Angelos Stergios | angelos.stergios@novartis.com

Performance and systemic challenges in the management of cardiovascular diseases in Greece: A Delphi Consensus Study

Themistoklis Paraskevas[1], Michalis Papapanou[2], **Angelos Stergios[3]**, Georgios Cheilas[3], Ioannis Boletis[4], Daphne Kaitelidou[5], Panos Kanavos[6], Evangelos Liberopoulos[7], Lefteris Marinos[8], Kostas Mathioudakis[9], Athanasios Pallidis[10], Dimitrios Paraskevis[11], Stavros Terzakis[12], Eleftherios Thireos[13], Konstantinos P. Toutouzas[14], Vasiliki - Rafaela Vakouftsi[15], George Veliotes[16], Kostas Athanasakis[17]

[1]Department of Nephrology and Kidney Transplantation, University of Patras, Greece; [2]Second Department of Obstetrics and Gynecology, Aretaieion University Hospital, National and Kapodistrian University of Athens, Athens, Greece; [3]Novartis Hellas S.A.C.I., Athens, Greece; [4]Onaseio Hospital, Athens, Greece; [5]Department of Nursing, National and Kapodistrian University of Athens, Athens, Greece; [6]Department of Health Policy and LSE Health - Medical Technology Research Group, London School of Economics, London, United Kingdom; [7]First Department of Propedeutic and Internal Medicine, Medical School, National and Kapodistrian University of Athens, Athens, Greece; [8]Federation of Pharmacists' Cooperatives of Greece, OSFE, Athens, Greece; [9]IDIKA - e-Government Center for Health and Social Security SMSA, Athens, Greece; [10]LDL Greece, Athens, Greece; [11]Department of Hygiene Epidemiology and Medical Statistics, Medical School, National and Kapodistrian University of Athens, Athens, Greece; [12]Greek Carers Network EPIONI, Athens, Greece; [13]National Agency for Quality Assurance in Health (AQAH S.A.), Athens, Greece; [14]First Propaedeutic Department of Surgery, ''Hippocrateion" General Hospital, School of Medicine, National and Kapodistrian University of Athens, Athens, Greece; [15]Greek Patients' Association; [16]Interamerican Hellenic Insurance Company, part of Achmea, Athens, Greece; [17]Laboratory for Health Technology Assessment, Department of Public Health Policy, University of West Attica, Athens, Greece

KEY FINDINGS & CONCLUSIONS

- Key systemic challenges were identified across prevention and risk management, care delivery and coordination, equity, healthcare-system capacity, and governance and digital infrastructure, highlighting the need for more integrated cardiovascular care in Greece.
- Risk-factor management, especially lifestyle-related factors, was considered insufficiently addressed within the current healthcare system.
- Improving cardiovascular management in Greece will require **a coordinated, patient-centered strategy that strengthens prevention, improves care pathways, addresses inequities, expands system capacity, and enables better data-driven governance.**

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INTRODUCTION

- **Cardiovascular diseases (CVD) remain a major public health and health-system burden in Greece**, contributing substantially to morbidity, mortality and healthcare resource use[1].
- Although the Greek healthcare system has introduced relevant initiatives, such as the Prolamvano prevention program, **a comprehensive and coordinated National Cardiovascular Action Plan is currently lacking**[2,3].
- At the European level, the **Safe Hearts Plan supports Member States in developing comprehensive national cardiovascular health plans,** highlighting the need for coordinated and sustainable approaches to CVD prevention and management[4].
- The **ZOE** (**Z**ooming-in on the **O**utcomes and **E**ffectiveness of Cardiovascular Prevention in Greece) initiative aims to characterize the burden of CVD (Part 1), to **identify systemic challenges in cardiovascular care (Part 2)** and propose priorities for future prevention and health policy (Part 3)[5,6].
- As the second part of the ZOE initiative, a **two-round modified Delphi study** was conducted to capture **multidisciplinary expert perspectives on gaps and challenges** in the management of cardiovascular disease in Greece.

