountability of teams for results, must be recognized.

Table 24: Medicines and Technology – policy recommendations and their rationale

DOMAIN 4	MEDICINES AND TECHNOLOGY

4A — **Ensure that patients have access to hospital medicines through home delivery or access at the nearest pharmacy**

Ensuring that all citizens needing hospital medicines can access them at home or at the nearest pharmacy is important. The Green Light operation, used as a transitory measure during the pandemic, should have been continued. That operation provided great added value for health users, including undeniable gains not only in terms of health (avoiding the interruption of therapy due to difficulty in access) but also in avoiding travel costs and absenteeism at work.

4B — **Ensure that adoption of health technologies is based on evidence-based medicine**

Measures are required to ensure that technology adoption is informed by evidence-based medicine, from authorization to the prescription of new medicines and technologies; abandoning the use of treatments with reduced effectiveness; promoting cost-effective technologies in clinical practice and in prescription; and abandoning alternatives that may not be cost effective.

4C — **Promote equitable access to innovative medicines for patients**

Measures are required to move towards a more efficient regulatory framework for access to innovative medicines. Developing and accessing innovation is a lengthy and bureaucratic process, and instances of great inequality in access to new medicines in Europe must be properly addressed.

Under the new Pharmaceutical Strategy for Europe, a stable but also adaptable, rapid, effective, and globally competitive regulatory structure is needed to achieve the adoption of concrete, transparent, and measurable actions resulting from partnerships among the pharmaceutical industry, the Member States, the institutions of the European Union and the Portuguese Government. A shared understanding of the causes of delays and barriers to access should be aligned, considering the economic conditions of countries, to find collaborative solutions to ensure that patients are treated in all European countries with the best therapeutic solutions for their health status, e.g., new approaches and new payment models to finance new medicines.

4D — **Promote Portugal as a major centre of excellence for biomedical innovation and clinical research**

Promotion of the following is needed: research and visibility regarding return on investment in medicines, with implementation of risk-sharing systems; clinical and translational research; clinical trials that enable access to medicines free of charge; early access to innovation; acquisition of knowledge essential to the progress in clinical practice; strengthening of the qualifications of health professionals; and improvement of care.

4E — **Strengthen health technology assessment**

Health technology assessment should be extended to devices and other health interventions; the public's recognition of the importance of this assessment must be improved; and a management system for drugs and devices, with data integration, must be created.

Table 24: Medicines and Technology (continued) – policy recommendations and their rationale

4F	**Review the medicine co-payment system currently in place**
	The medicines co-payment system in place has evolved incrementally but has too many additions and exceptions written in various legislation documents, thus resulting in a fragmented system that does not promote equity of access (as demonstrated by the high Portuguese out-of-pocket spending in medicines); therefore, it must be reviewed as a whole.

Table 25: Service delivery – policy recommendations and their rationale

DOMAIN 5	SERVICE DELIVERY
5A	**Focus on disease prevention by investing in population-based screening and early diagnosis**
	Measures are required to redirect the focus to prevention and health promotion, rather than focusing exclusively on disease treatment, and to foster the implementation of disease prevention policies, particularly the adoption of healthier lifestyles.
5B	**Invest in domiciliary care and associated digital health**
	Investing in home-based health care is needed, not only to free up hospital resources, but also because treatment and recovery at home is beneficial for patients. For this purpose, technological solutions in remote monitoring products and services should be enhanced and used.
5C	**Develop and strengthen population literacy, and health promotion and prevention strategies**
	The following should be considered:
	(a) Coordination between the NHS and the private and social sectors should be strengthened to promote the effectiveness and sustainability of access to health care in Portugal.
	(b) This dimension requires a robust and cross-cutting response, which will be possible only through integrated resource management and collaboration among the various sectors (public, private, social, and cooperative sectors) working in the health area.
	(c) The focus should be on a healthier and more resilient society through health promotion and disease prevention.
	(d) Less than 1% of the health budget is invested in preventing disease, thus indicating that the system is unable to respond to current epidemiological projections.
5D	**Advance local health care delivery through decentralizing, increased autonomy, and contracting**
	Attributions and competencies should be reorganized on the basis of proximity, autonomy, and accountability. Capacity to decide and act must be increased, and local governance agents should be involved.

