



GUIDEBOOK
on successful health
management
practices in South-
Eastern Europe

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List of acronyms

ADE	Adverse Drug Event
CT	Computed Tomography (scan)
EHMA	European Health Management Association
EHR	Electronic Health Records
EOPYY	Greek National Organisation for Health Care Services Provision
EU	European Union
FBiH	Federation of Bosnia Herzegovina
FHIR	Fast Healthcare Interoperability Resources
GDPR	General Data Protection Regulation
HIE	Health Information Exchange
HIPPA	Health Insurance Portability and Accountability Act
HL7	Health Level Seven
HMO	Health Maintenance Organisation
MoH	Ministry of Health
MRI	Magnetic Resonance Imaging
PHR	Personal Health Record
RBAC	Role-based Access Controls
RRF	Recovery and Resilience Facility
SEE	South-Eastern Europe
SEEHN	South-Eastern Europe Health Network
SHCE	Standardised Healthcare Education
SIG	Special Interest Group
UNICEF	United Nations Children's Fund



Executive summary

This Guidebook serves as a comprehensive resource documenting actionable health management strategies implemented across South-Eastern Europe. Amidst the evolving challenges and transformations of regional healthcare systems – fuelled by the COVID-19 pandemic – this Guidebook highlights practical solutions that address critical domains such as workforce management, financing, and digitalisation.

Key themes and objectives

- **Workforce Management:** Initiatives like the Federation of Bosnia and Herzegovina's Health Managers' Certificate Programme demonstrate efforts to professionalise healthcare leadership through structured certification. By equipping medical professionals with essential management skills, the programme improves operational and strategic capacities, overcoming barriers such as workforce shortages and limited interdisciplinary inclusivity.
- **Healthcare Financing:** Greece's 'Spyros Doxiadis' National Public Health Prevention Programme exemplifies the leveraging of EU Recovery and Resilience Facility (RRF) funds to advance preventive health measures. Targeted initiatives, including breast cancer screening and obesity prevention, illustrate sustainable methods to address public health disparities while strengthening infrastructure.
- **Digitalisation and Data:** Israel's OFEK health information exchange is a landmark example of integrating electronic health records across a national healthcare system. The platform enhances clinical decision-making, reduces redundant diagnostics, and improves public health surveillance through interoperable, secure, and federated data systems.

Regional insights: The Guidebook not only underscores the successes but also analyses challenges like administrative hurdles, scalability constraints, and cultural resistance to reform.

Scalability and replicability: While initiatives outlined are regionally specific, the Guidebook evaluates their potential adaptation for other contexts. Essential considerations include legal frameworks, financing mechanisms, and workforce capacity.

The Guidebook is a dynamic, evolving document that aligns South-Eastern European health systems with EU objectives, fostering cross-border collaboration and disseminating best practices. By focusing on actionable solutions and structured evaluations, it serves as a vital tool for policymakers, healthcare administrators, and stakeholders across the region.




The evolution of the health management landscape in South-Eastern Europe

Over the past few years, the healthcare landscape in South-Eastern Europe has undergone a significant transformation. The effects of the COVID-19 pandemic required a recalibration of national healthcare systems, that had to rapidly adapt, re-evaluating their structures, practices, and resilience mechanisms.

During this period, **health governance structures** have shifted towards more flexible frameworks by decentralising or delegating decision-making authority to regional health authorities, thus enhancing local responsiveness to public health needs. Considering the extensive workforce fatigue observed during the pandemic, the management of the **healthcare workforce** has emerged as a critical priority. In response, numerous countries have channelled resources towards initiatives aimed at optimising the geographical distribution of personnel, enhancing capacity forecasting, and providing targeted upskilling and reskilling programmes. Furthermore, comprehensive wellbeing strategies have been implemented to mitigate the physical and psychological strain exposed during the prolonged states of crisis. In many cases, these measures were accompanied by extended compensation packages for healthcare professionals, reflecting an increased recognition of their essential contributions and the need to retain a resilient workforce under adverse conditions.

From a **financial** standpoint, recent years have witnessed a reallocation of governmental expenditure towards fortifying healthcare infrastructure, expanding resources availability, and ensuring a steady supply of essential consumables, driven by the need to enhance system resilience. This funding reorientation has been further complemented by an influx of private sector contributions, bridging emergent gaps in healthcare provision. More importantly, the substantial financial impetus provided by European funds, most notably the Recovery and Resilience Facility (RRF), has been instrumental in enabling long-overdue reforms across primary and secondary healthcare. This external funding has allowed countries to undertake structural and functional upgrades and modernisation projects that had been deferred for decades due to budgetary constraints.

The accelerated adoption of **digital solutions** has spurred the widespread deployment of health information systems, frequently incorporating integrated electronic health records and data-sharing platforms capable of semantic-level interoperability, across both national and regional networks. This has resulted in a robust repository of health data that in many cases was harnessed to support clinical decision-making and epidemiological surveillance, enabling timely responses to emerging public health threats.



In the realm of **cross-border collaboration**, the implementation of common policy frameworks, the adoption of standardised protocols and the mandated exchange of health outcomes information, through the joint participation in European surveillance and monitoring schemes, has further strengthened intergovernmental cooperation, enabled comparative analysis and significantly aligned health management practices across neighbouring countries.

The Special Interest Group on South-Eastern Europe (SIG SEE)

In 2022, the European Health Management Association (EHMA) launched the Special Interest Group on South-Eastern Europe (SIG SEE) to address the pressing challenges faced by healthcare systems in this part of Europe. The initiative was established to harness expert insights and facilitate knowledge exchange, with the overarching aim of fortifying the resilience and efficiency of these healthcare systems. From its inception, the SIG SEE was driven by the following objectives:

- **Identifying core challenges:** The SIG SEE sought to highlight the systemic challenges encountered by health systems in South-Eastern Europe.
- **Leveraging regional expertise:** By drawing on the insights and experiences of prominent health management experts from the region, the initiative aspired to generate dynamic dialogues. These exchanges served as a foundation for brainstorming pragmatic and evidence-based strategies to enhance health management capacity and capability.
- **Supporting regional and cross-border collaboration:** The initiative also wanted to support the efforts of the South-Eastern Europe Health Network (SEEHN) by fostering collaboration among SEE countries. Founded on the recognition that many of the challenges share commonalities and, as such, solutions can be effectively shared, refined, and implemented across the region, this approach was designed to facilitate mutual learning and joint problem-solving that would ultimately lead to improved health outcomes.
- **Mobilising stakeholders for reform:** The SIG SEE worked to engage relevant stakeholders at the local, national, and regional levels. By rallying their support and commitment around identified priority reforms, the initiative sought to create momentum for transformative health system changes.
- **Raising awareness at the EU level:** The initiative also aspired to elevate the profile of South-Eastern European healthcare systems within the broader EU context. By highlighting both the unique strengths and specific challenges of these systems, it aimed to build a shared understanding and commitment to addressing these issues, while also aligning with broader EU health policy goals.

Exploring applied health management solutions

In light of the sweeping advancements witnessed across the healthcare systems of South-Eastern Europe, in 2024 the SIG SEE decided to reassess its composition and methodology. The evolving landscape of health management within the South-Eastern European region required an expansion of the SIG geographical reach. As illustrated in Figure 1, the 2024 SIG SEE encompasses a cohort of 10 countries:


1. Albania
2. Bosnia and Herzegovina
3. Bulgaria
4. Croatia
5. Greece
6. Israel
7. Kosovo
8. Moldova
9. Romania
10. Serbia



Figure 1 - Geographical representation of SIG SEE 2024 participating countries

The inclusion of varying healthcare systems was not merely intended to increase representation but allowed the group to investigate and address the complexities inherent in various levels of system maturity, resource allocation, health governance frameworks, and digital health integration. Equally, the SIG SEE enlarged its participants and by extension, the range of competencies they contribute, drawing from a diverse array of academics, clinical experts, and health policy leaders, the majority of whom have previously held high-level positions within governmental health bodies, ministries, and international public health organisations. This broadening of the stakeholder base reflects the intent to ground discussions in both scientific rigour and practical realities, ensuring that findings and recommendations are underpinned by a synthesis of scholarly insight, regulatory expertise, and operational experience.

From a methodological standpoint, in 2024 the SIG SEE decided to centre its efforts on the development of a Guidebook of verifiable, ground-level interventions, adopting a practice-oriented approach, documenting initiatives that have been fully implemented or are in advanced stages of deployment. Whether these solutions are from national ministries, regional health authorities, or local hospitals and clinics, they are curated to offer a dynamic repository of actionable strategies, readily adaptable by health managers or policy makers confronting similar challenges.



A template-based methodology was introduced to structure the evaluation of these initiatives. Each intervention was analysed using the following format:

- **Initiative overview:** An introductory summary offering a contextual backdrop to the initiative, delineating its overarching objectives, as well as its scope. This section is intended to set the stage by providing readers with an understanding of the strategic intent behind the intervention.
- **Implementation process:** A detailed exposition of the sequential steps and strategies employed throughout the implementation of the initiative. This narrative also identifies the primary stakeholders involved, outlining their roles, contributions, and the inter-organisational synergies that facilitated the initiative's advancement.
- **Challenges faced:** An account of the obstacles encountered during the execution phase, accompanied by an exploration of the methodologies and adaptive strategies deployed to overcome them. This section not only captures the complexity of real-world implementation but also serves as a repository of lessons learnt.
- **Outcomes and impact:** An appraisal of the initiative's outcomes, articulated through quantitative and qualitative indicators. This includes the initiative's measurable impact on patient care, operational efficiency, resource utilisation, and its overall contribution to health system resilience and effectiveness.
- **Scalability and replicability:** A critical reflection on the potential for scaling up or adapting the initiative to other regions or healthcare contexts. This analysis highlights the factors that are foundational for successful replication, thereby transforming localised success into a potential blueprint for broader systemic reform.

The Guidebook thematic focus and purpose

The Guidebook centres its case studies around three of the five macro-domains identified in the first publication released by the SIG SEE in 2022: Health workforce management, Financing, and Digitalisation and data.

