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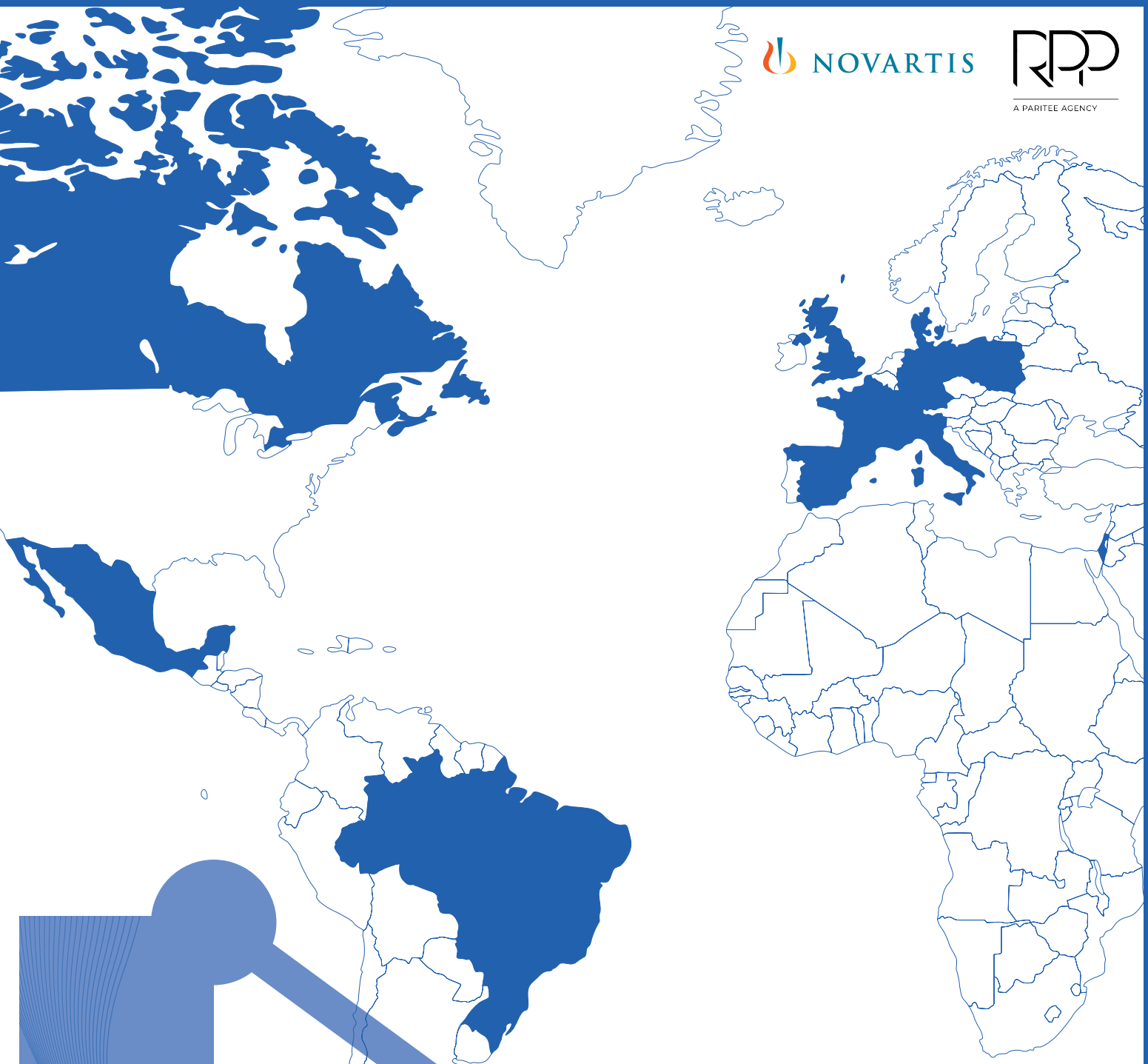

# TREAT-TO-TARGET POLICY LANDSCAPE 2026

Global insights for advancing policies on secondary prevention of cardiovascular disease

# CONTENTS


1. Objective 1
2. Executive summary 1
3. Introduction 2
    3.1. Why Treat-to-Target LDL-C matters 2
    3.2. The policy gap in secondary prevention: The need for system-level evaluation of LDL-C 3
4. Methodology 3
    4.1. Gold standards for Treat-to-Target in lipid management 5
5. Benchmark analysis 7
    5.1. Diverging paths: How countries implement Treat-To-Target differently 10
    5.2. Do stronger Treat-to-Target systems achieve better LDL-C outcomes? 11
    5.3 Do policies designed to keep patients on target improve LDL-C target attainment? 11
    5.4. Barriers and enablers of T2T implementation 12
    5.5. Best practices in treat-to-target across 12 markets 13
6. Country profiles 15
    6.1. Brazil 16
    6.2. Canada 20
    6.3. Denmark 24
    6.4. France 28
    6.5. Germany 32
    6.6. Israel 36
    6.7. Italy 40
    6.8. Mexico 44
    6.9. Poland 48
    6.10. Spain 52
    6.11. Switzerland 56
    6.12. United Kingdom 60
7. References 65



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# 1. OBJECTIVE

The objective of this report is to evaluate how effectively 12 health systems have implemented Treat-to-Target (T2T) LDL-C policies for secondary prevention of atherosclerotic cardiovascular disease (ASCVD) and dyslipidemia. The countries included were selected to ensure cross-country policy relevance and comparability rather than to reflect a ranking by cardiovascular disease burden, with a focus on European systems complemented by international comparators operating within, or closely aligned to, ESC/EAS guidelines. Selection criteria included geographic and health system diversity, policy implementation, and strategic relevance for cross-country learning.

Using a structured Gold Standard framework, the report assesses the maturity of national policies, clinical pathways, incentives, and digital infrastructure required to ensure early, intensive, and sustained LDL-C lowering. The analysis identifies best practices, quantifies implementation gaps, and examines whether stronger T2T system design is associated with improved lipid outcomes and cardiovascular performance.

# 2. EXECUTIVE SUMMARY

Cardiovascular disease continues to place a substantial burden on health systems, and persistent gaps in LDL-C control remain a major driver of recurrent events in patients with ASCVD and dyslipidemia. While the Treat-to-Target (T2T) model provides a clear operational framework for achieving guideline-recommended LDL-C thresholds, its implementation depends on the presence of system-level enablers: structured care pathways, escalation protocols, digital monitoring tools, access to combination therapy, and performance mechanisms that reinforce sustained lipid management.

Across the 12 countries assessed, the maturity of these system enablers varies widely. Only the United Kingdom demonstrates full alignment with the T2T Gold Standards, integrating national guidelines with digital registries, unified quality indicators, and financial or contractual levers that support therapy optimisation and follow-up. This level of structural alignment appears to correlate with more systematic adoption of innovative lipid-lowering therapies, including injectable treatments such as PCSK9 inhibitors, where the UK has demonstrated comparatively strong uptake supported by national commissioning frameworks.

A second group, Denmark, Israel, Italy, Poland, and Spain, show strong performance in specific domains, such as guideline alignment, specialist lipid services, access to advanced lipid-lowering therapies, or regional monitoring initiatives. However, implementation remains uneven across the full continuum of care, with variability in follow-up protocols, escalation mechanisms, and accountability frameworks. As a result, while many structural components of T2T are present, they are not yet consistently operationalised at national scale.

In contrast, Germany, Mexico and Switzerland, show strong alignment with clinical guidelines but weaker system-level operationalisation. In these settings, key structural mechanisms such as escalation protocols, performance monitoring, and integrated digital tools remain underdeveloped or inconsistently applied. This disconnect between guideline intent and system capacity contributes to delayed therapy intensification and lower LDL-C target attainment in routine practice.

Finally, Brazil, Canada, and France exhibit more foundational levels of system readiness. Although clinical guidance and access to first-line lipid-lowering therapies are generally established, structural enablers for sustained secondary prevention—such as national monitoring systems, coordinated follow-up pathways, and consistent access to advanced therapies—remain limited or fragmented. In Canada in particular, the provincial organisation of reimbursement and care delivery results in heterogeneous implementation across regions.

Quantitative analysis confirms a positive association between Gold Standard maturity and LDL-C target attainment, demonstrating that countries with stronger T2T infrastructure achieve better control among high- and very-high cardiovascular-risk populations. The findings highlight the importance of moving beyond guideline publication toward system architecture that enables consistent measurement, timely intensification, and shared accountability for lipid outcomes.

# 3. INTRODUCTION

Atherosclerotic cardiovascular disease (ASCVD) remains the leading cause of death and disability worldwide, responsible for more than 18 million deaths annually and approximately one-third of all global mortality[1], and dyslipidemia, especially elevated LDL-cholesterol (LDL-C), is one of its most powerful and modifiable drivers[2]. Global estimates show that high LDL-C alone accounted for almost 4 million deaths in 2021[3], underscoring its central causal role in atherosclerosis.

Decades of evidence have established a clear, graded relationship between LDL-C and ASCVD risk: for every 1 mmol/L (≈38 mg/dL) sustained reduction in LDL-C, major cardiovascular events fall by approximately 22–25%, with benefits observed across all risk categories[4]. Modern guidelines therefore recommend ambitious LDL-C targets for patients with established ASCVD and other very-high-risk conditions and emphasise the need for early, intensive, and sustained lipid-lowering therapy[5].