Table 25: Service delivery (continued) – policy recommendations and their rationale

5E	**Fully implement electronic health records across the health system**
	A single system for collecting, storing, and managing users' health information (the EHR) should be created so that, with proper authorization, it can be accessed at any point in the health system, in a timely manner (any health unit, authorized health care professionals, any time).
	The proliferation of different information management systems for users' health, without ensuring their interoperability, generates substantial inefficiency, discomfort for users, waste, duplication of examinations and consultations, and sometimes a lack of knowledge regarding essential information for the best provision of care in urgent or emergency situations.
5F	**Strengthen primary health care delivery (with greater responsiveness and diversity of services)**
	Measures are necessary to 'reform the reform' of primary health care, increase the portfolio of services, and apply performance indicators focused primarily on access.

Table 26: Population health and social determinants – policy recommendations and their rationale

DOMAIN 6	POPULATION HEALTH AND SOCIAL DETERMINANTS
6A	**Invest in health promotion through initiatives (e.g., exercise and healthful diet) at the municipal level, following the transfer of responsibilities within the decentralization process**
	Measures are needed to invest in health promotion, e.g., through physical exercise and healthful eating programs, to control risk factors and delay or prevent the onset of diseases that lead to the consumption of health resources and create sustainability issues.
6B	**Invest in the development of community-based health outcome metrics (focusing on improving health and well-being) and create incentives to improve those metrics, e.g., through developing a community-based health value model**
	Measures are needed to decrease disease burden and invest in a system geared towards improving the health and well-being indicators of the population. The proposed model – the community-based health value model – ensures that public health and health promotion policies will become integrated into the health system, with indicators duly collected and measured and financially incentivized.
6C	**Ensure access to differentiated health technologies (e.g., hip replacements that avoid surgical revision procedures) to ensure higher quality of life for ageing people**
	Good life expectancy indicators should be accompanied by a higher quality of life in the population over 65 years of age. Differentiated medical devices play crucial roles in mobility and in treating the loss of disabling vital senses such as vision and hearing. Examples include orthopaedic prostheses, intraocular lenses, cochlear implants, pacemakers, and coronary stents. Making the state of the art of these and other technologies accessible to the Portuguese population is essential.

6D	**Develop cross-sectoral campaigns (involving health and education) to promote public literacy regarding modifiable risk factors**
	From a moderate and long-term perspective, public literacy in how to improve health and prevent disease is essential not only to improve quality of life but also to decrease the need to resort to health services, thus freeing up resources for situations that cannot be avoided or prevented, for instance those related to chronic diseases.
6E	**Develop tools to implement a population-based approach to primary health care provision, on the basis of risk stratification, thus enabling proactive interventions targeting various groups**
	The implementation of population risk stratification enables the identification of groups with similar needs. In this way, programmes targeted at each group can be defined, and proactive interventions can avoid, for example, unplanned admissions. Through identification of different needs, the allocation of resources can also be better adjusted accordingly.
6F	**Map the causes associated with poor quality of life of the population over 65 years of age, and identify specific actions to improve the quality of life of this population**
	Internationally, Portugal compares very well in life expectancy indicators but very poorly in quality-of-life indicators after the age of 65. The causes of this morbidity, namely avoidable morbidity, which represents an unbearable cost for the country and for families, must be analysed.
6G	**Increase salaries so that people have better living conditions and better health**
	Income level has been shown to affect the health of individuals, because it is one of the social determinants of health. The health status of individuals with higher income is better, and they live longer. The weak growth of Portuguese wages, without effective real increases in relation to inflation, clearly compromises a positive trajectory of gains in health.
6H	**Regulate commercial activities and practices that affect health, such as advertising and easy access to harmful products (tobacco, unhealthful foods, and/or alcohol)**
	Public health should focus on the commercial determinants of health by negotiating and regulating economic interests whose activity is harmful to the health of the population. The concept of commercial determinants of health refers to "strategies and approaches used by the private sector to promote products and choices that are harmful to health" and covers "factors such as individual behaviours and choices related to consumption and lifestyle, and related to global society, such as consumption risks, political economy and globalization." (https://www.paho.org/en/news/4-1-2022-window-knowledge-about-commercial-dimension-social-determinants-health-inaugurated).