The decision to concentrate the Guidebook on only three macro-domains reflects a conscious prioritisation on areas that surfaced from the healthcare crisis precipitated by the pandemic as both profoundly impactful and acutely susceptible to structural challenges within South-Eastern Europe. The pandemic cast a stark light on deep-seated workforce shortages, financial precarity, and digital disjunctions, underscoring that these areas demand targeted reforms to fortify healthcare systems against future crises. By examining policies and interventions under these focal points, the current version of the Guidebook aims to align regional health advancement with EU objectives to cultivate resilience and sustain systemic cohesion across borders, while preserving analytical continuity.



The Guidebook anchors its content in practical case studies that illustrate *what worked, how it was achieved, and why*. By framing each intervention within these thematic domains and using the newly established evaluation template, the SIG SEE aims to distil and disseminate best practices that are directly applicable to the realities of health systems across the region.

As a dynamic document, this Guidebook is intended to expand iteratively, guided by ongoing dialogues among specialists within the group. This progression will, in due course, allow for a broader inclusion of policies, interventions, and initiatives from across the region, while also facilitating exploration of the remaining macro-domains of governance and cross-border collaboration. In this manner, the Guidebook will develop to become an increasingly comprehensive go-to resource for addressing the multifaceted needs of healthcare systems in South-Eastern Europe.

Health workforce management

Federation of Bosnia and Herzegovina – Health Managers' Certificate

Initiative overview

The Health Managers' Certificate, introduced by the Federal Ministry of Health of Bosnia and Herzegovina in 2010 and fully implemented by 2012, represents a **central effort to elevate health management to a professional and standardised practice across the Federation of Bosnia and Herzegovina.**


Prior to the introduction of this initiative, **health management was approached through a predominantly medical standpoint.** Leadership positions within healthcare institutions were exclusively held by medical professionals, many of whom had little to no formal training in management.

Despite ongoing reforms, the legal framework in the Federation of Bosnia and Herzegovina still dictates that only those having obtained a medical degree can hold health management positions, even in administrative roles. It was against this backdrop that the Health Managers' Certificate was introduced, designed to fill the gap by providing medical professionals with the managerial skills needed to lead effectively.

The Health Managers' Certificate essentially represents an educational training programme structured across three progressive levels, each designed to develop key competencies in healthcare management. The first tier provides foundational knowledge, covering healthcare systems, basic management, and ethics, ensuring that future managers have a solid grasp of essential leadership principles. The second and third tiers build upon this foundation, introducing more advanced subjects such as healthcare economics, legal frameworks, and strategic management, preparing individuals for the complex responsibilities of senior administrative and executive roles.

According to Article 66 of the Law on Health Care of the Federation of Bosnia and Herzegovina (Official Gazette of the Federation of Bosnia and Herzegovina, No. 46/2010), the position of director of a health institution requires candidates to meet the following qualifications:

- i. A degree in medicine, dentistry, or pharmacy.
- ii. A minimum of five years of professional experience in their respective field.
- iii. Evidence of knowledge in health management, demonstrated through one of the following:
 - A certificate of completed education in health management.
 - A specialisation in health management.
 - A postgraduate degree in health management.




To this day, it remains a legal requirement for medical professionals aspiring to any administrative role within both public and private sectors, from internal ward managers to regional administrators, to have completed at least one of the three levels of certification. The overarching aim of this initiative orients around **ensuring that healthcare leaders, while practicing their clinical expertise, are also proficient in addressing the operational, financial, and strategic challenges** inherent in modern healthcare.

Implementation process

The implementation of the Health Managers' Certificate mandate was a centrally coordinated process engaging multiple key stakeholders and navigating a series of regulatory steps to ensure its integration into the healthcare system of the Federation of Bosnia and Herzegovina. The process was governed by a regulatory framework established by the Federal Ministry of Health, which collaborated with various educational and public health institutions to deliver a structured education programme. Notably, **the reform exemplifies successful cooperation between public agencies and regional authorities**, demonstrating the potential for intergovernmental collaboration in achieving meaningful healthcare reforms.

The principal stakeholders in the implementation process included:

- The **Federal Ministry of Health** held the central role in orchestrating the entire framework. The Ministry was responsible for not only drafting and passing the legislation but also for forming the Coordinating Body for Health Management Education, as outlined in Article 6 of the Rulebook on Continuous Professional Education in Health Management ("Official Gazette of the Federation of Bosnia and Herzegovina", number 6/20). This body is tasked with overseeing the implementation of health management education and advancing educational partnerships within the discipline. The Ministry further guaranteed that the certificate became a legal obligation, enforceable under national law for all health managers.
- **Educational institutions**, specifically the Medical and Economics faculties at universities in Sarajevo, Mostar, and Tuzla, were entrusted with delivering the programme. These institutions, as stipulated in Article 16 of the Ordinance on Continuous Professional Education in Health Management, had to fulfil specific criteria in terms of academic standing, faculty expertise, and infrastructure to conduct the courses. Notably, the faculties were required to provide both theoretical and practical training, thus ensuring that the managerial competencies developed aligned with the operational realities of the Federation of Bosnia and Herzegovina's healthcare system. Furthermore, educational institutions were obligated to continually revise and update their curricula to reflect the evolving needs of the sector.



The Health Managers' Certificate was implemented through the following steps:

1. Legislation and regulation

The first step was the formal introduction of the certificate into the legislative framework through the Rulebook Ordinance on Continuous Professional Education in Health Management (*Pravilnik o kontinuiranoj profesionalnoj edukaciji iz zdravstvenog menadžmenta*), published in the Official Gazette of the FBiH in 2020.

2. Establishment of the Coordinating Body

A Coordinating Body for Health Management Education was established within the Federal Ministry of Health. This body played a central role in approving the content of educational programmes, verifying the suitability of institutions to deliver training, and ensuring that the programmes adhered to national healthcare objectives.

3. Curriculum development and certification levels

The Health Managers' Certificate is structured across three levels, or sub-certifications, each tailored to equip medical professionals with the requisite competencies for ascending degrees of responsibility for distinct health management roles. Each level aligns with progressively advanced operational functions within the healthcare system. Advancement from one level to the next is mandatory and contingent upon the successful completion of the preceding level, ensuring a coherent and cumulative development of competencies.

i. SHCE 1 – Foundational management knowledge

The first level is designed for professionals stepping into foundational management positions, such as department coordinators or ward managers, focusing on introductory leadership skills. This module provides 75 hours of training, covering fundamental topics such as healthcare systems, ethics, and basic management principles.


ii. SHCE 2 – Intermediate management competencies

The second level, consisting of 75 hours of teaching, prepares individuals for intermediate roles like senior administrative officers or regional managers, where a deeper understanding of healthcare economics and legal frameworks is crucial.

iii. SHCE 3 – Advanced strategic and financial leadership

The third level, requiring 80 hours of training, is intended for those professionals taking on executive responsibilities, such as hospital directors or policy advisors, requiring mastery in strategic planning and high-level decision-making.

4. Selection and admission



Candidates are admitted into the programme through a public announcement and application process. Healthcare professionals seeking certification were required to demonstrate their eligibility based on their current professional roles and prior subject-relevant experience. A selection committee is established to vet applicants and ensure they met the prerequisites for enrolment in each level of the certification.

5. Delivery and assessment

The courses are delivered by authorised educational institutions, tasked with providing both classroom-based teaching and practical training, also including opportunities for distance learning. The Coordinating Body maintained oversight of the entire evaluation process to ensure compliance with the requisite standards.

6. Ongoing monitoring and adjustments

Institutions delivering the courses are required to submit regular reports on the outcomes of their programmes and to propose any necessary adjustments based on feedback from participants and their employers.

Challenges faced


The introduction and ongoing operation of the Health Managers' Certification in the Federation of Bosnia and Herzegovina have revealed key areas for improvement. While the programme offers a structured pathway for health management education, certain predominantly inclusivity-related obstacles persist.

- **Exclusivity to medical professionals**

In contrast to global trends, where health management roles are increasingly occupied by professionals from diverse backgrounds – such as public health or healthcare economics, thus enabling medical professionals to concentrate on clinical tasks – the Health Managers' Certification in Bosnia and Herzegovina remains up to today exclusive to those with medical, dental, or pharmaceutical qualifications. This eligibility criteria by Law on Health care of FBiH excludes professionals from other relevant fields, thereby limiting who can occupy leadership roles within the healthcare system.

Modern health management requires a range of interdisciplinary skills, particularly in the areas of operational strategy, financial management and epidemiological analysis. This framework, with its primary focus on clinical qualifications, may inadvertently limit the ability of healthcare institutions to benefit from a broader range of perspectives and technical skillsets, which are crucial for effectively addressing the complexities of contemporary healthcare systems.

- **Administrative burden and associated costs**



In addition to the challenges posed by the programme's exclusivity, the certification process requires substantial bureaucratic coordination involving submission of extensive documentation, compliance checks, and regular reporting, which increases the workload for regulatory bodies responsible for overseeing the process. The multi-tiered structure of the certification requires continuous oversight by educational institutions and government agencies.

Professor A. Pilav, Head of the Department of Social Medicine and Health Organisation with Health Economics at the Institute for Public Health of Sarajevo Canton, noted that participants perceive the financial costs associated with the certification as a potential barrier. These costs may further exacerbate disparities in access to health management positions, particularly in less affluent areas

Outcomes and impact

The absence of established impact assessment mechanisms has, to date, precluded the collection of qualitative data needed for an objective appraisal of the Health Managers' Certificate initiative's effects. This lack of systematic monitoring framework has left its effectiveness largely documented through experiential accounts from healthcare professionals directly involved, rather than official evidence. Nevertheless, observations suggest that certified managers have brought a welcome sense of structure to resource allocation and departmental coordination.


Scalability and replicability

The Health Managers' Certificate programme in the FBiH presents a compelling framework for potential expansion and adaptation in other healthcare systems of South-Eastern Europe, predominantly for those aspiring to professionalise managerial standards within health services. Its tiered module structure, which integrates clinical and business training, demonstrates considerable universality, rendering it suitable for diverse health contexts.