Yet in routine practice, most secondary-prevention patients do not reach these targets. The problem is no longer a lack of therapies, high-intensity statins, ezetimibe, PCSK9 inhibitors and siRNA agents are widely available[6], but a lack of policies and system structures that ensure these therapies are used in a timely, sustained, and risk-aligned way. This is precisely the gap T2T policies are designed to close.

Treat-to-Target in dyslipidemia is a policy and system framework that operationalises guideline recommendations into concrete expectations for care. While clinical guidelines define LDL-C thresholds and targets according to cardiovascular risk category (e.g. low, moderate, high, very high, and extreme risk), T2T policies translate these targets into structured practice. They mandate regular lipid testing, and link off-target results to specific escalation steps (e.g. high-intensity statin, add ezetimibe, add PCSK9/siRNA) and encourage sustained achievement of LDL-C targets[7]. T2T policies should also monitor clinical outcomes, particularly where LDL-C targets are not achieved or maintained, to ensure accountability and continuous optimisation of care. To be effective, these policies must be embedded in the architecture of the health system: discharge pathways, shared-care agreements between cardiology and primary care, digital alerts in electronic health records, quality indicators, funding rules for combination therapy, and incentives or feedback loops that address therapeutic inertia and poor adherence[5].

In patients with ASCVD and dyslipidemia, robust T2T policies can transform care from a "fire-and-forget" model into a continuous, outcome-oriented process where LDL-C is treated as a modifiable vital sign. When national strategies, payer frameworks, and clinical pathways are aligned around T2T, clinicians are more likely to intensify therapy, patients are more likely to remain on effective regimens, and systems can systematically reduce residual risk after an acute coronary event.[8]

This report evaluates how 12 countries have designed and implemented T2T policies. Using a structured Gold Standard framework, it assesses the maturity of national guidelines, reimbursement mechanisms, digital infrastructure, and accountability tools that enable T2T in real-world practice. It also examines whether countries with more advanced T2T policy implementation achieve better LDL-C outcomes in high- and very-high-risk populations. The goal is to provide a comparative view of T2T readiness, highlight scalable best practices, and guide policy makers, payers, and industry partners in strengthening secondary prevention for patients living with ASCVD and dyslipidemia.

## 3.1. WHY TREAT-TO-TARGET LDL-C MATTERS

The clinical rationale for T2T is unequivocal. LDL-C reduction is directly proportional to risk reduction; lower LDL-C levels consistently yield fewer cardiovascular events; and earlier, sustained reduction diminishes cumulative "cholesterol-years," a key determinant of lifetime risk. Updated ESC/EAS guidelines require LDL-C targets of <1.8 mmol/L for high-risk and <1.4 mmol/L for very-high risk patients, with even lower thresholds (<1.0 mmol/L) for extreme risk[5].

Despite this evidence, treatment patterns are characterized by under-intensification, suboptimal adherence, and insufficient monitoring. Therapeutic inertia, clinicians' failure to escalate therapy when targets are unmet, is a dominant barrier, affecting more patients than non-adherence alone. T2T transforms lipid management from a static "fire-and-forget" model to a dynamic, feedback-driven approach requiring regular monitoring, algorithmic escalation, and system accountability.

## 3.2. THE POLICY GAP IN SECONDARY PREVENTION: THE NEED FOR SYSTEM-LEVEL EVALUATION OF LDL-C MANAGEMENT

While the clinical evidence base for LDL-C lowering in secondary prevention is extensive and well established, far fewer studies have examined the health-system determinants that enable or constrain effective implementation of guideline-recommended lipid management. Existing multinational registries (e.g., EUROASPIRE[9], SANTORINI[10]) consistently highlight gaps in LDL-C monitoring, therapy escalation, adherence, and use of combination therapy, yet they provide limited insight into the policy, organisational, and digital infrastructures that drive this variation across countries.

Likewise, although T2T strategies have demonstrated clinical effectiveness in controlled trials and selected regional programmes, there remains limited systematic comparative assessment of how national systems integrate T2T principles into reimbursement frameworks, shared-care models, quality indicators, or electronic health records. In addition to current guideline documents (ESC/EAS, ACC/AHA), broader policy frameworks such as the World Heart Federation (WHF) Roadmap on cholesterol provide an important public health foundation, building on scientific evidence, identifying implementation barriers through surveys of member countries, and proposing adaptable solutions across regions. However, these frameworks primarily outline strategic priorities and recommended actions, rather than offering structured cross-country evaluation of how health system architectures embed and sustain T2T delivery in routine practice. As such, there remains a notable absence of analyses focused on the how - that is, which structural levers must be present for guideline-based LDL-C management to be delivered reliably and at scale.

No comparative policy framework currently evaluates countries across the full continuum of T2T enablers, nor links policy maturity to real-world LDL-C outcomes. This report responds to that gap by applying a ten-domain Gold Standard scoring framework to 12 countries, enabling systematic benchmarking of T2T readiness and supporting an evidence-based understanding of how system design influences lipid outcomes in high- and very-high-risk patients.

# 4. METHODOLOGY

This policy landscape assessed T2T implementation across 12 markets using a structured comparative framework aligned with the Gold Standards for LDL-C secondary prevention. The methodology integrated policy analysis, clinical guideline assessment, real-world evidence review, and system-level benchmarking to evaluate each country's readiness to operationalise T2T at scale.

The research and drafting of this report were carried out by RPP Group, with internal review and validation by Novartis to ensure accuracy and strategic alignment.

## 1. SYSTEMATIC POLICY, GUIDELINE, AND EVIDENCE REVIEW

The research team conducted a comprehensive review of national and regional policies, clinical guidelines, ASCVD care pathways, reimbursement and formulary frameworks, digital health strategies, cardiac rehabilitation models, and quality indicator programmes. Evidence was triangulated using published literature, real-world registry data, national audits, and peer-reviewed studies to assess implementation fidelity, LDL-C attainment rates, therapeutic inertia, and treatment patterns. The review examined both formal policy documents and documented real-world practice to determine the degree of alignment with T2T principles.

## 2. GOLD STANDARD SCORING AGAINST 10 STRUCTURAL DIMENSIONS

Each country was assessed against ten predefined Gold Standards that represented the essential components of an effective Treat-to-Target system. These included:

1. Policy alignment with evidence-based, early, intensive, and sustained LDL-C lowering
2. Guideline-defined LDL-C targets
3. In-hospital initiation, early combination lipid-lowering therapies, and continuity of care
4. Structured follow-up, therapy escalation, and accountability
5. Tackling therapeutic inertia through incentives and feedback
6. Medication adherence measurement, support, and patient engagement
7. Access to combination and long-term lipid-lowering therapies
8. Integrated digital registries, alerts, and data standards
9. Quality indicators and incentives
10. Multidisciplinary care, workforce training, and patient involvement

Each domain was scored from 0 to 3, where 0 indicated absence of policy or implementation, 1 reflected partial or regional adoption, 2 denoted established but inconsistently applied frameworks, and 3 represented fully implemented, system-wide maturity supported by enforcement or incentives.

| Score | Definition | What It Means In Practice |
|---|---|---|
| 0 - No Implementation | No national or regional policy exists; no evidence of system mechanisms supporting this Gold Standard. | The domain is either absent or entirely dependent on individual clinician initiative. No structural support, accountability, or formal integration into care systems. |
| 1- Partial / Early Implementation | Policies exist or are referenced, but implementation is inconsistent, limited in scope, or not operationalised system-wide. | The domain is recognised in policy documents or guidelines, but not embedded in financing, indicators, digital systems, or routine clinical workflows. Effect on LDL-C outcomes is minimal. |
| 2- Moderate / Structured Implementation | Clear policies and mechanisms exist, and implementation is structured but incomplete or not consistently applied nationally. | Systems show strong elements—e.g., regional pathways, pilot programmes, registries—but coverage and enforcement are uneven. Evidence of impact exists but is not scaled. |
| 3 - Full / System-Level Implementation | The Gold Standard is fully operationalised at national scale, with embedded indicators, governance mechanisms, digital infrastructure, and accountability processes. | The domain is a routine, expected component of care. Data are monitored; incentives or performance frameworks exist; clinicians and health systems must comply. Demonstrated impact on LDL-C control and secondary prevention. |

# 3. CROSS-COUNTRY BENCHMARKING AND THEMATIC ANALYSIS

Scoring outputs were benchmarked across all 12 markets to identify structural strengths, gaps, and variations in implementation maturity. The analysis synthesised patterns across domains and examined associations between T2T readiness, system design features, and real-world LDL-C outcomes. Thematic analysis identified recurring barriers that undermined T2T adoption across

# 4. IDENTIFICATION OF BEST PRACTICES AND OPPORTUNITIES FOR SYSTEM STRENGTHENING

High-scoring or high-performing models were examined to identify replicable best practices. These best practices were then systematically mapped to the structural gaps identified in lower-performing countries. This cross-market crosswalk enabled the formulation of targeted, scalable policy recommendations, ensuring that countries could adopt interventions most relevant to their specific weaknesses and level of T2T readiness.