Table 27: Environmental sustainability – policy recommendations and their rationale

DOMAIN 7	ENVIRONMENTAL SUSTAINABILITY

7A	**Continue to develop policy measures aimed at energy and water efficiency and decreasing waste production**
	Over the past few years, an Environmental Sustainability program has been developed at the MoH, which began with the Low Carbon Strategic Plan and the Energy Efficiency Program in Public Administration – Health Sector and has now continued with ECO@SAÚDE, which consists of adapting the framework of the ECO.AP 2030 (Program for Efficiency of Resources in Public Administration 2030) to the characteristics of the buildings of the MoH, particularly hospital organisations of the NHS.
	Its main objectives are to increase the efficiency associated with the consumption of energy resources (electricity and gas) and water, and the mitigation of waste production, and decreasing the emission of greenhouse gases. In this context, measures are currently being implemented to monitor such consumption, as well as behavioural measures, through guidelines for good practices or sustainability campaigns that have been developed.
	A pilot project is also underway for energy efficiency management contracts with energy service companies, as well as the channelling of community funds to support hospitals to develop energy efficiency actions.
	To improve environmental sustainability continuation of these measures is recommended, as well as:
	(a) Increasing the incorporation of renewable energy sources, in terms of self-consumption, in MoH buildings
	(b) Developing awareness and actions at the highest level of management in each organization
	(c) Promoting a concerted strategy at the levels of the MoH, Energy Agency, and General Directorate for Energy and Geology, to increase the ability to capture European cohesion funds
	(d) Incorporating environmental sustainability (goals) in in hospitals and other contracting providers.
7B	**Develop a medical device reprocessing initiative**
	Waste reduction is a key objective.
7C	**Focus on commercial determinants of health (i.e., private sector activities that positively and negatively affect health), with special attention to those relevant to environmental sustainability**
	Public health should be focused on the commercial determinants of health, and negotiating and regulating economic interests whose activity is harmful to the health of the population. The clearest example is advertising and easy access to processed foods of animal origin with a large ecological footprint.

7D	**Incorporate incentives and obligations related to environmental sustainability within public contracting mechanisms**
	Measures are needed to extend the scope of government contracting mechanisms aimed at the energy and digital transition objectives; adopt sustained and sustainable practices; opt for alternatives that enable the reduction of emissions; and promote the reuse of materials and equipment.
7E	**Map the current status regarding environmental sustainability (related to Ministry of Health activities and competencies) and within the next 5 years, progress in the commitment to improve the value of each indicator in key domains of environmental sustainability by 75%**
	Environmental sustainability has been outside the scope of health policy. By nature, health care provision is a highly polluting activity because many consumables are single use, and petroleum derivatives are abundant in materials (gloves, masks, uniforms, personal protective equipment, needles, catheters, diapers, etc.). Hospitals, many of which are old, are not energy efficient. Much of the waste produced at hospitals requires different forms of treatment, owing to its organic nature and infectious potential for the community. Action is needed in a variety of areas to contribute to the environmental sustainability of the planet.
7F	**Reduce hospital medical equipment obsolescence**
	A consensus exists indicating that hospitals' medical equipment is considerably deteriorated, with very high obsolescence, and therefore falls far short of European recommendations (the golden rules). https://www.cocir.org/media-centre/publications/article/cocir- medical-imaging-equipment-age-profile-density-2021-edition.html.
	Existing equipment entail greater exposure of health professionals and patients to radiation levels than the latest generation of equipment, which is also more ecologically and environmentally friendly regarding lower electricity and water consumption, and production of less polluting waste. This recommendation must be accompanied by mapping of the installed equipment, more specifically 'heavy equipment' (and its implementation requires the use of not only State budget funds but also European funds, such as Horizonte 2030 and PRR).