For the programme to be replicated effectively beyond the FBiH, several foundational factors demand careful examination.

- **Regulatory frameworks and inclusivity**

A fundamental consideration lies in the legislative environment and the programme's current eligibility requirements, which mandate a medical background for all health management functions. Different jurisdictions operate under unique legislative and regulatory frameworks, which often permit non-clinical professionals to assume health management roles. Replicating the Health Managers' Certificate across other countries would involve expanding eligibility to incorporate professionals from



diverse disciplines, such as public health, business, and policy. Embracing this inclusivity would not only augment both the scalability and adaptability potential of the programme, but also align it with global practices that recognise the value of multidisciplinary expertise in health management.

- **Alignment with healthcare structure**

Effective replication of the Health Managers Certificate programme hinges upon its integration with the existing governance structure of the target healthcare system. In settings where healthcare administration is highly centralised, challenges may arise due to the absence of regional administrative bodies authorised to oversee health management autonomously. Within such frameworks, health managers traditionally operate under central directives, with all decisions regarding health care function retained at a central level. Ultimately, successful alignment with the health care system's organisational structure appears to be essential for fostering effectiveness among health managers.


- **Stakeholders' collaboration**

The development and delivery of any equivalent Health Managers' Certification programme would require coordinated input from diverse stakeholders. Central to the FBIH initiative has been the shared responsibility among healthcare institutions, universities specialising in both medical and business disciplines, and governmental bodies. This cooperation transcended mere curriculum delivery; it ensured a foundational consensus on the competencies essential to health management and their corresponding operational roles within healthcare institutions.

Governmental agencies, tasked with oversight and regulation, must coordinate with academic institutions to identify competencies that embody both the medical and administrative expertise essential to local health conditions and contemporary systemic objectives. For instance, within Western European healthcare systems, where the emphasis is increasingly on addressing the complexities of ageing populations and the management of chronic conditions, health management education often prioritises competencies in integrated care, patient-centred methodologies, and inter-sectoral collaboration.

In contrast, healthcare systems in parts of Central and Eastern Europe, which may contend with resource constraints and evolving public health infrastructures, typically incorporate a stronger focus on public health emergency preparedness, efficient resource allocation, and strategic service coordination across urban and rural areas.

Likewise, universities should actively contribute not only specialised knowledge but also the pedagogical foundation needed to translate complex competencies into teachable modules, while healthcare



institutions must serve as practical arbiters of relevance, offering insights into the functional demands placed upon managers at various operational levels.

- **Adaptive learning structures**

A fundamental factor in replicating this programme concerns addressing the significant time constraints encountered by active medical professionals, who naturally constitute the predominant demographic for health management training. In numerous healthcare systems, clinicians and nurses operate within rigorous schedules, leaving scarce opportunity for engagement in protracted educational commitments. Thus, to achieve broad relevance and uptake, the programme must be structured with inherent flexibility, tailored to the needs of practising professionals. Modular design, asynchronous study options, and succinct training sessions would enable accessibility while preserving the integrity and practical value of the competencies imparted.

Financing

Greece – ‘Spyros Doxiadis’ National Public Health Prevention Programme

Initiative overview

The ‘Spyros Doxiadis’ National Public Health Prevention Programme, a nationwide initiative designed and coordinated by the Ministry of Health (MoH), emerged against the backdrop of pressing challenges faced by the Greek healthcare system. Despite notable improvements in life expectancy and a reduction in premature mortality over the past two decades, health outcomes in Greece have gradually fallen behind other European countries. The system has been marked by **chronic underfunding, a high dependency on private expenditure, and disparities in access**, particularly for rural and underserved populations.

The COVID-19 pandemic further highlighted structural weaknesses, including **under-resourced health infrastructure, insufficient staffing, and a lag in digital health integration**. With public healthcare expenditure at one of the lowest levels in the EU, Greece faces ongoing struggles in maintaining equitable access to quality care. Key systemic issues include a **low ratio of general practitioners, inadequate hospital bed capacity, and significant health inequalities** driven by geographical and socioeconomic factors.

The ‘Spyros Doxiadis’ Programme exemplifies how a national health administration can **successfully leverage external funding, specifically from the Recovery and Resilience Facility (RRF), to address longstanding structural deficiencies and enact transformative healthcare reforms without depleting domestic public resources**. This initiative demonstrates the potential of European financial mechanisms to facilitate critical reforms in domestic healthcare infrastructure, enabling systemic improvements that might otherwise remain unattainable due to fiscal constraints. By utilising predominantly external capital, the Greek government aims to address both primary and secondary prevention, targeting the curb of non-communicable diseases prevalence and ultimately diminishing reliance on cost-intensive interventions. Further, the integration of digital health solutions by the Greek MoH illustrates how such funding can catalyse modernisation in healthcare systems, promote early disease detection and management, thus alleviating pressures on secondary care and supporting long-term resilience. To date, six programmes have advanced to the nationwide implementation phase, while a broader array of programmes, including public health campaigns addressing alcohol consumption, medical screening initiatives targeting rural communities and others, remains in earlier stages of development.

- **Primary prevention** concentrates on promoting healthier lifestyles and improving public health literacy. The programmes within this category include:
 - **National programme for exercise and healthy nutrition – childhood obesity prevention**
RRF contribution: €36,071,326.00
 - **National health promotion programme for mothers, children and families**
RRF contribution: €21,791,250.00
 - **Health Counsellor Service and Healthflix platform**
RRF contribution: €6,767,300.00
- **Secondary prevention** is dedicated to the early identification and management of chronic conditions, aiming to reduce long-term morbidity and mortality. The included programmes are:
 - **National breast cancer prevention programme ‘Fofi Gennimata’**
RRF contribution: €50,476,400.00
 - **National programme for the prevention of cervical and colorectal cancer**
RRF contribution: €145,750,000.00
 - **National programme for the prevention and treatment of cardiovascular risks**
RRF contribution: €101,303,833.00

Implementation process

The implementation process across all initiatives adheres to a structured sequence, ensuring both coherence and accountability. The key stages are outlined as follows:

1. Country fiche

This high-level document encapsulates the initiative, situating it within the broader pillars of action such as economic institutional transformation, employment and social cohesion, or digitalisation. It articulates the rationale behind the initiative, delineates the challenges it aims to address, and projects the anticipated impact. Additionally, it identifies the potential stakeholders involved in future implementation scenarios. This document, akin to a proposal submitted to the European Commission, is typically drafted by the responsible ministry, often through its general secretariat.

2. European Commission approval

The initiative must secure formal endorsement from the European Commission, signifying alignment with EU strategic objectives and eligibility for funding.

3. Project technical sheet

This domestic equivalent of the country fiche translates the initiative from a conceptual framework into actionable processes. It allocates responsibilities to specific actors, establishes timelines, deliverables and delineates legal and financial parameters for each activity. The document should specify the Implementing Authority, the Funding Authority – serving as an intermediary between the European Commission and the executing entities – and the Supervisory Authority overseeing the project.

4. Approval by Local Administrative Authority

Each action pillar and corresponding ministry requires validation from a designated administrative authority, ensuring alignment with national and regional priorities.

5. Inclusion decision

This formal resolution authorises the project's integration into the funding mechanism, formalising its scope, financial parameters, and conditions for execution. The inclusion decision marks the critical transition from the planning phase to deployment, adhering to the formerly stipulated guidelines and conditions.

6. Subcontracting agreements


These agreements introduce a legally binding framework for collaboration among private entities, public agencies, and international organisations. Each contract adheres to the stipulations outlined in the Programme Technical Sheet, ensuring compliance and coherence in execution.

For projects exceeding €5 million in funding requirements, an additional layer of scrutiny is mandated through the Hellenic Court of Audit. This independent body, the Supreme Financial Court, evaluates the project's scope and technical intricacies. Tasked with auditing public fund usage under the principles of legality, regularity, and sound financial management, the Court provides jurisdictional, advisory, and auditing oversight, as enshrined in the Greek Constitution.

The funding for each of the following programmes is predominantly sourced from the European Union's NextGeneration EU initiative within the framework of Greece 2.0 under the Recovery and Resilience Facility. Supplementary operational funding is provided by the national treasury as necessary, primarily in cases where required resources fall outside of eligible funding categories.

- **National programme for exercise and healthy nutrition – Childhood obesity prevention**

In Greece, child obesity represents a profound public health concern, with the nation exhibiting some of the highest prevalence rates in Europe. This escalating issue required a targeted and scientifically grounded response to



mitigate its long-term implications on both individual health outcomes and the broader healthcare system.

This National programme was designed to address this challenge through a comprehensive series of interventions aimed at children aged 0–17 years. The programme adopts an evidence-based, multi-dimensional strategy encompassing the promotion of physical activity, the enhancement of dietary habits, and the integration of digital health tools to facilitate early detection and intervention. Further, it provides holistic support through psychological counselling and nutritional guidance, ensuring a solid framework for both prevention and management.


Implementation is delineated across six work packages: legislative and institutional enhancement, primary prevention through professional and community engagement, the establishment of a European Centre for Obesity Prevention, the development of digital infrastructure, a nationwide awareness campaign, and meticulous project management and quality assurance. This integrative approach aims to deliver sustainable reductions in childhood obesity rates and lead to improved health outcomes across the population.

The implementation of the programme is orchestrated by the Ministry of Health, with direct oversight by the Office of the Secretary General for Public Health. This initiative is realised through a multidisciplinary collaboration involving healthcare professionals, educational institutions, and local authorities. Key actors include paediatricians, dietitians, psychologists, and educators, who are integral to delivering the programme's interventions. Additionally, the programme benefits from a partnership with the United Nations Children's Fund (UNICEF), which constitutes the role of Implementing Authority.

- **National health promotion programme for mothers, children and families**

The national health promotion programme for mothers, children, and families seeks to address the wide spectrum of public health challenges related to the mental and physical wellbeing of mothers, children, and adolescents in Greece. This initiative is structured around three core pillars: early detection of developmental disorders, targeted mental health support, and health promotion strategies aimed at both prevention and awareness.