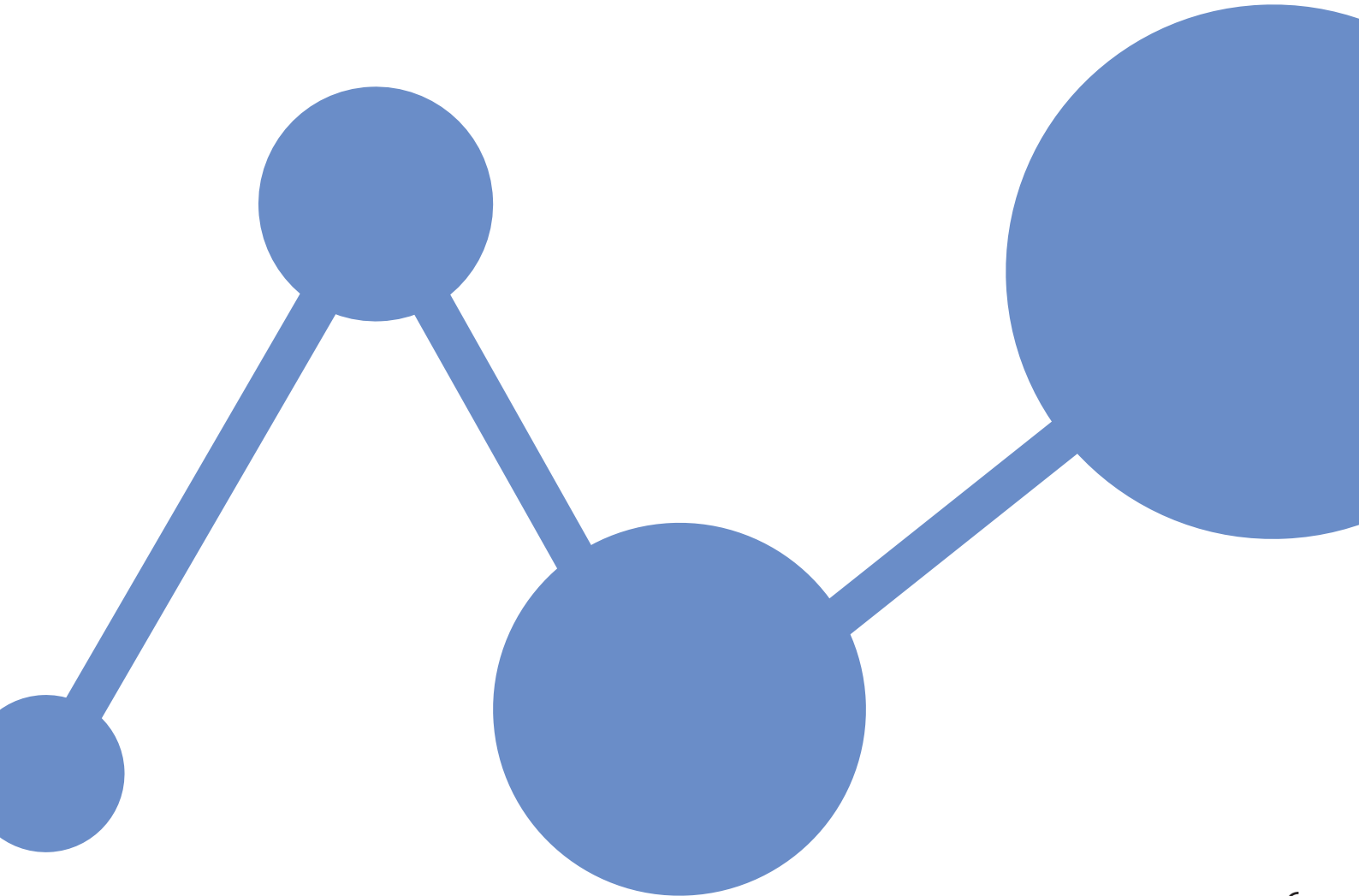
# 4.1. GOLD STANDARDS FOR TREAT-TO-TARGET IN LIPID MANAGEMENT

To benchmark how effectively different health systems are positioned to implement T2T LDL-C management, this analysis employs a ten-domain Gold Standard framework designed to capture the core policy, organisational, and operational elements required for high-quality secondary prevention.

These Gold Standards were developed to provide a consistent, comparable basis for evaluating countries across the full continuum of ASCVD care, from alignment with international guidelines and the use of explicit LDL-C targets, to in-hospital initiation, structured follow-up, escalation protocols, and mechanisms to address therapeutic inertia. Together, these ten Gold Standards form a comprehensive benchmarking tool that enables systematic cross-country comparison, identification of structural strengths and gaps, and assessment of each health system's readiness to operationalise T2T LDL-C strategies in real-world practice.

| Gold Standard | Description |
|---|---|
| 1. Policy alignment with evidence-based, early, intensive, and sustained LDL-C lowering | National clinical guidelines clearly define LDL-C targets by cardiovascular risk category and promote alignment with international standards. LDL-C targets are explicitly referenced in national guidelines and payer frameworks and integrated into quality-of-care indicators. Alignment between national targets as well as the 2025 AHA/ ACC ACS and the ESC/EAS guidance is regularly reviewed to maintain harmonization across countries. |
| 2. Guideline-defined LDL-C targets | National clinical guidelines clearly define LDL-C targets by cardiovascular risk category and promote alignment with international standards. LDL-C targets are explicitly referenced in national guidelines and payer frameworks and integrated into quality-of-care indicators. Alignment between national targets as well as the 2025 AHA/ ACC ACS and the ESC/EAS guidance is regularly reviewed to maintain harmonization across countries. |
| 3. In-hospital initiation, early combination lipid-lowering therapies, and continuity of care | Hospital discharge pathways and reimbursement frameworks (e.g., DRG-linked metrics) require the initiation or optimization of lipid-lowering therapy prior to discharge and clear documentation of transition of care. National or regional policies should specify referral responsibilities, communication standards, and shared-care arrangements between hospital and primary care teams to ensure timely treatment intensification and sustained long-term LDL-C goal maintenance. |
| 4. Structured follow-up, therapy escalation, and accountability in care | National guidelines and payer frameworks establish mandatory follow-up intervals and escalation criteria, with compliance monitored through audits or digital reporting systems. Policies should also define referral triggers and shared-care arrangements to avoid treatment delays or therapeutic inertia after discharge. |
| 5. Tackling therapeutic inertia through incentives, funding, and performance feedback | National and regional quality frameworks include indicators to identify and address therapeutic inertia, such as "no medication change despite off-target LDL-C," automated alerts, audit feedback, or performance dashboards to encourage treatment intensification. |
| 6. Medication adherence measurement, support, and patient engagement | Medication adherence is established as a national quality indicator, with adherence-support interventions covered by reimbursement frameworks. Quality programs should track both adherence rates and participation in support initiatives, ensuring accountability and continuous improvement in LDL-C management. |
| 7. Access to combination and long-term therapies | National formularies and HTA frameworks explicitly cover advanced lipid-lowering therapies, including PCSK9 inhibitor–targeted therapies, for eligible high-risk patients. In decentralised systems, regional or hospital-level budget controls, administrative requirements, or prescribing restrictions may create variability in uptake and delay treatment initiation. Reimbursement policies prioritize early combination therapy and equitable access at the regional and hospital levels, ensuring that administrative processes do not delay treatment initiation or continuation. |

| | |
|---|---|
| 8. Integrated digital registries, EHR alerts, and data | Participation in digital registries and reporting systems is mandated at the national or regional level, with data used to inform quality reporting, policy evaluation, and resource allocation. Clear standards for data governance, coding consistency, and interoperability are required to ensure that registry outputs are actionable and comparable across regions. |
| 9. Quality indicators and incentives | National and regional quality frameworks explicitly integrate LDL-C-related indicators within performance reporting and reimbursement systems. These metrics are used for financial incentives, accreditation, and public transparency, (e.g QOF-type frameworks) ensuring accountability and continuous improvement in lipid management outcomes. |
| 10. Multidisciplinary care, workforce training, and patient involvement | National service specifications and funding mechanisms support the establishment of multidisciplinary lipid management teams and clinics. Workforce development programs align with national cardiovascular health strategies as well as the 2025 AHA/ ACC ACS and ESC/EAS guidelines, ensuring consistent implementation of evidence-based care. Patient education initiatives and structured involvement programs are included within quality frameworks to promote adherence and shared decision-making. |



# 5. BENCHMARK ANALYSIS

The following benchmark analysis systematically evaluates how 12 health systems perform across the ten T2T Gold Standards, providing a comparative view of their structural readiness to deliver effective LDL-C management in secondary prevention.

The scoring reveals not only absolute performance levels but also patterns in how different countries have adopted, or failed to adopt, the operational mechanisms required to translate clinical guidelines into real-world outcomes. By examining performance across the 10 Gold Standard domains, the analysis highlights both areas of strength and recurrent structural gaps. This cross-country comparison forms the basis for the tiered readiness classification that follows, illustrating where health systems are fully equipped, partially aligned, or still lacking the foundational components necessary for robust T2T implementation.

Each Gold Standard was scored using a structured 0–3 maturity scale to ensure consistent, comparable assessment across the 12 health systems. Scores reflect policy existence, operationalisation, and system-wide implementation of T2T LDL-C enablers.