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Key results of the Web–Delphi process

Table 28: Characteristics of participants who completed the second round of the Web–Delphi process (N=37)

Participant characteristics	Group	Number of stakeholders	Percentage of stakeholders
Age	[30–39]	4	11%
	[40–49]	6	16%
	[50–59]	13	35%
	[60–69]	12	33%
	+70	2	5%
Gender	Male	25	68%
	Female	12	32%
Sector of activity	Public sector	20	54%
	Private sector	9	24%
	Social sector	4	11%

Table 29: Web-Delphi (second round) results for the recommendations in the Governance domain (N=37)

GOVERNANCE DOMAIN Recommendations		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
1A	Ensure managerial autonomy of health administrations	0.0%	0.0%	2.7%	21.6%	75.7%	0.0%
1B	Enable a structure leading to integration of the care provided at various levels and by different sectors (public, private and social)	2.7%	2.7%	5.4%	13.5%	73.0%	2.7%
1C	Optimize communication between primary and secondary care settings by improving referral protocols and mechanisms	0.0%	2.7%	2.7%	13.5%	81.1%	0.0%
1D	Ensure proper execution of strategic planning instruments in all NHS institutions and in the Ministry of Health	0.0%	0.0%	2.7%	13.5%	83.8%	0.0%
1E	Improve intersectoral coordination, to ensure its comprehensiveness and effectiveness, and provide continuity of care	0.0%	0.0%	2.7%	18.9%	78.4%	0.0%
1F	Implement a merit-based appointment system for people performing management tasks, supported by technical competence assessment and subjected to regular auditing	0.0%	0.0%	0.0%	5.4%	94.6%	0.0%
1G	Promote partnerships and collaborations in health care provision involving public, private, and social sectors of the Portuguese health system	2.7%	0.0%	8.1%	8.1%	78.4%	2.7%
1H	Separate the State's roles in finance, provision, regulation, and supervision, thus simplifying and empowering its administrative organization	5.4%	0.0%	2.7%	29.7%	62.2%	0.0%

Tables 29 to 35 could be combined under single title:

Table 29: Web-Delphi (second round) results for the recommendations (N=37)

Table 30: Web-Delphi (second round) results for the recommendations in the Financing domain (N=37)

FINANCING DOMAIN Recommendations	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
2A End the backlog of payments to NHS suppliers	0.0%	0.0%	2.7%	18.9%	75.7%	2.7%
2B Adopt multi-annual budgets in the NHS	2.7%	0.0%	2.7%	18.9%	73.0%	2.7%
2C Implement a cost-based accounting model	0.0%	0.0%	18.9%	18.9%	62.2%	0.0%
2D Review the contracting and financing system for health care providers in the public, private, and social sectors	0.0%	0.0%	10.8%	40.5%	45.9%	2.7%

Table 31: Web-Delphi (second round) results for the recommendations in the Workforce domain (N=37)

WORKFORCE DOMAIN Recommendations	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
3A Decentralize human resource management within an updated standardized career model	2.7%	0.0%	8.1%	48.6%	35.1%	5.4%
3B Increase recognition and integration of wider staff groups beyond physicians and nurses into health professional teams, e.g., pharmacists, health and diagnostic technicians, and clinical secretaries	2.7%	0.0%	8.1%	32.4%	51.4%	5.4%
3C Improve the working conditions of health professionals through multiple actions (i.e., changing working hours, increasing flexibility, paying by performance, providing time for research, and improving workplace conditions)	0.0%	0.0%	5.4%	10.8%	78.4%	5.4%
3D Improve human resources planning in the health sector	0.0%	0.0%	2.7%	10.8%	81.1%	5.4%
3E Value human capital through integrated development strategies, thus contributing to talent retention	0.0%	0.0%	2.7%	5.4%	83.8%	8.1%

Table 32: Web-Delphi (second round) results for the recommendations in the Medicines and Technology domain (N=37)

MEDICINES AND TECHNOLOGY DOMAIN Recommendations		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
4A	Ensure that patients have access to hospital medicines through home delivery or access at the nearest pharmacy	0.0%	0.0%	0.0%	16.2%	83.8%	0.0%
4B	Ensure that adoption of health technologies is based on evidence-based medicine	0.0%	0.0%	5.4%	13.5%	81.1%	0.0%
4C	Promote equitable access to innovative medicines for patients	0.0%	0.0%	16.2%	18.9%	59.5%	5.4%
4D	Promote Portugal as a major centre of excellence for biomedical innovation and clinical research	0.0%	0.0%	5.4%	8.1%	86.5%	0.0%
4E	Strengthen health technology assessment	0.0%	0.0%	5.4%	29.7%	64.9%	0.0%
4F	Review the medicine co-payment system currently in place	0.0%	0.0%	8.1%	48.6%	37.8%	5.4%