The programme comprises several targeted interventions, incorporating systematic screening for developmental disorders among children, early identification and intervention for anxiety and depression in parents and caregivers, and direct referrals to specialised mental health services. Further, it addresses the social stigma surrounding menstruation through structured educational and awareness campaigns designed to promote health literacy. In response to the rising incidence of self-harm and aggressive behaviours among adolescents, the programme will also establish a community centre for mental health. This facility will be responsible for delivering advanced



mental health services, including telepsychiatry, alongside community-wide initiatives to improve mental health awareness and access.

As concerns involved parties, the execution of the initiative remains under the stewardship of the Ministry of Health, in partnership with the UNICEF country office, in the capacity of the implementation partner, offering technical guidance grounded in global health expertise. The implementation engages with paediatric associations, academic research entities, and civil society organisations.

- **Health Counsellor Service and Healthflix platform**


The Health Counsellor Service and Healthflix platform project represent two advanced digital health initiatives aimed at elevating health literacy and improving preventive care across Greece. The Healthflix platform offers a sophisticated multimedia delivery system, featuring on-demand and live content encompassing a broad spectrum of health-related subjects, from pandemic management to digital health service utilisation. This platform seeks to enhance public engagement with health services by providing comprehensive educational resources tailored to both the general population and healthcare professionals, promoting an informed and proactive approach to health management.

The Health Counsellor Service operates as an integrated information system designed to function as the primary interface between the public and national health services. It facilitates the creation of personalised health profiles, tracks preventive health activities, and delivers customised notifications to encourage timely engagement with health interventions. The system also supports early detection of preventable conditions, thereby contributing to a reduction in the incidence of chronic diseases and improving long-term health outcomes.

This initiative is administered by the General Secretariat for Public Health and implemented by the Social Security Electronic Governance Agency (IDIKA). The project draws upon the expertise of a multidisciplinary partnership, including public health authorities, digital health specialists, and healthcare practitioners, to ensure the seamless integration of the platform into the national health infrastructure. Through this collaborative effort, the programme aims to address existing gaps in health education and service delivery, contributing to a more resilient and informed healthcare system. The duration of the Health Counsellor Service and Healthflix Platform projects is set at 18 months, commencing from the signing of the contract.

- **National breast cancer prevention programme ‘Fofi Gennimata’**

Until recently, Greece has been one of the few EU countries without a population-wide screening programme, an absence that has historically hindered data collection and timely interventions. Informed by this gap, the National breast cancer prevention programme ‘Fofi Gennimata’ has been established as a flagship response to the rising incidence and mortality



associated with breast cancer in Greece, acknowledging the central role of early detection in improving survival rates and mitigating social and economic health burdens. The primary objectives of the programme include reducing healthcare system pressure, lowering treatment costs, enhancing quality of life for patients, and extending equitable healthcare access to underserved groups within the female population aged 50–69.

Structured into a series of phases, the programme commences with a public awareness initiative, utilising SMS notifications, a dedicated website hosted on gov.gr, National Organisation for the Provision of Health Services (EOPYY) platforms, and multimedia outreach (TV, radio and online). These channels will systematically inform eligible participants, divided into sub-groups by age, of their eligibility for free mammography screening. The programme operates through a streamlined process enabled by electronic referrals via the IDIKA e-prescription system, which generates digital mammogram vouchers for eligible women and notifies them through secure electronic means. Execution of referrals will be accommodated by both public and private diagnostic facilities across the country, ensuring broad accessibility for participants.

Following the initial digital mammography, results are documented and, in cases where abnormalities are detected (BIRADS category 3 and above), a second referral is automatically issued for clinical examination by an appropriate specialist (surgeon, gynaecologist, or breast care expert). Should further investigation be required, an ultrasound referral is generated, with each stage recorded within the patient's electronic health record. These integrated electronic systems allow for real-time monitoring, enabling EOPYY to ensure service provision compliance and reimbursement. At programme completion, the data gathered will undergo analysis to inform future public health policy, enhance breast cancer prevention efforts, and raise public awareness, ultimately contributing to improved national health outcomes and survival rates for breast cancer.

The programme's implementation is led by the National Organisation for the Provision of Health Services, with significant support from the Social Security Electronic Governance Agency, which oversees the configuration of the system's digital infrastructure. IDIKA's role centres on ensuring the efficient, timely transfer of information between diagnostic centres, healthcare providers, and patients, thereby facilitating a seamless flow of data essential for coordinated care. More specifically, the Ministry of Digital Governance, under whose jurisdiction IDIKA operates, supported the programme's implementation by pinpointing eligible demographic groups and ensuring the delivery of SMS and platform-based notifications to convey participation status and screening options. This initiative reflects Greece's commitment to harmonising its healthcare standards with European benchmarks, utilising digital infrastructure to bridge historical gaps in cancer screening and ultimately fortifying national health resilience.

- **National programme for the prevention of cervical and colorectal cancer**


The National programme for the prevention of cervical and colorectal cancer constitutes a major public health intervention in Greece, focused on mitigating the morbidity and mortality associated with these high-impact cancers through structured, evidence-based screening. Designed by the Greek MoH and implemented by the EOPYY, the programme is created to ensure preventive screening for targeted populations, complemented by comprehensive data analysis, cost-effectiveness assessments, and stringent audit mechanisms.

As a guiding principle, cervical cancer screening is directed towards women aged 21–65 with a valid Social Security Registration Number (AMKA). Eligibility is contingent upon defined exclusion criteria, disqualifying those with a previous diagnosis of cervical malignancy, individuals who have undergone a total hysterectomy for cervical cancer, and women in specific age ranges who have recently completed cervical screening. Similarly, colorectal cancer screening also targets individuals aged 50–69 holding an AMKA. Exemptions include those with a previous colorectal cancer diagnosis or a colonoscopy within the last five years. The target cohort comprises an estimated 3,840,005 individuals within this age range, with an intended coverage of approximately 10%, or 384,001 individuals, to be screened across Greece.

Further than that, the programme's implementation is reinforced by a series of evaluative subprojects designed to guarantee fidelity and optimise impact. To elaborate on that, the programme includes an interim demographic and participation analysis within the first 12 months of cervical cancer screening, examining factors that contribute to disparities in engagement and identifying statistically significant patterns. Additionally, a randomised controlled trial will be conducted to compare the diagnostic efficacy of HPV-DNA and HPV-mRNA tests, using a representative sample to ensure external validity. Lastly, an audit by an independent certified auditor has been mandated, covering administrative, financial, and technical compliance through documentation reviews and on-site inspections.

- **National programme for the prevention and treatment of cardiovascular risks**

Although recent years have seen a decline in cardiovascular mortality rates in Greece, due to advanced treatments and improved management of risk factors, cardiovascular disease remains the leading cause of death. The National programme for the prevention and treatment of cardiovascular risks addresses the persistent public health burden of cardiovascular disease in Greece. The programme aims to further reduce morbidity and mortality by intervening in modifiable risk factors such as smoking, diet, physical activity, hypertension, diabetes, dyslipidaemia, and obesity. The programme's duration is set at three years, during which a concerted effort will be made to mobilise the general population.



The screening component of the programme includes a comprehensive set of examinations: blood count, blood glucose, blood pressure measurement, and documentation of specific parameters to assess the cardiovascular profile of each participant. The target population comprises all citizens aged 30–70, with a realistic objective of engaging 60% of this group, estimated at approximately 5,706,125 individuals.


In terms of participants the programme is centrally orchestrated by the MoH and implemented by the EOPYY. To ensure quality in diagnostic assessments, screenings can be evaluated by personal physicians and private practitioners of related specialisations, including General Practitioners, Internists, and Cardiologists affiliated with EOPYY. Each evaluating physician will receive a fee of €20 per consultation. To monitor programme efficacy, an interim study will be conducted within the first 12 months, examining participation rates across demographic groups to identify statistically significant variations in engagement. This analysis will highlight barriers to participation and inform adjustments in outreach strategies to increase programme uptake, especially among vulnerable and underserved groups, such as migrants, Roma communities, and individuals in extreme poverty. Data collected from these screenings will contribute to national population health data, informing future public health policies and initiatives. By employing alternative outreach and engagement strategies, the programme aims to boost participation rates, with particular attention to ‘hard-to-reach’ populations, ensuring equitable access to preventive cardiovascular care.

Challenges faced

Implementing the National public health prevention programme has involved a series of complex challenges, both logistical and structural, each highlighting the nuanced demands of large-scale, nationwide public health initiatives. Addressing these issues has required innovation, inter-agency coordination, and a commitment to overcoming deeply ingrained system limitations to ensure that the programme’s objectives reach equally and effectively every community.

- **Intricate multilayered funding distribution channels**

The flow of funding through multiple layers – from the European Commission to Greece’s central banking structures, onward to local banking branches, and ultimately to governmental agencies and private or public service providers – was proven to be an exceptionally complex logistical undertaking. Each stage of this transfer process introduced possible delays whether in administrative processing, verification protocols, and disbursement procedures. The challenge was intensified when coordinating funds for a broad range of local actors, such as private diagnostic centres located in remote regions, where timely access to resources was central for the consistent delivery of services.



Frequently, bottlenecks arose within this layered system, requiring a thorough process-mapping to identify inefficiencies and implement redesigns. In some instances, alternative pathways were devised to circumvent bureaucratic constraints, allowing funding to bypass non-essential procedural steps and reach recipients more swiftly. However, these adaptations were not without friction. K. Athanasakis, Assistant Professor in Health Economics and Health Technology Assessment at the University of West Attica, noted that local service providers occasionally expressed dissatisfaction, voicing concerns over delays that directly impacted their operational stability. Consequently, maintaining programme integrity and continuity required not only consistent oversight but also innovative financial solutions and adaptive process designs to address and pre-empt potential disruptions across this multifaceted funding landscape.