## FIGURE 1: T2T GOLD STANDARD IMPLEMENTATION MATURITY BY COUNTRY

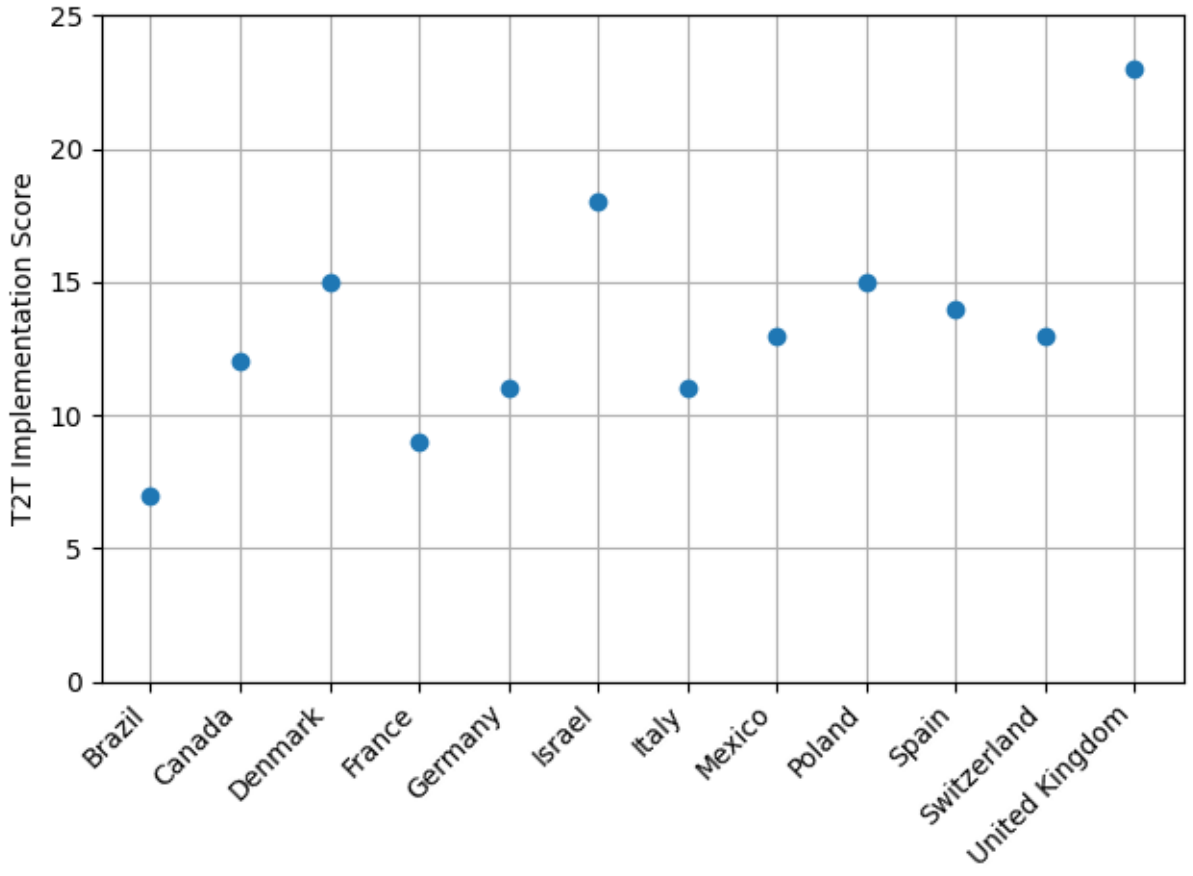



Figure 1 presents country-level T2T implementation maturity and reveals wide variability in overall readiness. Scores range from 7 (Brazil) to 23 (United Kingdom), illustrating a substantial divide between countries with well-developed T2T systems and those with only basic or partially implemented structures. Overall, the plot demonstrates that T2T implementation maturity is far from uniform globally, with only a minority of countries studied currently positioned to deliver guideline-recommended LDL-C management at scale.

# FIGURE 2: VARIATION IN T2T POLICY ADOPTION ACROSS GOLD STANDARDS

| | GS1 | GS2 | GS3 | GS4 | GS5 | GS6 | GS7 | GS8 | GS9 | GS10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Brazil | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| Canada | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Denmark | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 3 | 0 | 3 |
| France | 2 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| Germany | 2 | 1 | 1 | 1 | 1 | 0 | 2 | 1 | 1 | 1 |
| Israel | 2 | 1 | 2 | 1 | 1 | 3 | 2 | 2 | 2 | 2 |
| Italy | 2 | 1 | 1 | 1 | 0 | 1 | 3 | 1 | 0 | 1 |
| Mexico | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 |
| Poland | 2 | 2 | 2 | 2 | 1 | 0 | 2 | 1 | 1 | 2 |
| Spain | 2 | 1 | 2 | 1 | 0 | 2 | 1 | 1 | 2 | 2 |
| Switzerland | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 2 |
| United Kingdom | 2 | 3 | 2 | 2 | 2 | 1 | 3 | 3 | 3 | 2 |

GS1: Policy alignment with evidence-based, early, intensive, and sustained LDL-C lowering
GS2: Guideline-defined LDL-C targets
GS3: In-hospital initiation, early combination lipid-lowering therapies, and continuity of care
GS4: Structured follow-up, therapy escalation, and accountability in care
GS5: Tackling therapeutic inertia through incentives, funding, and performance feedback
GS6: Medication adherence measurement, support, and patient engagement
GS7: Access to combination and long-term therapies
GS8: Integrated digital registries, EHR alerts, and data quality standards
GS9: Quality indicators and incentives
GS10: Multidisciplinary care, workforce training, and patient involvement

Figure 2 shows substantial variation in T2T implementation readiness across countries, with scores spanning from foundational to highly advanced. Broadly, the data reveal three consistent patterns:

1. Most countries perform well on guideline adoption but fall short on the operational mechanisms needed to deliver sustained LDL-C management;
2. A mid-performing group shows partial system integration but inconsistent scaling of digital tools, follow-up protocols, and accountability frameworks;
3. Only one country, the UK, demonstrates comprehensive implementation across nearly all Gold Standards.

These distinct patterns cluster countries into four tiers based on the maturity of their T2T infrastructure, providing a structured way to interpret system readiness and compare performance across markets. While the tiering reflects the predominant system characteristics observed across countries, individual outliers exist due to specific structural features that are better explained through qualitative evidence.

# TIER 1 - SYSTEM-READY LEADERS

## UNITED KINGDOM

The United Kingdom is the only country demonstrating consistently high performance across nearly all Gold Standards, reflecting a cohesive national approach to secondary prevention. Strong digital registries, robust integration of primary care data, mandatory quality indicators, and incentive-linked performance frameworks position the UK as the most advanced system for Treat-to-Target implementation. The UK therefore represents a mature and highly integrated model in which guideline recommendations are supported by operational infrastructure, accountability mechanisms, and standardized data systems. While cross-country causality cannot be directly inferred from this analysis, the UK's structured approach to lipid management aligns with evidence linking systematic LDL-C reduction to improved cardiovascular outcomes and reduced event recurrence in high-risk populations. However, when comparing LDL-C target attainment across countries, it is important to consider that some UK data rely on a higher threshold (≤ 2.0 mmol/L), which may partially influence its comparatively strong performance.

# TIER 2 - STRUCTURED BUT FRAGMENTED ACHIEVERS

## DENMARK, ISRAEL, ITALY, POLAND, AND SPAIN

These countries exhibit strong performance in several domains, particularly guideline alignment, early therapy initiation, access to combination therapy, or the presence of structured specialist programmes and monitoring systems. Most have implemented successful regional or programme-level initiatives such as lipid clinics, structured post-MI pathways, or national registries.

However, implementation remains uneven across the full continuum of care. Importantly, where advanced lipid-lowering therapies are formally reimbursed at national level, real-world access may still vary due to regional, hospital-level, or administrative restrictions. In decentralised systems, this can result in heterogeneous uptake and delayed treatment intensification. As a result, while access frameworks may exist, practical accessibility is not always uniform across patient populations or geographies. Common gaps include incomplete national scaling, inconsistent follow-up protocols, and limited use of incentives or accountability frameworks. These systems possess many of the necessary elements for high-quality secondary prevention but have not yet operationalised them uniformly.

Within this tier, Italy represents a relatively strong performer in terms of access to advanced lipid-lowering therapies, supported by AIFA-managed therapeutic registries and nationally reimbursed treatment pathways that facilitate monitoring and adherence among treated patients. However, these mechanisms remain largely concentrated within specialist care settings and are not yet consistently embedded within a nationwide T2T implementation framework.

# TIER 3 - GUIDELINE-ALIGNED BUT MECHANISTICALLY UNDERDEVELOPED

## GERMANY, MEXICO, AND SWITZERLAND

Countries in this tier demonstrate strong alignment with ESC/EAS secondary prevention guidelines and reasonably robust acute-phase management. However, structural components essential for T2T delivery, such as escalation protocols, digital integration, and outcome-based incentives, remain insufficiently developed. While individual mechanisms, such as registries, rehabilitation programmes, or specialist pathways, may be well established in particular contexts, these strengths are not uniformly reflected across the broader care pathway. Overall, gaps persist between clinical standards and system capacity, limiting the translation of guidelines into consistent LDL-C target attainment.