METHODS

- **Eighteen experts** from across healthcare sector participated in a web-based modified Delphi process.
- **Panel composition:** 5 Specialists · 3 Primary healthcare professionals· 4 Patient representatives · 4 Health economists · 2 Health-authority representatives

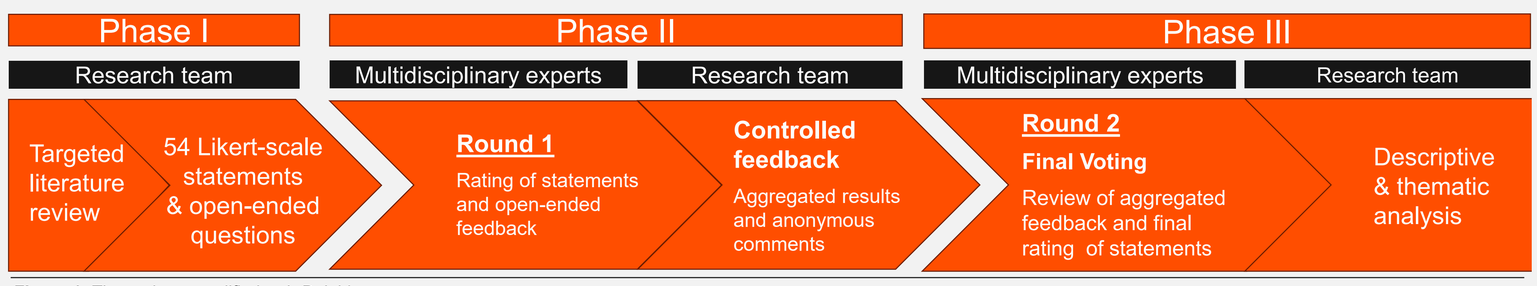


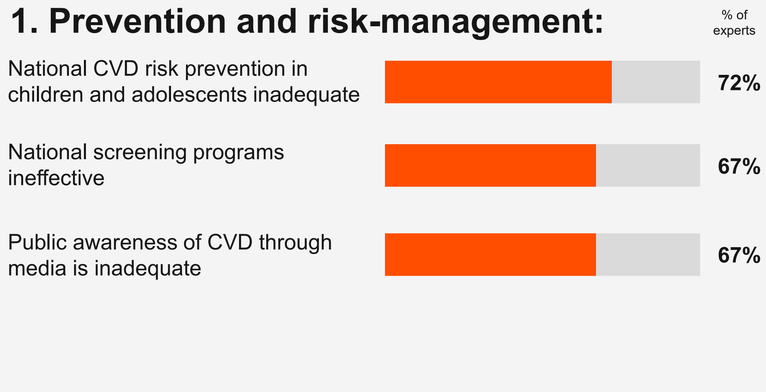
Figure 1: Three-phase modified web-Delphi process.

- In both Delphi rounds, all panelists:
  - rated **positively framed statements using five-point Likert scales**, ranging from "strongly disagree" to "strongly agree" or from "not at all" to "absolutely", depending on the question;
  - provided **qualitative comments** to contextualize and explain their ratings;
  - contributed additional **qualitative insights through open-ended questions.**
- This poster presents findings from 27 of the 54 Likert-scale items, focusing on current health-system performance and systemic challenges.
- **Consensus for quantitative ratings was defined a priori as ≥66.7% agreement**, corresponding to a two-thirds majority across the multidisciplinary panel.
- **Qualitative feedback** from comments and open-ended questions **was analyzed using thematic analysis.**

RESULTS

The key expert-perceived healthcare systemic challenges were categorized into 5 domains: 1. Prevention and risk-management 2. Care delivery and coordination 3. Equity 4. Healthcare system capacity 5. Governance and digital infrastructure (Figure 2).

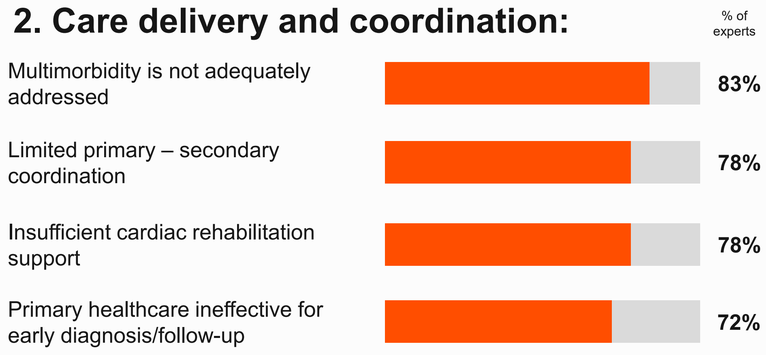
1. Prevention and risk-management:



Key qualitative comments and explanations

- **Current actions for CVD risk prevention and early detection among children and adolescents were rated as insufficient**. Despite the existing initiatives, their impact is limited by restricted coverage, lack of systematic screening, and weak integration with primary care and follow-up mechanisms.
- **National CVD screening programs were rated as insufficiently effective**. Despite the important initiatives, such as the national "Prolamvano" ("Prevent") program, its impact is constrained by fragmented implementation, limited follow-up, insufficient focus on high-risk groups, and weak integration into primary care.
- Although experts had mixed perceptions (no consensus) regarding the adequacy of CVD information and awareness in Greece, they stressed that **media and social media coverage of the disease remains inadequate**.