- **Engagement in a traditionally reactive health paradigm**

Historically, Greece's healthcare approach had been largely reactive, where citizens predominantly sought medical assistance only once symptoms had become acute, resulting in an overwhelming reliance on hospital emergency departments. This inclination was further reflected in the disproportionately limited presence of primary care specialists, such as family physicians, within the healthcare system, contrasting sharply with the substantial representation of surgical and procedural specialists. Such a culturally embedded perspective presented an obstacle to the adoption of preventive health initiatives, as the population largely lacked awareness of the substantial benefits of early intervention and risk mitigation.

To galvanise public participation, considerable resources needed to be allocated not only towards the programme's operational components but also towards meticulously crafted communication strategies. These campaigns were devised with precise targeting, addressing distinct demographic groups in alignment with the programme's focus areas. For instance, initiatives within schools attempted to cultivate a preventive mindset among the younger demographic, embedding the principles of proactive health from an early age. Conversely, outreach to marginalised communities required specialised messaging that addressed barriers such as accessibility and limited health literacy. Prominent public figures, including influential TV personalities and athletes, were enlisted to champion these preventive efforts, thereby fostering public trust and encouraging a reorientation towards pre-emptive health engagement.

Despite these endeavours, substantial resistance to preventive healthcare remains, stemming from a historically ingrained tendency to seek medical intervention only post-diagnosis. This enduring hesitance underscores the need for a consistent effort to drive a paradigm shift, moving Greece's healthcare orientation towards a model that prioritises early detection and long-term health preservation.



- **Institutional data protectionism among local governmental agencies**

The absence of a cohesive, centralised framework for the aggregation and processing of population health data in Greece has led to pronounced fragmentation and significant gaps in data utilisation. Various governmental agencies, including EOPYY and IDIKA, collect substantial data tied to essential operational procedures mandated for citizens. However, this information remains compartmentalised within individual agencies, seldom shared across the broader healthcare ecosystem, even with other public entities. Such insularity has resulted in numerous isolated repositories of valuable information that remain largely dormant due to institutional reluctance to collaborate on data-sharing initiatives. Without a systematic mechanism for data integration, these isolated datasets lack the interoperability needed for comprehensive population health analysis and proactive health interventions.

Efforts by the Ministry of Health to foster data-sharing practices have encountered considerable resistance, as many sub-agencies prefer to retain exclusive control as primary custodians of health data, positioning themselves as central repositories. This approach, rooted in a culture of data protectionism, alongside the European Commission's mandate for post-launch monitoring on all funded projects, has compelled most of the initiatives, included in the 'Spyros Doxiadis' National Public Health Prevention Programme, to explicitly outline its data collection and processing responsibilities, designating specific agencies to fulfil these roles in the absence of a universally recognised body to oversee such tasks. Such compartmentalisation has restricted data fluidity, thus undermining the healthcare system's capacity for real-time monitoring and integrated decision-making.

- **Developing digital health infrastructure from foundational levels**

The absence of a foundational digital infrastructure within Greece's healthcare system has posed a significant barrier to the effective implementation of the National Public Health Prevention Programme. Essential platforms to facilitate communication between key programme participants – such as diagnostic centres, primary care physicians, and hospital administrators – were largely non-existent, leaving a considerable gap in logistical support. Furthermore, tools to keep patients informed at each stage of their care journey, through notifications and reminders, required full-scale development from the ground up, adding complexity to the programme's roll-out. This foundational responsibility was placed on IDIKA, the public Electronic Governance Agency tasked with structuring and implementing these central digital solutions to ensure smooth information flow and operational coordination. In several instances, the lack of pre-existing digital frameworks led to notable delays, often attributed to designing, testing, and integrating each component across sub-projects. These tasks demanded extensive resources to create interoperable networks capable of sustaining the collaborative requirements of the initiatives.



- **Public-private partnership dynamics in resource-constrained regions**


Public-private partnerships represent a relatively novel approach within the traditionally centralised Greek healthcare system, where state-led provision has historically dominated. In mountainous and island communities, where public health services are often sparse, such partnerships have become indispensable, as local populations heavily depend on private providers for healthcare access. For instance, within the Breast Cancer Prevention Programme, the reliance on private actors became especially apparent, given the routine absence of public diagnostic centres on smaller islands. Consequently, collaboration with private diagnostic facilities was imperative to ensure that mammography screening services reached all eligible citizens. However, engaging these private actors required extensive accreditation processes, allowing only those providers who met strict healthcare standards to officially participate in the programme. This accreditation not only ensured compliance with public health objectives but also established a baseline of quality and consistency for diagnostic services, aligning private providers with the programme's preventive goals.

The complexities inherent in these partnerships originated from the need to balance the commercial motivations of private providers with the state's commitment to equitable, high-quality care. Private profit-motivated facilities were required to operate within a framework of public accountability, adhering to stringent standards that guaranteed both accessibility and consistency in care. The state's reimbursement mechanisms had to be carefully calibrated, providing adequate financial support while enforcing regulatory compliance. As a result, these partnerships required the first-time introduction of a sophisticated regulatory structure that enabled mutual accountability and aligned disparate goals, ensuring that rural populations across the country could access preventive services on par with those available in urban centres.

Outcomes and impact

The impact of the 'Spyros Doxiadis' National Public Health Prevention Programme remains largely undocumented, as the majority of its constituent initiatives are in the early stages of implementation. Consequently, substantive outcome data has yet to be systematically gathered. All currently available insights are being channelled through the Ministry of Health, or its internal Secretariats, which is overseeing the post-implementation monitoring activities, ensuring that each programme's objectives and outcomes align with originally defined objectives.

One exception is the National Breast Cancer Prevention Programme that has been operational longer than the others, and preliminary data suggests a considerable public health impact. Reports from various local press sources reveal that over 416,000 women have accessed free mammography screenings under this initiative, a critical milestone in advancing preventive



healthcare. More importantly, more than 26,000 of these screenings identified early-stage findings, demonstrating the programme's efficacy in promoting timely diagnosis. As of September 2024, the Ministry of Health, in collaboration with IDIKA and the Ministry of Digital Governance, has issued SMS notifications to a further 163,000 women who recently became eligible or were approaching the renewal period for their annual mammogram. At the same time, approximately 740,000 women have also received digital reminders of their upcoming mammography appointments. This early evidence underscores the programme's potential to reshape preventive health practices, particularly in addressing one of the most prevalent cancers in Greece.

Scalability and replicability

Expanding these public health initiatives across varied regions or countries might not be as straightforward, requiring a thorough evaluation of several core factors. From financial frameworks and cultural attitudes to workforce readiness, a range of factors contribute significantly to the feasibility and longevity of such programmes. The following overview delineates the primary considerations essential for facilitating the effective replication and sustainable impact of these initiatives within diverse healthcare ecosystems.

- **European Union affiliation and access to funding streams**

The foremost prerequisite for replicating such public health initiatives lies in securing European Union funding, as evidenced in Greece, where EU mechanisms contributed over 90% of the programmes' financial resources. EU membership grants access to significant funding streams, notably through the European Social Fund and NextGenerationEU, which empower Member States to deploy expansive, high-impact health interventions that would otherwise be fiscally unviable, particularly for economies in South-Eastern Europe. For regions beyond the EU borders, emulating these programmes would require alternative funding avenues of equivalent magnitude, a prospect which may pose a series of logistical and financial complexities.

Equally essential is the alignment with EU standards, as EU-funded programmes are subject to multi-tiered European Commission approvals. This alignment presupposes overall adherence to European policy objectives and quality protocols, thereby requiring a sophisticated grasp of the EU bureaucratic landscape. Specifically, successful navigation of these processes demands advanced proficiency in EU administrative protocols, encompassing submission requirements, reporting frameworks, and regular collaboration with EU representatives. Such competencies are central to retaining EU institutional support and ensuring the seamless implementation of these public health programmes within a highly regulated and structured framework.



- **Cultural receptivity to preventive healthcare**


Healthcare across South–Eastern Europe is often conceptualised as a means to address acute conditions, a perception that can curtail public engagement in preventive initiatives, especially within rural and underserved areas. This tendency towards reactive healthcare could pose a substantial barrier to the uptake of screenings and other similar preventive measures, as residents may not immediately perceive the value in early detection. For regional or national stakeholders attempting to replicate resembling initiatives, overcoming this cultural resistance requires not only reshaping public perception but also addressing deep-seated health beliefs through informed and highly targeted communication.

Drawing insights from Greece’s experience, effective engagement entails implementing extensive, tailored communication strategies that leverage plain, relatable language and vivid illustrations of the health impacts that preventive care seeks to mitigate. Additionally, the involvement of familiar local figures and respected health professionals can further strengthen the message’s reach and credibility. However, such efforts can substantially inflate programme budgets. Furthermore, equalising access to these services is imperative; ensuring that individuals can participate with ease, regardless of socioeconomic status or geographic isolation, may demand complex logistical planning. Steps such as detailed process mapping, scenario analysis, and flexible adaptation to emerging disparities or delays are fundamental for securing broad and equitable access. Simplifying the pathways to participation, including follow-up consultations via primary care providers, has proven to ensure consistent care across all demographics.

- **Healthcare workforce capacity and infrastructure**

Expanding macro-level public health initiatives, like preventive screening programmes, hinges heavily on the numerical availability, competences of the healthcare workforce and the level of supporting infrastructure. Health administrators considering the execution of similar programmes must assess not only the total number of healthcare professionals but also their distribution, particularly in primary care and diagnostic services, where workforce shortages are most likely to impact programme implementation. From an infrastructural standpoint, cancer prevention programmes, equivalent to the ones implemented by the Greek MoH, demand a network of diagnostic and treatment facilities, equipped with state-of-the-art mammography units, HPV-DNA and mRNA testing kits, and colonoscopy equipment. A scarcity in these areas could impede routine screening and lead to logistical challenges in ensuring consistent patient follow-up, particularly in underserved or remote communities. Addressing these challenges may require targeted recruitment drives, capital investment in equipment and maintenance, incentivised placements in rural locations, or mobile healthcare units to extend services into more isolated communities.

In the case where private sector actors are enlisted to supplement service provision, establishing standardised protocols becomes necessary to



ensuring an integrated operational model and alignment in quality standards across all participating entities.