Despite higher overall scores, Switzerland falls within this tier because, while the country demonstrates strong rehabilitation programmes and specialist care capacity, broader system integration, including consistent escalation pathways and access frameworks for advanced lipid-lowering therapies, remains more limited. This example illustrates the central challenge within this tier: strong individual system elements without the integrated governance and operational mechanisms required to deliver T2T consistently at national scale.

# TIER 4 - FOUNDATIONAL BUT STRUCTURALLY LIMITED SYSTEMS

## BRAZIL, CANADA, AND FRANCE

France and Brazil have established strong clinical guidelines and access to first-line lipid-lowering therapies, yet lack the structural enablers required for sustained secondary prevention. In both countries, digital infrastructure, quality indicators, systematic follow-up, and therapy escalation mechanisms remain limited or inconsistently applied, constraining the ability to translate guideline recommendations into consistent LDL-C control. In France specifically, access to certain innovative lipid-lowering therapies has been constrained by pricing negotiations and reimbursement conditions, resulting in limited real-world uptake despite regulatory approval.

Canada presents a different but related structural challenge. While the country benefits from universal healthcare coverage and well-established clinical guidance, the provincial organisation of drug reimbursement results in heterogeneous access to advanced lipid-lowering therapies and fragmented national monitoring systems. As a result, progress in Treat-to-Target implementation varies significantly across provinces. Overall, these systems possess the foundational components for effective secondary prevention but lack the integrated governance, monitoring, and accountability mechanisms required to ensure consistent longitudinal LDL-C management.

# DIVERGING PATHS: HOW COUNTRIES IMPLEMENT TREAT-TO-TARGET DIFFERENTLY

Figure 2 reveals a clear hierarchy in the adoption of T2T system components across the 12 countries assessed. GS1 (policy alignment with evidence-based LDL-C lowering) is uniformly strong, with all countries scoring at a high level. This reflects broad consensus around the scientific evidence and guideline recommendations for LDL-C management in ASCVD and confirms that lack of awareness or disagreement on targets is not the primary barrier to implementation. Similarly, GS3 (in-hospital initiation, early combination therapy, and continuity of care) and GS7 (access to combination and long-term therapies) show relatively high and consistent adoption, indicating that most systems are capable of initiating lipid-lowering therapy during hospitalisation and have formal access pathways for combination treatment, including advanced therapies.

In contrast, the weakest Gold Standards in terms of adoption are GS5 (tackling therapeutic inertia through incentives, funding, and performance feedback) and GS6 (medication adherence measurement, support, and patient engagement). These domains show low scores across the majority of countries, with several scoring zero. This indicates that therapeutic inertia and adherence are rarely treated as system-level policy problems with defined indicators, funding, or accountability mechanisms. The absence of incentives linked to LDL-C outcomes and the lack of structured adherence monitoring undermine sustained T2T delivery, even in systems with good guideline alignment and drug availability.

The analysis also highlights GS8 (integrated digital registries, EHR alerts, and data quality standards) and GS9 (quality indicators and incentives) as the Gold Standards with the greatest variation between countries. A small number of systems—most notably the United Kingdom and Denmark—demonstrate advanced digital integration and performance frameworks, while many others rely on fragmented, regional, or non-mandatory data systems. This wide dispersion suggests that digital maturity and the use of outcome-oriented quality indicators are key differentiators of T2T readiness and major drivers of the overall maturity gap observed between countries.

Overall, the heatmap shows that foundational elements of T2T (guidelines, initiation of therapy, and access to medicines) are largely in place, whereas operational enablers, such as follow-up, escalation, digital monitoring, incentives, and adherence support, remain the most underdeveloped and unevenly implemented components. These weaker and more variable Gold Standards represent the highest-impact opportunities for system strengthening and explain much of the cross-country variation in T2T performance observed in the benchmark analysis.

# DO STRONGER TREAT-TO-TARGET SYSTEMS ACHIEVE BETTER LDL-C OUTCOMES?

## FIGURE 3: CORRELATION BETWEEN TREAT-TO-TARGET POLICY IMPLEMENTATION AND LDL-C GOAL ACHIEVEMENT

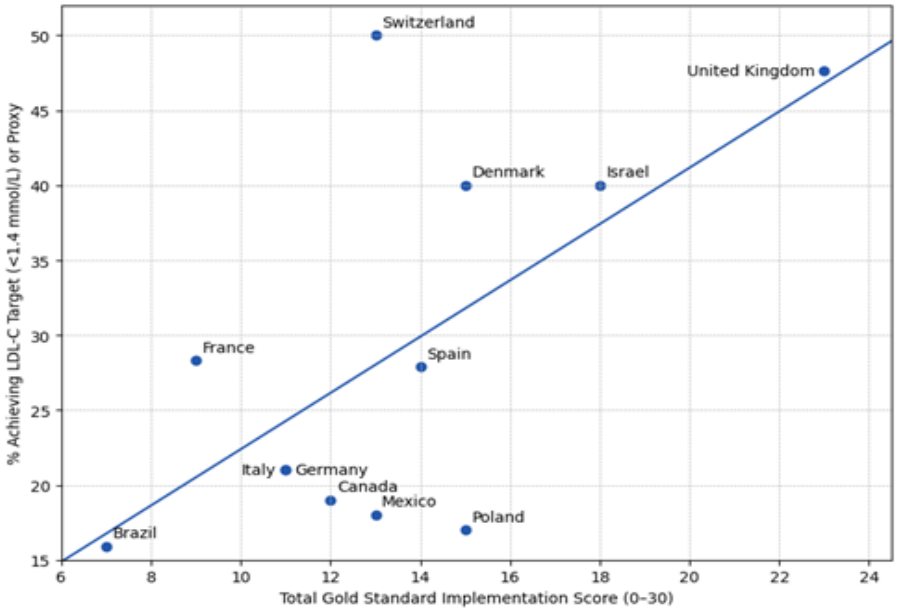



Figure 3 demonstrates a positive association between the overall maturity of T2T policy implementation, as measured by total Gold Standard scores, and the proportion of high and very-high cardiovascular risk patients achieving ESC LDL-C targets. Countries with more advanced structural enablers—such as the United Kingdom, Switzerland, Israel, and Denmark—show markedly higher LDL-C goal attainment, while those with lower or fragmented policy maturity (including Brazil, Poland, Mexico, Italy, Canada, and Germany) cluster at substantially lower achievement levels, typically between 15–22%. France and Spain occupy an intermediate position in the distribution, with LDL-C goal attainment around 28%, suggesting partial structural maturity that may not yet be fully translating into optimal population-level control.

However, it is important to note that outliers can be explained by context: Switzerland's ~50% attainment reflects performance within a cardiac rehabilitation cohort, and the United Kingdom's 47.6% reflects a less stringent proxy threshold (LDL ≤2.0 mmol/L) due to the absence of <1.4 mmol/L data.

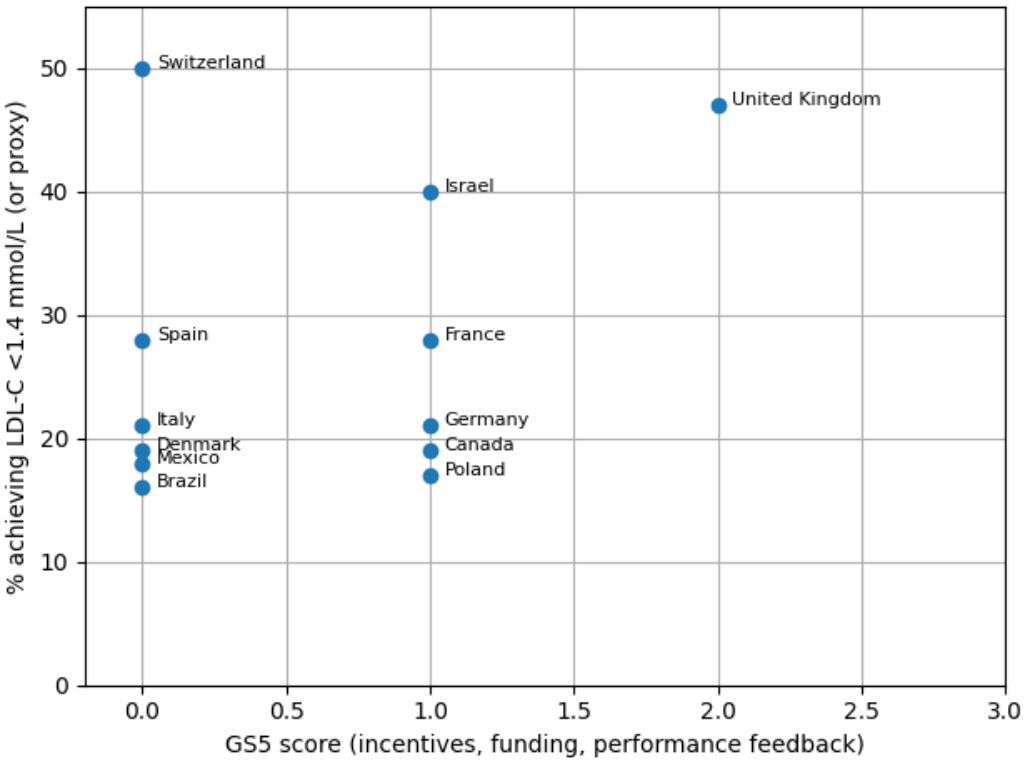
Overall, the upward slope of the trend line indicates that stronger structural readiness, particularly digital registries and alerts (GS8), quality indicators and incentives (GS9), structured follow-up and escalation criteria (GS4), and mechanisms to address therapeutic inertia (GS5), is consistently associated with improved LDL-C control at the population level. This supports the core hypothesis that system design, rather than guideline alignment alone, is the primary determinant of T2T success.