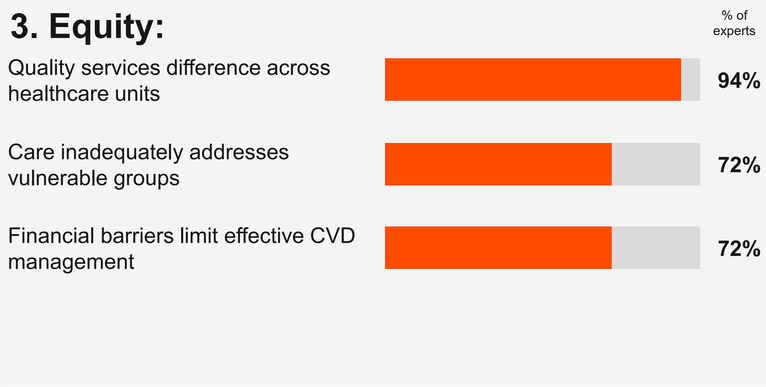
2. Care delivery and coordination:



Key qualitative comments and explanations

- **Current care delivery was considered insufficient to adequately manage multimorbidity,** with experts citing fragmented care, limited multidisciplinary collaboration, workforce shortages, inadequate continuing professional education, and the absence of structured care pathways.
- Experts described cardiovascular care in Greece as clinically adequate; however, **coordination between primary and secondary care was rated as deficient.**
- **Rehabilitation services were rated as insufficient**, with experts highlighting the concentration of services in urban centers, limited accessibility in peripheral regions, and substantial out-of-pocket costs.
- **Primary healthcare (PHC) was widely perceived as incapable of** fulfilling its intended role as **the cornerstone of early CVD diagnosis and long-term follow-up.**

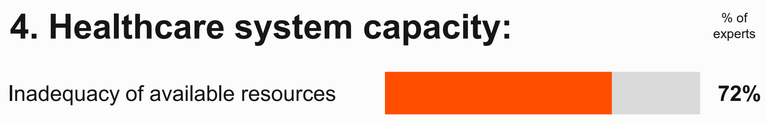
3. Equity:



Key qualitative comments and explanations

- Experts agreed that **substantial differences exist in the quality of cardiovascular services across health units in Greece**, with geographic disparities emerging as the dominant source of variation.
- **Greek health system was considered inadequate in addressing the needs of vulnerable populations**, particularly residents of remote areas, older adults, children, patients with ASCVD and multimorbidity, low-income and low-education groups, migrants, and people with disabilities.
- Experts stressed that **individual-level economic barriers**, such as out-of-pocket payments and cost-sharing, constitute **a major obstacle to effective cardiovascular management**, linking these barriers to delayed diagnosis, poorer treatment adherence, and worse health outcomes.

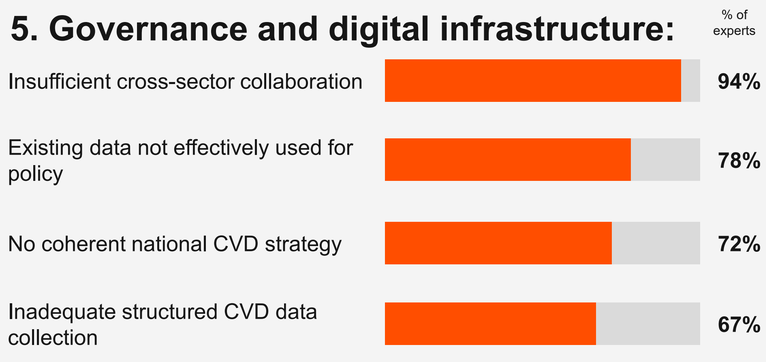
4. Healthcare system capacity:



Key qualitative comments and explanations

The availability of human, technological, and financial resources for cardiovascular care was rated as insufficient. Despite recent investments and reforms, resource constraints persist due to workforce shortages, geographic inequalities in healthcare infrastructure, under-resourced primary care, and limited investment in prevention.