Table 33: Web-Delphi (second round) results for the recommendations in the Service Delivery domain (N=37)

HEALTH SERVICES PROVISION DOMAIN Recommendations		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
5A	Focus on disease prevention by investing in population-based screening and early diagnosis	2.7%	0.0%	2.7%	13.5%	81.1%	0.0%
5B	Invest in domiciliary care and associated digital health	0.0%	2.7%	0.0%	16.2%	81.1%	0.0%
5C	Develop and strengthen population literacy, and health promotion and prevention strategies	0.0%	0.0%	2.7%	18.9%	78.4%	0.0%
5D	Advance local health care delivery through decentralizing, increased autonomy, and contracting	0.0%	2.7%	2.7%	24.3%	70.3%	0.0%
5E	Fully implement electronic health records across the health system	0.0%	0.0%	2.7%	5.4%	91.9%	0.0%
5F	Strengthen primary health care delivery (with greater responsiveness and diversity of services)	0.0%	0.0%	5.4%	21.6%	73.0%	0.0%

Table 34: Web-Delphi (second round) results for the recommendations in the Population Health and Social Determinants domain (N=37)

POPULATION HEALTH AND SOCIAL DETERMINANTS DOMAIN Recommendations	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
6A	Invest in health promotion through initiatives (e.g., exercise and healthful diet) at the municipal level, following the transfer of responsibilities within the decentralization process	0.0%	2.7%	2.7%	16.2%	78.4%	0.0%
6B	Invest in the development of community-based health outcome metrics (focusing on improving health and well-being) and create incentives to improve those metrics, e.g., through developing a community-based health value model	0.0%	0.0%	5.4%	35.1%	59.5%	0.0%
6C	Ensure access to differentiated health technologies (e.g., hip replacements that avoid surgical revision procedures) to ensure higher quality of life for ageing people	0.0%	0.0%	10.8%	27.0%	59.5%	2.7%
6D	Develop cross-sectoral campaigns (involving health and education) to promote public literacy regarding modifiable risk factors	2.7%	0.0%	2.7%	16.2%	78.4%	0.0%
6E	Develop tools to implement a population-based approach to primary health care provision, on the basis of risk stratification, thus enabling proactive interventions targeting various groups	0.0%	0.0%	5.4%	10.8%	83.8%	0.0%
6F	Map the causes associated with poor quality of life of the population over 65 years of age, and identify specific actions to improve the quality of life of this population	0.0%	0.0%	0.0%	18.9%	81.1%	0.0%
6G	Increase salaries so that people have better living conditions and better health	0.0%	2.7%	10.8%	16.2%	7.6%	2.7%
6H	Regulate commercial activities and practices that affect health, such as advertising and easy access to harmful products (tobacco, unhealthful foods, and/or alcohol)	0.0%	2.7%	8.1%	21.6%	67.6%	0.0%

Table 35: Web-Delphi (second round) results for the recommendations in the Environmental Sustainability domain (N=37)

ENVIRONMENTAL SUSTAINABILITY DOMAIN Recommendations		Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Don't know/ don't want to answer
7A	Continue to develop policy measures aimed at energy and water efficiency and decreasing waste production	0.0%	0.0%	2.7%	16.2%	81.1%	0.0%
7B	Develop a medical device reprocessing initiative	0.0%	0.0%	8.1%	37.8%	51.4%	2.7%
7C	Focus on commercial determinants of health (i.e., private sector activities that positively and negatively affect health), with special attention to those relevant to environmental sustainability	0.0%	0.0%	16.2%	40.5%	37.8%	5.4%
7D	Incorporate incentives and obligations related to environmental sustainability within public contracting mechanisms	0.0%	2.7%	0.0%	29.7%	67.6%	0.0%
7E	Map the current status regarding environmental sustainability (related to Ministry of Health activities and competencies) and within the next 5 years, progress in the commitment to improve the value of each indicator in key domains of environmental sustainability by 75%	0.0%	2.7%	10.8%	32.4%	51.4%	2.7%
7F	Reduce hospital medical equipment obsolescence	0.0%	0.0%	5.4%	13.5%	81.1%	0.0%

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