# DO POLICIES DESIGNED TO KEEP PATIENTS ON TARGET IMPROVE LDL-C TARGET ATTAINMENT?

GS5 (tackling therapeutic inertia through incentives, funding mechanisms, and performance feedback) was identified as the least consistently implemented Gold Standard across the countries assessed, prompting further examination of its potential relationship with LDL-C outcomes. While multiple Gold Standards contribute to the enabling environment for T2T delivery, those that directly address therapeutic inertia and establish accountability measures once treatment has been initiated are expected to exert a greater influence on sustained LDL-C control.

Accordingly, Figure 4 examines the association between GS5 and LDL-C target attainment across countries. This focused approach enables a more precise assessment of whether health systems that embed mechanisms within routine care to actively keep patients on target achieve superior real-world outcomes.

# FIGURE 4: ASSOCIATION BETWEEN GS5 ENFORCEMENT AND LDL-C TARGET ATTAINMENT




Countries without GS5 implementation consistently demonstrate low LDL-C control, clustering below approximately 25% target attainment, while partial or indirect incentive mechanisms are associated with only modest improvements. The sole system with comprehensive, outcome-linked incentives achieves substantially higher LDL-C attainment and is clearly separated from the rest. However, it should be noted that differences in LDL-C thresholds (e.g. 2.0 mmol/L vs ESC-aligned <1.4 mmol/L targets) influence cross-country comparability of outcome levels.

A small number of apparent outliers can be explained by contextual factors rather than system-wide enforcement: for example, Switzerland's high attainment reflects a cardiac rehabilitation cohort with intensive follow-up rather than national policy implementation, while Israel's performance is influenced by payer-level digital oversight in the absence of formal national incentives. Italy represents a positive outlier, suggesting that strong adherence practices and clinical follow-up structures can drive improved attainment even where formal financial incentives are limited. Although outcome definitions vary across countries and causality cannot be inferred, the absence of high-performing systems without GS5 indicates that financial and accountability mechanisms are a necessary, though not sufficient, condition for sustained T2T success. At the same time, adherence infrastructure and structured follow-up emerge as critical interacting factors. In combination, these elements appear to create the conditions most conducive to sustained T2T implementation.

## 5.2. BARRIERS AND ENABLERS OF T2T IMPLEMENTATION

The patterns observed across the 10 Gold Standards point to a consistent set of system-level barriers that limit countries' ability to achieve guideline-recommended LDL-C targets, as well as a complementary group of enablers present in higher-performing markets.

The following table summarises these recurring barriers and enablers, providing a clear foundation for understanding the readiness tiers that follow and identifying the system levers most critical for strengthening T2T implementation at scale.

| IMPLEMENTATION BARRIERS ✕ | IMPLEMENTATION ENABLERS ✓ |
|---|---|
| Fragmented care pathways; weak handoff between hospital and primary care | Structured post-ACS pathways and unified care protocols |
| No mandated follow-up intervals or escalation rules | Clear escalation algorithms linked to LDL-C thresholds |
| Limited monitoring of LDL-C results | Routine lipid testing schedules and standardised follow-up |
| Lack of digital registries; no EHR alerts | National or regional digital registries; automated LDL-C alerts |
| Therapeutic inertia due to absent accountability | Audit-and-feedback systems; performance reporting |
| Restricted access to combination or advanced therapies | Reimbursement aligned to LDL-C thresholds; streamlined access to advanced lipid-lowering therapies |
| No incentives or quality indicators | Outcome-linked incentives and quality frameworks |
| Absence of adherence monitoring | Programmes supporting medication persistence and adherence |

## BEST PRACTICES IN TREAT-TO-TARGET ACROSS 12 MARKETS

The following table highlights exemplary policies and elements identified across the 12 countries included in this analysis. These initiatives demonstrate how specific system levers, such as structured post-MI pathways, digital registries, outcome-based incentives, multidisciplinary lipid services and targeted reimbursement frameworks, can operationalise T2T LDL-C and translate clinical guidelines into measurable improvements in patient outcomes. Importantly, inclusion in this section does not imply overall system maturity or Tier classification; rather, it recognises best practices that may exist even within systems that remain foundational or structurally limited overall.

Each example illustrates a concrete mechanism that enables earlier testing, timely therapy escalation, enhanced adherence, or more coordinated long-term secondary prevention. Together, these best practices offer a scalable set of models that health systems can adopt or adapt to strengthen LDL-C management and reduce recurrent cardiovascular events. While individual best practices may not reflect a country's comprehensive readiness across all Gold Standards, they provide transferable models that other health systems can adopt or adapt to strengthen LDL-C management and reduce recurrent cardiovascular events

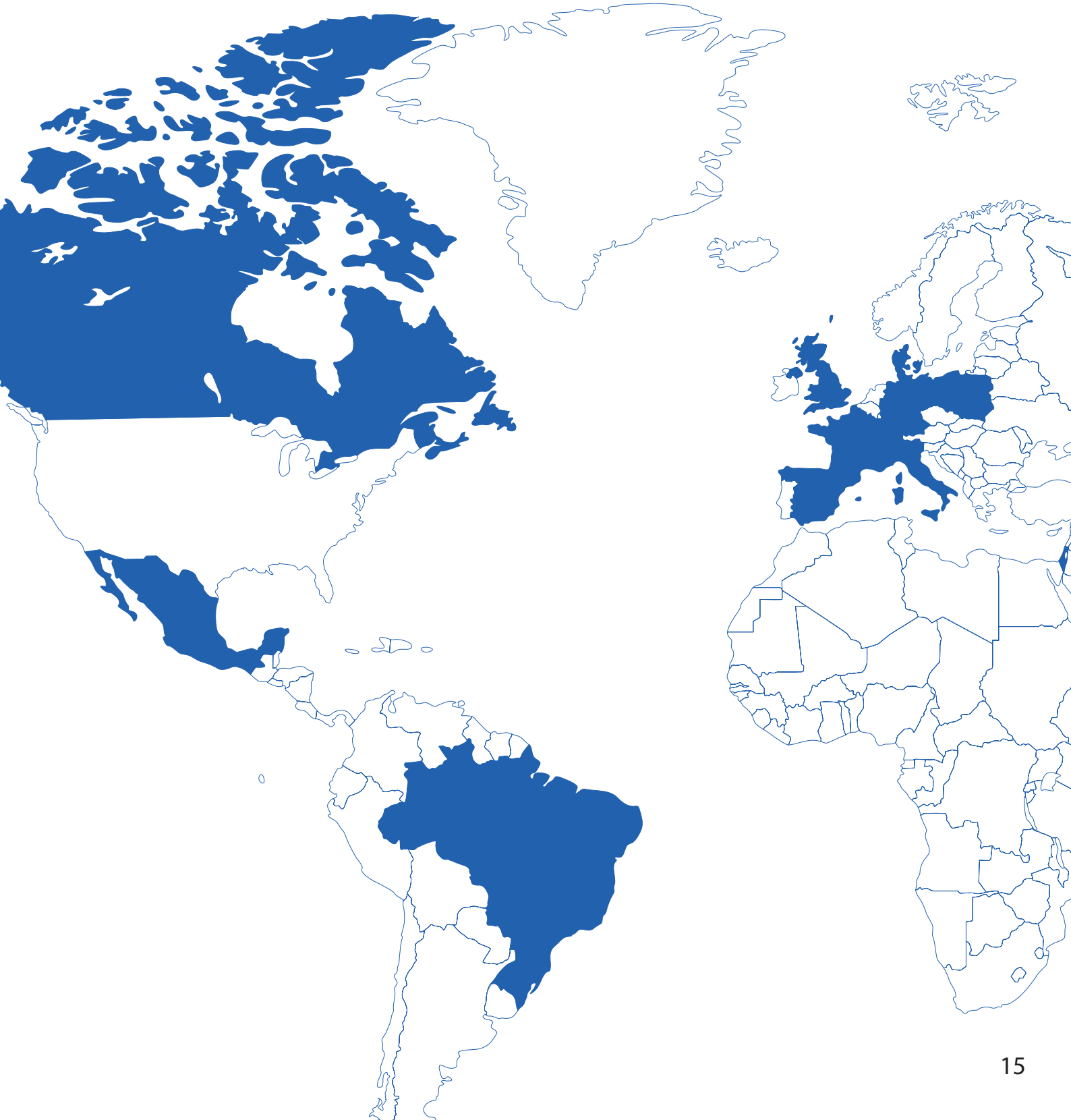
| Country | Best practice | Why it matters for treat-to-target |
|---|---|---|
| Brazil | ACS Line of Care & ACS Protocol | Integrates hospital and primary care after MI, with explicit follow-up and lipid monitoring and funding incentives for compliant coronary care units—creating a template for longitudinal secondary prevention. |
| Canada | CCS Secondary Prevention Pathway (Ontario) | Structured post-ACS pathway with defined timelines, LDL thresholds and escalation steps—an explicit treat-to-target model that can be scaled across provinces. |
| Denmark | Registry-driven and linkable national data infrastructure | World-class registry infrastructure capturing LDL-C testing, LLT use and CR outcomes; enables precise measurement of gaps and supports audit-and-feedback on secondary prevention. |
| | Established familial hypercholesterolaemia (FH) infrastructure and specialist lipid services | Systematically identifies FH and provides intensive lipid-lowering management for inherited high-risk groups. |