5. Governance and digital infrastructure:



Key qualitative comments and explanations

- **Collaboration across health, education, government, and media sectors was considered insufficient**, with experts highlighting inconsistencies between health promotion messages and real-world environments, particularly in schools (e.g., the availability of unhealthy food in school canteens).
- Experts highlighted **the absence of structured data collection and data availability for cardiovascular policy planning**, citing the lack of a unified national CVD registry, limited data interoperability, fragmented datasets, and underutilization of existing data sources.
- Experts agreed that **Greece does not currently have a coherent, nationally coordinated cardiovascular strategy**, noting that although individual initiatives exist, these efforts remain fragmented and are not integrated within a unified national governance framework.

Health-system success in addressing priority modifiable CVD risk factors

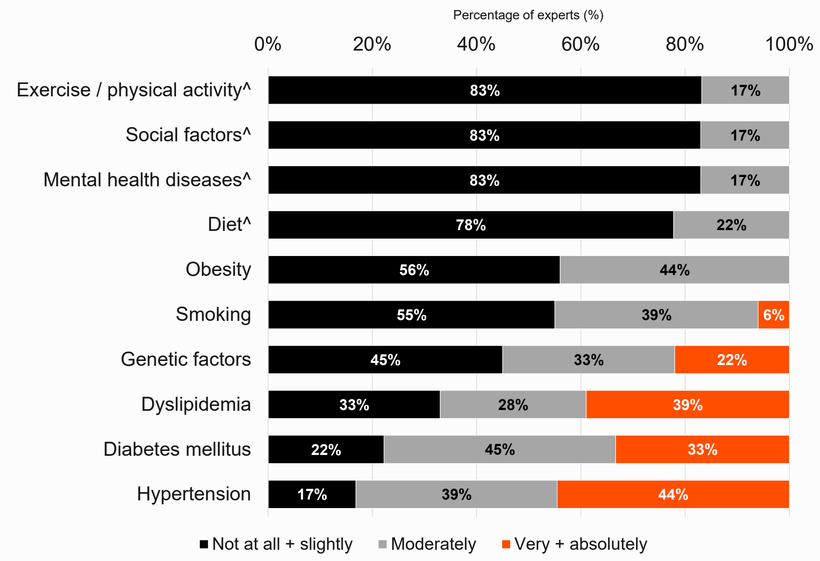


Figure 3. Distribution of expert ratings on how successfully the health system addresses each modifiable cardiovascular risk factor that a national policy should prioritize. ^Negative consensus reached (≥66.7% rated 'not at all' or 'slightly').

System-level weaknesses in current cardiovascular disease management in Greece: qualitative analysis of open-ended question

Fragmented care and coordination	Weak coordination across care settings disrupts continuity and promotes hospital-centric care.
Absence of integrated care pathways	Standardized patient-centered pathways linking prevention, diagnosis, referral, and long-term management are lacking.
Reactive care model	Care remains treatment-focused, with limited emphasis on holistic and proactive risk-factor management.
Limited audit and quality assurance	Guideline implementation, achievement of clinical targets, and healthcare performance are not systematically monitored, evaluated, or audited.
Limited patient empowerment	Structured support for adherence, self-management, health literacy, and active patient involvement remains insufficient.
Fragmented digital infrastructure	Limited interoperability, absence of an integrated digital ecosystem, and underuse of telemedicine constrain continuity, monitoring, and data-driven improvement.

Figure 4. Key weaknesses in current cardiovascular disease management in Greece as identified through qualitative analysis of responses to open-ended questions.

Figure 2. Key healthcare-system gaps in cardiovascular disease management in Greece, categorized into five domains: prevention and risk management, care delivery and coordination, equity, healthcare-system capacity, and governance and digital infrastructure. Percentages represent the proportion of experts selecting the two negative response categories ("strongly disagree" or "disagree").

Limitations

- Expert perceptions, not direct measurement of health-system performance or patient outcomes.
- Small panel (n=18) and possible stakeholder underrepresentation/selection bias limit generalizability.
- This study represents a cross-sectional view of 2025; reforms and digital initiatives may change relevance over time.
- The study identified barriers but did not quantify their relative impact on cardiovascular outcomes.
- Consensus does not imply objective system performance; non-consensus items may still reflect important regional or sectoral variation.
- Possible anchoring/conformity bias from controlled feedback between rounds.

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Disclosures

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