A foundational degree of digital maturity is equally essential, serving as the backbone of stakeholder coordination, data storage, and patient engagement within such programmes. An advanced digital platform is required not only for storing and managing patient records but also for facilitating real-time interaction among diverse healthcare stakeholders, including diagnostic centres, primary care providers, regional health authorities and citizens themselves. For example, Greece's IDIKA system for electronic referrals and notifications has proven indispensable in maintaining patient engagement and ensuring that follow-up actions are accurately communicated. In areas where digital infrastructure is underdeveloped, considerable investments in interoperability solutions, and staff training might be necessary to support consistent data flow and monitoring across programmes' components.

- **Financing and long-term sustainability**

In the context of Greece, where the majority of health programmes typically operate within a 3–4-year timeline aligned with EU financing frameworks, ensuring the continuity of these initiatives presents notable financial and structural challenges. The short-term nature of these funding cycles requires a clear strategy for sustaining programme activities beyond the initial period. For long-term implementation, alternative funding sources would need to be identified – a challenging task for many South-Eastern European economies where fiscal resources are often constrained. Relying on EU funds without a contingency for continued support may lead to programme attrition, potentially undoing the progress made in preventive health.

A prudent approach in similar environments involves leveraging large-scale external investments during initial phases to lay the groundwork for fundamental reforms within the healthcare infrastructure, addressing structural needs upfront and establishing a robust operational base. Over time, the responsibility for covering operational costs could transition to the national budget, allowing state funds to sustain these programmes at a manageable scale. To sustain these initiatives over the long term, adjustments may involve scaling back the programmes' scope to focus on essential services, enabling their integration into broader public health strategies funded by national treasuries. Such an approach could allow for targeted deployment based on epidemiological trends, reaching priority demographic groups in need of preventive interventions. Additionally, periodic campaigns could be strategically designed to address high-risk populations, creating a sustainable model that balances impact with financial feasibility. Integrating these initiatives into the national health agenda, potentially with intermittent but regular funding allocations, could help ensure that preventive health measures become a durable element of the region's healthcare landscape.

Digitalisation and Data

Israel – The OFEK health information network

Initiative overview

In Israel, the OFEK Health Information Exchange (HIE) system, initially conceived in 1999 as a solution to the fragmentation of patient data within the Clalit Health Maintenance Organisation (HMO), has evolved into a **comprehensive national platform for digital health data centralisation** across Israel's healthcare ecosystem.

To address the disjointed nature of Clalit's information systems – then comprising over 25 disparate subsystems incorporating specialised departments such as radiology, pathology, and laboratory services, Clalit launched a pilot project at Soroka Medical Centre, leveraging a platform to enable integration between its various Electronic Health Record (EHR) systems. **This system enables communication between existing EHRs through a shared interface, thereby facilitating real-time exchange of patient data between primary, secondary, and tertiary healthcare providers.**


Implementation process

The success of the pilot programme prompted its expansion to additional Clalit facilities, ultimately culminating in the official inclusion of the entire national healthcare system in 2012, which now encompasses all four HMOs, government-owned hospitals, and private healthcare providers.

The OFEK system operates through a multi-layered data-sharing sequence that ensures the seamless transmission and accessibility of patient information across healthcare institutions. This data flow within the OFEK system can be delineated into distinct stages, from the point of origin in hospitals and clinics, to the Sick Funds (HMOs), and ultimately reaching the various digital health applications accessible to both clinicians and patients. Each stage of implementation involved the standardisation of clinical terminologies, establishing semantic interoperability, and ensuring security through encryption and strict user authentication measures. These are the sequential steps and mechanisms that underpin this data-sharing network, illustrating the complex orchestration that makes OFEK an effective national health information exchange:

- **Data collection and initial input: point-of-care data capture**

The process starts at the point of care within healthcare facilities such as hospitals, primary care clinics, and specialist centres. Each participating provider has an Electronic Health Record or an equivalent information system



that stores structured (e.g. lab results, imaging) and unstructured (e.g., physician notes) patient data.

Legacy System Integration constituted the primary technical challenge, concerning the integration of multiple legacy systems within hospitals and clinics. To achieve this, the dbMotion platform, a middleware solution developed specifically for such scenarios, was deployed to interface with each EHR, extracting and harmonising data into a standardised format using Health Level Seven (HL7) and Fast Healthcare Interoperability Resources (FHIR) standards. Specifically, HL7 provides a framework for exchanging clinical and administrative data between healthcare applications, while FHIR offers a more modern approach with modular components known as 'resources' that enable granular, web-based data exchange. Together, these standards transform heterogeneous data into a unified semantic structure, allowing it to be processed and shared through the OFEK network. The system effectively transforms heterogeneous data into a common semantic structure, allowing it to be processed and shared through the OFEK network.


In contrast to centralised repository, Federated Data Management governs how the OFEK network handles data storage. Rather than consolidating data in a single location, the system retains information within its original source systems. This federated model allows real-time data retrieval through secure queries, reducing latency and ensuring information remains current at the point of access. Each participating facility within the network retains ownership and control of its data, thus addressing privacy concerns and minimising the risk of data breaches.

In essence, OFEK employs a decentralised architecture, thereby circumventing the vulnerabilities associated with a centralised repository by ensuring patient information resides within each facility's EMR system. Data access is facilitated solely on an as-needed basis and remains restricted to authorised personnel within the scope of active treatment, with role-based permissions precisely delineating access to clinically pertinent information. All data transmissions within OFEK are fortified with encryption protocols and routed through secure channels to mitigate risks of unauthorised interception. The network's infrastructure complies with globally recognized privacy standards, including GDPR and HIPAA, which are embedded across its operational design.

- **Data transfer and standardisation: integration with HMOs**

Once data has been standardised and made accessible through the dbMotion middleware (also the system's technological partner), it is transmitted to the respective HMO to which the patient is subscribed. Each of the four HMOs in the country – Clalit, Maccabi, Meuhedet, and Leumit – act as a data-sharing hub that aggregates patient information from various healthcare facilities within its network.

In terms of inter-HMO communication, the HMOs are connected through the OFEK network, enabling inter-organisational data exchange. The use of HL7



and FHIR protocols ensures interoperability and semantic consistency across the different HMOs. The data-sharing mechanism is built on a query-based exchange framework, which means that data is retrieved on-demand, rather than being pushed to a centralised system. This regulation-compliant design authorises clinicians within one HMO to access patient data from another HMO, contingent upon patient consent, and pre-established data-sharing agreements are in place.

As concerns the metadata management, one of the key technical components of the OFEK system is the use of a metadata layer that handles data mapping and translation between different terminologies and coding systems. For instance, in the case where one hospital utilises a particular code to represent a medication or procedure, while another facility employs an entirely different coding system for the same item, the metadata layer harmonises these discrepancies by mapping them to a unified standard. This layer acts as a translation mechanism, ensuring that clinical data maintains its meaning and context when transferred between systems, while facilitating accurate interpretation and preventing ambiguity.

- **Data presentation and access: digital health platforms**

The consolidated patient data is made accessible through several digital platforms tailored to different user groups. For healthcare providers, patient information is accessible through their existing Electronic Health Records systems, now integrated into the OFEK network. The EHRs display a unified, longitudinal view of patient records, including data from multiple providers and settings, with the capability to drill down into specific records as needed.

On the patients' side, the collected information is available through Personal Health Record (PHR) Applications, managed by the respective HMOs. These applications are connected to the OFEK network, allowing patients to view their lab results, medication history, upcoming appointments, and even interact directly with their healthcare providers. The patient interface is designed with stringent access control mechanisms to ensure data privacy and security.

- **Data analysis and public health monitoring**

The OFEK network also supports advanced data analysis and public health monitoring functionalities. During the COVID-19 pandemic, the system was rapidly adapted to provide real-time epidemiological insights and to support vaccination efforts. For instance, OFEK's infrastructure enables the creation of real-time dashboards for public health monitoring, including COVID-19 case tracking, hospital capacity management, and vaccination status updates. These dashboards aggregate data from multiple sources, such as laboratory test results, hospital admission records, and vaccination registries, to offer comprehensive, up-to-the-minute views of the pandemic's impact. The system utilises automated algorithms to flag trends such as rising infection rates or hospital bed shortages and disseminates these alerts to public health authorities and healthcare providers, enabling proactive interventions.



- **User feedback and iterative system enhancements**

Continuous feedback from clinicians, administrators, and patients serves as a basis for the ongoing refinement and evolution of the OFEK system. Utilisation patterns, system performance metrics, and user satisfaction data are scrutinised to pinpoint potential enhancements and steer the development of new features. For instance, when concerns were raised regarding the responsiveness of the system and the clarity of patient records, updates were introduced to optimise query response times and improve the user interface intuitiveness and accessibility. Moreover, following clinicians reported difficulties in navigating between hospital and community health records, OFEK's structure was adjusted to provide a more cohesive, panoramic view of patient data, thereby ensuring a more fluid and harmonious transition across care settings. The architecture of the system accommodates these iterative refinements with minimal disruption, allowing such modifications to be integrated into the platform without disrupting ongoing clinical operations or compromising data integrity.

Challenges faced


The OFEK reform encountered multiple key challenges during its implementation, which required nuanced solutions.

- **Judicial and legislative hurdles**

The OFEK project faced protracted delays due to legal battles that arose from ambiguities in Israel's patient privacy laws and regulations governing health data sharing. The judicial resistance stemmed from interpretations of the Patient Rights Law (1996) and the Privacy Protection Law (1981), which placed stringent conditions on the management and dissemination of health information. Concerns were particularly pronounced regarding the potential for unauthorised access to sensitive patient data, as well as the risk that data collected for one purpose could be repurposed without explicit patient consent.

To address these issues, the OFEK system underwent multiple iterations of its privacy and data management framework. Initial drafts of the system's data-sharing protocols were rejected by the courts on the grounds that they inadequately safeguarded patient anonymity and failed to limit data accessibility based on the care context. This prompted a comprehensive redesign of the system's data handling mechanisms, including the introduction of role-based access controls (RBAC) and the segmentation of data based on clinical relevance. Each layer of access was subjected to separate legal reviews, significantly extending the time required for judicial approval.