| | | |
|---|---|---|
| France | Comprehensive Financial Protection Supporting Long-Term Secondary Prevention | Ensures long-term financial protection and access to guideline-directed LLT and rehab for chronic CVD, removing cost barriers to sustained LDL-C control. |
| Germany | Mandatory Disease Management Programmes (DMPs) for CHD | Structured chronic-care programmes coordinating GP and specialist follow-up in line with guidelines; a platform that could embed LDL-C indicators and escalation rules. |
| | "Auf Ziel" ("On Target") lipid campaign | Prospective protocols requiring documentation of LDL-C and mandatory LLT escalation in very-high-risk patients—local proof that protocolised treat-to-target closes the gap. |
| Israel | NPQI acute ACS quality indicators | Delivers high-quality acute care and ensures statin initiation and CR referral at discharge—strong foundation for extending indicators into LDL-C outcomes. |
| | HMO digital dashboards & LDL-C alerts | Integrated EHRs flag off-target LDL-C and support real-time intensification; PCSK9 programmes show large LDL reductions when escalation occurs. |
| Italy | AIFA web-based therapeutic plans & PCSK9 access | National reimbursement and registry-like monitoring for advanced LLT; provides a lever for scaling combination therapy if linked to clear LDL-C targets. |
| Mexico | Acute coronary care pathways with embedded secondary prevention (Código Infarto) | Standardises in-hospital initiation of high-intensity statins and discharge planning—basis for building structured outpatient secondary prevention. |
| Poland | KOS-Zawał coordinated post-MI care | Nationally funded, multidisciplinary post-MI programme (early visits, CR, lipid monitoring) with better outcomes and financial incentives; a flagship best practice. |
| | B101 drug programme | Provides structured access to PCSK9/inclisiran for patients above LDL-C thresholds, explicitly using LDL levels as eligibility criteria. |
| Spain | ESCAV (national cardiovascular strategy) | National CVD strategy aligned with treat-to-target LDL-C, defining indicators and emphasising prevention and equity across regions. |
| | SEA 2024 Standards & lipid/vascular risk units | Operational treat-to-target standards (statin - ezetimibe - PCSK9/siRNA) implemented in accredited units handling complex dyslipidaemia. |
| Switzerland | Standardized Cardiac Rehabilitation System | Structured, multi-phase CR model with consistent implementation across centers. Evidence shows CR effectively improves lipid control and risk-factor management. |
| United Kingdom | Quality and Outcomes Framework (QOF) | Financial incentives for GPs to deliver secondary prevention, including lipid control. It has shown improved recording of risk factors, high prescribing rates and better long-term disease management. |
| | NHS England Cardiovascular Disease High Impact Interventions and lipid optimisation pathway | Defines a national pathway post-event management and promotes treatment intensification that suggests notable prevention of recurrent events in upcoming years. |

# COUNTRY PROFILES

The following country profiles provide a detailed assessment of T2T readiness and implementation across the 12 markets included in this study. Each profile examines how national policies, clinical guidelines, reimbursement frameworks, digital infrastructure, and care-delivery models align with the T2T Gold Standards for LDL-C management in secondary prevention. Beyond documenting policy structures, the profiles analyse real-world performance (where data is available), such as LDL-C attainment, treatment patterns, and system-level gaps, and highlight how specific strengths or weaknesses influence the country's overall T2T maturity.

This section also identifies opportunities for improvement and presents best practices that can be transferred across systems. Together, the profiles offer a comparative, evidence-based view of how health systems are positioned to deliver consistent, risk-aligned lipid management for patients with ASCVD and dyslipidemia.



# BRAZIL

- 183.69 cardiovascular disease deaths per 100,000 population (BR1.5).
- 555,236 cardiovascular-related emergency department visits were recorded in 2021 (BR1.7).
- 33 hospital admissions for acute coronary syndrome (ACS) per 100,000 population were reported in 2019 (BR1.1).
- 23% of patients were readmitted within 30 days following an ACS event (BR1.2)
- 15.9% of very-high-risk patients and 31.4% of high-risk patients achieved ESC LDL-C targets (BR1.3).
- 35% of patients received combination lipid-lowering therapy in secondary prevention (BR1.4).
- Treat-to-Target is included in national clinical guidelines for cardiovascular prevention (BR1.6).

## COUNTRY SNAPSHOT

An estimated 7 million people in Brazil are under secondary prevention of cardiovascular events (BR 2.7). While hospital admission for ACS is lower than other countries, high readmission rates after ACS signal gaps in post-discharge care and higher event recurrence. Moreover, socioeconomic barriers and access to healthcare appear to be strong factors limiting LDL-c control. Brazil's lipid control outcomes are suboptimal but comparable to the international average, underscoring a worldwide challenge in achieving cholesterol targets. The country indicates a comparable adoption of combination therapy, however, additional LDL-c lowering therapies are recommended when patients do not meet targets (9-19% of patients do not reach LDL-C targets recommended by current guidelines) (BR 2.7).

Brazil has a strong policy framework and clinical guidelines for secondary cardiovascular prevention, but implementation is uneven. The Brazilian Society of Cardiology guidelines (2019 and 2025 updates) align closely with international gold standards – for example, they set aggressive LDL-C targets (<1.3 mmol/L / 50 mg/dL) and emphasize early, intensive lipid-lowering therapy (BR 1.6). Additionally, the public health system (SUS) provides broad access to first-line medications (high-intensity statins and ezetimibe) and integrates secondary prevention into primary care via the Family Health Strategy (BR 3.4, BR 2.5). This reflects a high level of policy alignment with evidence-based practices (e.g. treatment protocols, risk-factor monitoring, acute-to-chronic care transition).

However, gaps remain in execution and monitoring. Brazil lacks dedicated national indicators for secondary prevention outcomes – surveillance focuses on overall CVD metrics rather than tracking the secondary-prevention subset. Follow-up and long-term adherence are not systematically enforced: cardiac rehabilitation and post-discharge clinic visits are underutilized (CR participation <30%) (BR 2.4), and there is no nationwide system to ensure patients receive timely follow-up or therapy escalation. Therapeutic inertia and variability in care mean that many patients do not reach LDL-C goals despite available guidelines. Additionally, access to advanced therapies is limited in the public sector – PCSK9 inhibitors are not routinely covered by SUS – which constrains very-high-risk patients who remain above LDL targets (BR 3.4).

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | SBC guidelines (2019/2025) explicitly adopt ESC/AHA LDL-C thresholds (e.g., <1.4 mmol/L for very-high risk) and recommend early statin initiation post-ACS. However, there are no national audits or performance-linked implementation tools. (BR 1.6) |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | LDL-C targets are well-defined in SBC guidance, but not linked to performance-based reimbursement or quality-of-care indicators. Previne Brasil includes LDL testing but not LDL target attainment. (BR 1.6, BR 2.5) |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 1 | Clinical protocols recommend in-hospital initiation of statins and add-on therapy. However, discharge processes are not standardized, and there are no DRG-linked metrics or mandated follow-up pathways. (BR 1.6, BR 2.4) |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | Follow-up intervals and escalation steps (e.g., ezetimibe, PCSK9i) are recommended in SBC guidelines, but implementation is ad hoc. No national audit or digital system enforces follow-up or therapy escalation. (BR 1.6) |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 0 | No incentive programs or performance feedback systems exist to address therapy non-escalation when LDL-C is uncontrolled. No indicator tracks intensification failure. |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 0 | No national adherence metrics or structured support programs. PROMs/PREMs are limited to pilot projects and access to CR programs is very limited. (BR 2.4) |
| 7. Access to Combination and Long-Term Therapies | 0 | PCSK9 inhibitors and other advanced lipid-lowering therapies are not reimbursed within the public system and are primarily accessed through out-of-pocket payment, limiting access for uncontrolled high-risk patients. (BR 1.6; BR 3.4). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 0 | Brazil lacks a national secondary prevention registry. No EHR-linked alerts or standardized LDL-C coding/reporting mechanisms exist. |
| 9. Quality Indicators and Financial Incentives | 1 | LDL testing is included as a primary care indicator, but LDL-C goal attainment is not tracked or incentivized. there are performance-based transfers to municipalities for achieving certain indicators. (BR 2.5) |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 1 | Some hospitals have lipid units or high-risk clinics. Limited multidisciplinary care exists through the Family Health Strategy, but specialised secondary-prevention teams are not scaled nationally. No national workforce development programs exist for lipid management. (BR 2.1, BR 2.2) |
| SCORE: | 7 | |

# KEY STRENGTHS

## Robust and Updated Secondary Prevention Guidelines

The Brazilian Society of Cardiology (SBC) has developed cardiovascular prevention (3.1) and dyslipidaemia guidelines (BR1.6), last updated in 2019 and 2025, respectively. They set clear LDL-C targets in line with ESC/AHA recommendations and emphasize aggressive risk factor control, early therapy initiation, and avoidance of therapeutic inertia. This strong guideline foundation provides a solid policy benchmark for care.), last updated in 2019 and 2025, respectively. They set clear LDL-C targets in line with ESC/AHA recommendations and emphasize aggressive risk factor control, early therapy initiation, and avoidance of therapeutic inertia. This strong guideline foundation provides a solid policy benchmark for care.