Furthermore, the courts mandated the inclusion of patient opt-out options, where individuals could exclude themselves from the HIE, either entirely or for specific categories of sensitive information (e.g. psychiatric records,



reproductive health data). The legal scrutiny was such that every update to the system required prior review and ratification by a governmental oversight committee, which included representatives from the Ministry of Health, the Ministry of Justice, and the Israeli Medical Association. This ongoing legal oversight contributed to delays, stretching the full rollout of the initiative by nearly five years.

- **Reluctance and resistance from healthcare professionals**


Healthcare professionals were among the most critical stakeholders whose reluctance to adopt the OFEK system threatened to derail the project's implementation. Initial pilot programmes revealed that senior clinicians were particularly resistant, as they feared the new system would disrupt clinical workflows and impose additional administrative burdens. This concern was exacerbated by the complex interface of the OFEK system, which, despite its functionalities, required training and adjustment.

A key technical challenge lays in integrating OFEK with the diverse range of electronic health record systems already in use across various healthcare facilities. Each EHR system had distinct data formats, user interfaces, and integration capabilities, requiring bespoke adaptations and the development of middleware solutions to facilitate interoperability. This complexity increased the cognitive load on healthcare professionals, many of whom perceived the system as detracting from their clinical autonomy and requiring additional time to learn and navigate.

In response, the Ministry of Health, in collaboration with dbMotion, implemented an iterative feedback mechanism. User feedback was collected continuously and used to refine the system's interface, improve its usability, and align it more closely with established clinical workflows. However, even with these improvements, adoption rates varied significantly across regions and institutions, with some hospitals experiencing up to 40% lower usage rates compared to others, indicating persistent pockets of resistance.

- **Digital divide across patient demographics**

The digital divide among Israel ageing population posed a substantial challenge to the integration of OFEK across the healthcare landscape. Elderly patients, alongside a broader demographic of individuals with limited digital literacy – both of whom constitute a significant portion of those accessing health services – were disproportionately affected by the transition to digital platforms. Many of these individuals lacked the necessary digital literacy or access to technology to benefit from the online functionalities of the OFEK system. While this challenge is not exclusive to the OFEK, but pertains to all pre-existing electronic health record systems, it underscores the pervasive difficulty of digital integration across healthcare providers. As articulated by N. Alon, Head of Health Social and Science and Health Systems Management at the Hadassah Academic College, "a number of small private clinics, dental clinics, and other providers not connected to the OFEK still continue to rely on paper-based systems."



The reluctance and inability of certain segments of the population to engage with digital tools required the retention of a pre-existing manual administrative assistance framework. This legacy system needed substantial resources to maintain in parallel with OFEK's digital services, creating a dual-infrastructure burden on the healthcare system. Additional complications arose from the need to synchronise manual data entries with digital records to prevent discrepancies and ensure that both systems reflected accurate, up-to-date information. For instance, in numerous instances, patients would often present paper documentation to their healthcare providers, who, in turn, would be required to scan these records into the centralised OFEK system.

Technical solutions, such as dedicated kiosks with simplified interfaces and the deployment of 'digital navigators' to assist elderly patients in clinics, were trialled. However, these interventions saw limited success due to deep-seated resistance and technological inertia among the elderly. Consequently, a significant proportion of the elderly patient population continued to rely on the manual assistance framework, compelling the Ministry of Health to maintain a more traditional paper-based system at a considerable operational cost.


Outcomes and impact

The OFEK Health Information Network has yielded profound impacts across multiple technical, operational, epidemiological and clinical domains within the Israeli healthcare system. Its architecture and deployment have set a benchmark in digital health transformation, with ramifications for patient care, resource optimisation, and systemic resilience. Each impact is dissected below to provide an exposition of its influence on healthcare practices, system performance, and national health strategy.

- **Operational performance and resource utilisation**

The integration of predictive analytics capabilities within the OFEK system has transformed resource management across Israel's healthcare infrastructure. By leveraging machine learning algorithms that analyse patient flow patterns and historical data, the system has been able to forecast human and infrastructural resources demand, such as surgical theatre slots and medical staffing, with remarkable precision. These predictive models facilitate the optimal deployment of critical resources such as intensive care unit beds and surgical theatre slots, thereby reducing waiting times and enhancing throughput. Quantitative assessments reveal significant reduction in patient waiting times.

Moreover, the system's ability to integrate with dynamic workforce management modules has enabled healthcare institutions to track real-time metrics such as bed occupancy rates and staffing levels, and adjust staffing levels in real-time, in response to evolving patient acuity levels and caseloads.




Prior to the advent of OFEK, the lack of cross-institutional visibility into patient records resulted in an alarming frequency of redundant diagnostic procedures. The absence of a unified health information system meant that in cases where patients were referred from primary care providers to secondary or tertiary facilities, such as hospitals or specialist clinics, their medical records did not follow them seamlessly. Following the launch of OFEK, clinicians were able to review past diagnostic results, such as blood tests or imaging studies, in real-time during patient consultations. While such access had been feasible to some degree through the prior use of HMO-specific EMRs, the introduction of OFEK greatly amplified this capability. Thus, allowing medical personnel to make more informed decisions and avoid the automatic ordering of repeat tests. For example, if a patient has recently undergone a magnetic resonance imaging (MRI) or computed tomography (CT) scan at a different institution, the clinician could access those images directly through OFEK, ensuring that the patient is not subjected to the same procedure again unless clinically warranted. The system's capacity to present a unified view of patient encounters across multiple providers has obviated the need for duplications, thereby delivering both clinical and economic benefits. As expected, the reduction in redundant testing has been accompanied by improvements in overall patient satisfaction, as individuals no longer have to endure the inconvenience, discomfort, and anxiety associated with repeated diagnostics.

- **Population health outcomes and public health management**

The OFEK Health Information Exchange has established itself as a neuralgic component of Israel's public health infrastructure, significantly enhancing its capacity to monitor, respond to, and manage population health outcomes on a national scale. Real-time aggregation of epidemiological data has empowered the Ministry of Health to conduct comprehensive public health surveillance, which proved crucial during the COVID-19 pandemic. The system was swiftly adapted to track COVID-19 metrics, such as infection rates, hospitalisations, and vaccination statuses, allowing public health authorities to visualise the spread of the virus, identify clusters of new infections, and monitor hospital capacity in real-time. The integration of vaccination data within OFEK enabled precise identification of immunisation gaps across different population segments, supporting targeted vaccine distribution and prioritisation strategies.

OFEK's data analytics capabilities have equipped policymakers with the tools necessary to conduct evaluations of health outcomes, service utilisation patterns, and care disparities. The availability of longitudinal data repositories on chronic disease management and treatment adherence has supported the development of tailored health interventions aimed at reducing healthcare disparities across different socio-economic groups. Indicatively, the system's databases include detailed records on chronic conditions such as diabetes and cardiovascular diseases, enabling policymakers to assess



the effectiveness of existing treatment programmes and make data-driven adjustments to improve patient outcomes.

Scalability and replicability

The OFEK Health Information Network is a testament to how a digital health infrastructure can revolutionise healthcare delivery, offering a scalable framework that could, in theory, be replicated elsewhere. However, while its structure and functionality present an aspirational model, the prerequisites for its successful adaptation are stringent and not universally attainable – particularly in countries where foundational elements of health data collection are either underdeveloped or altogether absent. This presents a substantial barrier to replicating OFEK’s model in many regions, especially those in South-Eastern Europe, where the digital health ecosystem remains significantly fragmented.

Furthermore, Israel’s relatively modest size and population lend distinct advantages to digitalisation initiatives, simplifying coordination and integration across a limited number of healthcare providers. The nation’s four health maintenance organisations collectively cover the entire population, thereby facilitating the implementation of nation-wide digital health reforms. Conversely, in larger and more demographically complex countries of South-Eastern Europe, replicating such a model may be particularly complicated by the need to unify diverse healthcare insurance networks and navigate regional disparities in the integration of public and private providers.

In Israel, the OFEK system relies on a comprehensive, unified data management model that enables real-time access to patient information through an integrated platform. This architecture is predicated upon the availability of extensive datasets collected from healthcare providers at both regional and micro levels, encompassing everything from primary care interactions to hospital admissions and laboratory results. Such an infrastructure ensures that clinicians and public health officials have immediate access to a wealth of data, allowing for efficient clinical decision-making and strategic public health interventions. However, the absence of comparable data collection mechanisms in other regions – where national health services often do not capture data at the micro level or even on a regional scale, or simply rely on paper-based alternatives – could render the deployment of a system like OFEK difficult. Without a solid foundation of existing health data to build upon, the fundamental requirements for data exchange, standardisation, and interoperability cannot be met.

Furthermore, the OFEK system’s success hinges on its federated data management model, which retains patient information within its original sources while enabling secure, query-based access. This model proper functioning is dependent on a reliable network of interconnected electronic health records (EHRs) and hospital information systems capable of supporting data sharing through standards such as HL7 and FHIR. In the



absence of these digital records, as is often the case in several South-Eastern European countries, such a model cannot function. The lack of digital health records means there is no data to query, no systems to connect, and no framework to harmonise. Therefore, without substantial capital investment in the initial digitalisation of health records, along with the establishment of electronic health infrastructure at every level of healthcare provision, replicating the OFEK model would not be pragmatic.

In the case of countries that have already embarked on the path of digital health transformation and find themselves possessing multiple EHR systems at varying levels of implementation, the challenge lies not in the mere presence of digital health data, but in the intricate and technologically demanding task of unifying these disparate systems through a coherent interoperability framework. Despite the existence of digitalised records, the lack of standardised communication protocols and the heterogeneity of data formats often create silos that impede data exchange and clinical decision-making. To bridge these gaps, their respective governmental bodies would need to undertake the laborious process of integrating their existing systems using interoperability platforms, such as middleware solutions that support the HL7 and FHIR standards. This endeavour would require not only the technical harmonisation of data but also the development of a semantic framework that aligns diverse terminologies and coding schemas across all participating institutions. Achieving this level of interoperability requires substantial technological resources, comprehensive stakeholder collaboration, and a rigorous governance structure to ensure that all parties adhere to a unified strategy for health information exchange. Consequently, even in countries with relatively advanced digital health ecosystems, the transition to a fully integrated system akin to OFEK would demand a concerted national effort, supported by both public and private sectors, to overcome these inherent complexities and achieve true interoperability on a national scale.

Encouragingly, for systems where EHRs have yet to be fully deployed or remain in nascent stages, there exists a strategic advantage in sidestepping the gradual, often fragmented progression that more established systems, such as OFEK, have undergone. In the absence of entrenched, heterogeneous subsystems, these national or regional systems have the potential to establish a cohesive digital health infrastructure uniformly from the outset. By introducing a singular, standardised EHR system across all healthcare domains, they can effectively eliminate the need for complex interoperability protocols, such as HL7 or FHIR, which are traditionally used to bridge disparate systems. This unified approach dispenses with the need for complex retroactive harmonisation of legacy records or extensive semantic alignment between pre-existing systems, thus significantly reducing costs associated with developing custom interfaces between incompatible software – expenses and challenges Israel had to address incrementally. Consequently, several South-Eastern European countries within this category are well-positioned to effectively attain a level of digital integration comparable to



OFEK, advancing directly to a mature, interoperable system without the iterative recalibrations that characterise early digital transformation efforts.

Moreover, the successful replication of such an advanced digital health system would require the establishment of a coherent legal and regulatory framework governing data sharing and patient privacy. In countries where no such legislation exists, or where privacy protections are less stringent, the endeavour to implement a comprehensive health information network akin to OFEK would be fraught with significant legal and ethical complexities. This challenge is further compounded in jurisdictions where national frameworks, or even constitutional provisions, may expressly prohibit the collection of certain health-sensitive data – such as psychiatric records, genetic information, or reproductive health data. In such cases, the implementation of a similar system would require not only an extensive legislative overhaul but potentially a radical constitutional reform. Navigating this intricate legal terrain would likely be both protracted and resource-intensive, requiring the alignment of multiple stakeholders, including governmental bodies, legal authorities, and healthcare providers, to ensure that the requisite standards for data security, patient consent, and privacy rights are meticulously defined and rigorously enforced.

In essence, while the OFEK Health Information Network represents a pinnacle of digital health integration, the feasibility of replicating it in regions without foundational data collection mechanisms is highly questionable. For such an initiative to be viable, there must first be a concerted effort to establish the basic infrastructure required for health data capture and management. Without this groundwork, any attempt to emulate OFEK would lack the necessary scaffolding to support its complex architecture, thereby rendering it unfit for regions where digital health systems are still in their infancy. Nevertheless, OFEK can serve as a valuable benchmark for national and regional administrations initiating foundational EMR systems, demonstrating effective decentralised data storing and management, while highlighting the essential role of interoperability across multiple healthcare platforms serving the same population.



Conclusions

This Guidebook is a testament to the resilience, innovation, and collaboration demonstrated by the healthcare systems of South-Eastern Europe. By examining a diverse array of initiatives in workforce management, financing, and digitalisation, this guidebook captures actionable strategies that address critical systemic challenges while fostering sustainable reforms.

The Guidebook highlights the transformative potential of targeted interventions, as demonstrated by successful programmes like the Federation of Bosnia Herzegovina's Health Managers' Certificate and Greece's 'Spyros Doxiadis' National Public Health Prevention Programme. These case studies reveal the importance of investing in professional development, leveraging external funding mechanisms, and adopting innovative technologies to strengthen healthcare systems across the region.

Despite these achievements, the document also acknowledges the persistent barriers to systemic reform, including administrative burdens, resource limitations, and cultural resistance to change. Addressing these challenges requires sustained political will, cross-sector collaboration, and adaptive strategies tailored to local contexts. The emphasis on scalable and replicable solutions throughout the Guidebook ensures that these interventions can inform broader policy development within SEE and beyond.

Moving forward, the Guidebook will serve as a dynamic framework for ongoing knowledge sharing and capacity building among healthcare professionals, policymakers, and stakeholders. By documenting real-world examples and their associated challenges, it provides a pragmatic roadmap for improving healthcare management, achieving EU health policy objectives, and ensuring equitable access to high-quality care.

The Guidebook not only celebrates the achievements of the region's healthcare systems but also inspires future innovation and collaboration. By fostering a culture of learning and shared responsibility, this Guidebook will continue to play a pivotal role in transforming healthcare delivery across South-Eastern Europe.

References

Health workforce management: Health managers' certificate

Federation of Bosnia and Herzegovina. (2010). *Zakon o zdravstvenoj zaštiti* [Law on Health Protection]. *Službene novine Federacije BiH (No. 46/10), Član 66*. Sarajevo: Government of the Federation of Bosnia and Herzegovina.

Federation of Bosnia and Herzegovina. (2020). *Pravilnik o kontinuiranoj profesionalnoj edukaciji iz zdravstvenog menadžmenta*. [Rulebook on Continuous Professional Education in Health Management]. *Službene novine Federacije BiH (No. 6, 24 January 2020)*, pp. 36–47. Sarajevo: Government of the Federation of Bosnia and Herzegovina.

Financing: 'Spyros Doxiadis' National Public Health Prevention Programme

Greek Ministry of Finance. (2022). *Εθνικό Πρόγραμμα Φυσικής Άσκησης και Υγιεινής Διατροφής/Αντιμετώπιση Παιδικής Παχυσαρκίας: Απόφαση Ένταξης Έργου* [National Program of Physical Exercise and Healthy Eating/Combating Childhood Obesity: Project Inclusion Decision] (Document No. 112505 ΕΞ 2022). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Greek Ministry of Finance. (2023). *Δευτερογενής Πρόληψη - Τηλεφωνικό Κέντρο - ΟΠΣ: Απόφαση Ένταξης Έργου* [Secondary Prevention - Call Center - OPS: Project Inclusion Decision] (Document No. 5187969). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Greek Ministry of Finance. (2023). *ΕΟΠΥΥ: Εθνικό πρόγραμμα για πρόληψη και αντιμετώπιση καρδιαγγειακών κινδύνων: Απόφαση Ένταξης Έργου* [ΕΟΠΥΥ: National Programme for Prevention and Treatment of Cardiovascular Risks: Project Inclusion Decision] (Document No. 5200558). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Greek Ministry of Finance. (2023). *Προαγωγή Υγείας Παιδιού και Οικογένειας: Απόφαση Ένταξης Έργου* [Promotion of Child and Family Health Project Inclusion Decision] (Document No. 76529 ΕΞ 2023). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Greek Ministry of Finance. (2023). *Πρωτογενής Πρόληψη: Απόφαση Ένταξης Έργου* [Primary Prevention: Project Inclusion Decision] (Document No. 5201429). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Greek Ministry of Finance. (2023). *SUB2. Δευτερογενής Πρόληψη: Απόφαση Ένταξης Έργου* [SUB2. Secondary Prevention: Project Inclusion Decision] (Document No. 5168324). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Greek Ministry of Finance. (2023). *SUB2. Δευτερογενής Πρόληψη: Προληπτικά Τεστ κατά του Καρκίνου του Τραχήλου της Μήτρας και του Παχέος Εντέρου: Απόφαση Ένταξης Έργου* [SUB2. Secondary Prevention: Cervical and Colon Cancer Screening

Tests: Project Inclusion Decision] (Document No. 5183480). Special Coordination Service of the Recovery Fund, Hellenic Republic.

Proto Thema. (2024, September 29). *Μαστογραφία: 416.000 γυναίκες έκαναν δωρεάν, σε 26.000 εντοπίστηκαν ευρήματα* [Mammography: 416,000 women received free screenings, with findings detected in 26,000]. Proto Thema. <https://www.protothema.gr/ugeia/article/1545786/mastografia-416000-gunaiques-ekanan-dorean-se-26000-edopistikan-eurimata/>

Digitalisation and data: The OFEK Health Information Network

Dattner, I., Gal, R., Goldberg, Y., Goldshtein, I., Huppert, A., Kenett, R. S., Manor, O., Pfeffermann, D., Schechtman, E., di Serio, C., & Steinberg, D. M. (2022). *The role of statisticians in the response to COVID-19 in Israel: A holistic point of view*. Israel Journal of Health Policy Research, 11, 22. <https://doi.org/10.1186/s13584-022-00531-y>

Frankel, M., Chinitz, D., Salzberg, C. A., & Reichman, K. (2013). *Sustainable health information exchanges: The role of institutional factors*. Israel Journal of Health Policy Research, 2, 21. <https://doi.org/10.1186/2045-4015-2-21>

Gilboa, A. (2022). *The Implementation of a National Health Information Exchange Platform in Israel*. Inter-American Development Bank (IDB). <http://dx.doi.org/10.18235/0004272>

HealthManagement.org. (n.d.). *The OFEK Health Information Network*. Available at: <https://healthmanagement.org/c/it/issuearticle/the-ofek-health-information-network> [Accessed 7 October 2024].

Nirel, N., Rosen, B., Sharon, A., Blondheim, O., Sherf, M., & Cohen, A. D. (2011). *OFEK virtual medical records: An evaluation of an integrated hospital-community system*. Harefuah, 150(2), 72-78. <https://pubmed.ncbi.nlm.nih.gov/22164929/>

Rosen, B., Ashkenazi, Y., Ben-Assuli, O., Karnieli-Miller, O., Zelingher, J., Hochman, O., & Rosenblum, J., (2017). *Organizational aspects of Israel's national health information exchange*. Jerusalem: Myers-JDC-Brookdale Institute. Available at: <https://brookdale.jdc.org.il/en/publication/organizational-aspects-israels-national-health-information-exchange/> [Accessed 7 October 2024].

Rosen, B., Hartal, M., & Waitzberg, R. (2024). *The Israeli health system's rapid responses during the COVID-19 pandemic*. Israel Journal of Health Policy Research, 13, 11. <https://doi.org/10.1186/s13584-024-00596-x>