## Crucial Medication Access and Coverage

The public health system (SUS) provides universal access to essential medications for secondary prevention. High-intensity statins and ezetimibe are covered on the national formulary, meaning cost is not a barrier for first-line lipid-lowering therapy. This ensures that the majority of patients can be treated with guideline-directed medical therapy without financial hardship (BR 3.4).

## Clinical Initiatives and Awareness to Promote LDL Control

There is a growing recognition of secondary prevention quality gaps and a willingness to act. Innovative care models are emerging in leading centers – for example, some hospitals have "post-MI clinics" and nurse-led follow-ups to improve continuity, and a pilot digital program (SAPPHIRE-LDL trial) used EHR alerts and patient reminders to improve LDL control (BR 3.6). These efforts, though not yet scaled, demonstrate local strengths and can serve as prototypes for wider implementation.

# MAIN GAPS

## Need for Performance Incentives for LDL-C Control

Brazil lacks pay-for-performance or accreditation standards tied to secondary-prevention quality. This contributes to clinical inertia and inconsistent implementation of guideline-directed therapy. Despite national NCD commitments (BR 3.7) and emerging digital tools (BR 3.6), no national incentive system supports LDL-C goal attainment, post-event follow-up, or therapy intensification.

## Limited Access to Advanced Lipid Therapies

Brazil's SUS provides statins and ezetimibe (BR 3.4), but PCSK9 inhibitors are not included in the Relação Nacional de Medicamentos Essenciais (National List of Esstential Medicinces, RENAME 2022). This leaves many very-high-risk patients—who remain above target LDL-C despite dual therapy—without access to recommended treatments. Absence of clear eligibility criteria and reimbursement pathways creates major treatment gaps for the highest-risk populations.

## Lack of Patient Adherence Support Measures

Brazil lacks a structured national strategy to support medication adherence after myocardial infarction. Although Brazil has prior experience with chronic disease tracking through HIPERDIA (BR 3.8), no current nationwide system exists for monitoring adherence to lipid-lowering therapy or antiplatelets in secondary prevention. Primary care teams within the Family Health Strategy (BR 2.2) do not routinely deliver pharmacist-led counseling, systematic adherence assessments, or follow-up protocols targeted at post-MI patients. Digital health infrastructure is expanding, and pilot programs such as SAPPHIRE-LDL (BR 3.6) show feasibility of digital reminders and EHR alerts, but these innovations remain isolated pilots rather than national policy, contributing to persistent underuse of guideline-recommended therapy and poor LDL-C goal attainment.

# OPPORTUNITIES FOR IMPROVEMENT

## Strengthening Access, Accountability, and Post-Event Coordination

Brazil's assessment highlights a strong guideline framework but limited system-level enforcement of T2T principles. A high-impact opportunity lies in strengthening structured post-MI coordination through a nationally standardised follow-up pathway, including defined timelines for LDL-C reassessment and clear escalation triggers. While clinical guidance recommends follow-up and intensification, implementation remains uneven, and systematic monitoring is absent. Formalising this pathway could reduce fragmentation and support more consistent lipid optimisation across regions.

A second priority area concerns accountability mechanisms. Expanding existing primary care performance frameworks to incorporate explicit LDL-C thresholds and T2T indicators—moving beyond lipid testing toward target attainment and documented therapy escalation—would directly address therapeutic inertia. Linking outcome-based lipid indicators to performance-based transfers could reinforce guideline implementation while remaining consistent with Brazil's financing model. In parallel, establishing a national LDL-C registry with follow-up and escalation indicators would provide the data infrastructure necessary to benchmark secondary prevention performance nationwide.

Finally, given restricted access to advanced lipid-lowering therapies within Brazil's National Health System, a stronger cost-effectiveness framing focused on very-high-risk populations may help inform future reimbursement discussions and align access policies with clinical need.

# CANADA

202 cardiovascular disease deaths per 100,000 population were reported in 2021 (CAN 1.1).

More than 300,000 cardiovascular-related emergency department visits are estimated to occur annually, based on 175,000 visits by women alone in 2016–2017 (CAN 1.2).

193 hospital admissions for acute coronary syndrome (ACS) per 100,000 population (CAN 1.3).

9.3% of patients were readmitted within 30 days following an ACS event (CAN 1.4).

Only 30–40% of high-risk patients achieve LDL-C <1.8 mmol/L, and in real-world post-AMI populations, just 21.1% achieve LDL-C <1.4 mmol/L, while 32.4% reach <1.8 mmol/L, despite high-intensity statin use. (CAN 1.5; CAN 1.6)

23% of post-ACS patients receive combination therapy with statin plus ezetimibe, while less than 3% are treated with PCSK9 inhibitors. (CAN 1.7)

Treat-to-Target is explicitly included in national clinical guidelines. (CAN 1.8)

## COUNTRY SNAPSHOT

Canada has a substantial population in need of secondary prevention care. As of 2018, roughly 1 in 12 Canadian adults (~2.6 million people) were living with diagnosed heart disease (CAN 2.1). An estimated 40–50% of Canadians with established cardiovascular disease still do not achieve the previous LDL-C target of 2.0 mmol/L (CAN 2.2). Moreover, many post-ACS patients remain on statin monotherapy, with relatively low utilization of combination lipid-lowering therapy – only ~23% receive added ezetimibe and <3% receive PCSK9 inhibitors (CAN 1.7). The recurrent hospitalization rate after cardiac events in Canada mirrors global trends, underscoring the need for more effective risk factor management.

Canada demonstrates partial alignment with Gold Standard criteria. It excels in guideline quality, hospital-based initiation of therapy, and universal access to generic medications. The 2021 Canadian Cardiovascular Society (CCS) guidelines mirror European/American standards – recommending high-intensity statins for all acute coronary syndrome (ACS) patients and adding ezetimibe and/or PCSK9 inhibitors if LDL-C remains ≥1.8 mmol/L on statin therapy (CAN 2.3). While these is no national secondary prevention plan, provincial initiatives address secondary prevention, such as the 2025 CCS Secondary Prevention Pathway (piloted in Ontario in 2025), which exemplifies a treat-to-target approach by recommending stepwise therapy intensification based on defined LDL-C thresholds and regular follow-up testing to guide treatment adjustments (CAN 2.4).

However, provincial data highlight systemic gaps. While the guidelines support early combination therapy, statin monotherapy predominates in practice, and few eligible patients receive PCSK9 inhibitors due to access barriers and restrictive public reimbursement criteria (CAN 2.5). The absence of a national LDL-C registry, performance-linked incentives, or standardized follow-up protocols contributes to fragmented care and inconsistent treatment intensification. For example, in Alberta, 13% of post-MI patients received no lipid testing within 90 days of discharge, and in Ontario, only 52% of post-PCI patients had LDL-C testing within six months (CAN 2.5). As a result, a substantial proportion of patients remain off-target long after hospitalization—missed opportunities that modeling suggests could translate into hundreds of preventable cardiovascular events annually. These findings highlight the need for stronger policy enforcement, system-wide tracking, and equitable access to advanced lipid-lowering therapies (CAN 2.5).

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | Canadian guidelines strongly endorse early/intensive LDL lowering (CAN 1.8). However, uptake is suboptimal and primary-care providers report knowledge gaps (CAN 1.5). Coverage criteria further limit alignment with evidence (CAN 2.5). |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 2 | Canadian shifted from fixed LDL targets to "thresholds" for intensification (CAN 3.1). Some provincial programs link drug reimbursement to thresholds (e.g. British Columbia policy targets <2.0 mmol/L for adding ezetimibe) (CAN 3.2). However, there are no national pay-for-performance incentives tied to achieving LDL goals. |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 1 | Implementation varies across provinces. CCS secondary prevention pathway mandates starting high-intensity statins at hospital discharge and early follow-up and CR referral (CAN 2.4). Cardiac rehabilitation programs are widespread but lack sufficient access and often are not fully covered (CAN 3.3). |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | Canada lacks a uniform follow-up protocol for post-discharge lipid management. There is no nation-wide requirement that every post-MI or stroke patient gets a lipid recheck and treatment intensification within a set time frame. New regional initiatives aim to create a structured 6-week post-ACS follow-up process, like the CCS Secondary Prevention Pathway (CAN 2.4). |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 1 | Few incentive programs or feedback loops target statin intensification. Surveys show many Canadian PCPs view post-ACS lipid management as a specialist's role and lack structured guidance (CAN 1.5). There is no routine audit/feedback for LDL control; efforts are limited to disseminating guidelines and periodic CME. |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | Canada has no standardized system to measure or ensure medication adherence in secondary prevention. Patient support relies on standard counseling and pharmacy programs rather than systematic adherence interventions. |
| 7. Access to Combination and Long-Term Therapies | 1 | While hospital and physician services are universally covered, access to lipid-lowering therapies is uneven. Generic statins and ezetimibe are widely available, but reimbursement for PCSK9 inhibitors and inclisiran is limited to narrowly defined populations, primarily patients with familial hypercholesterolaemia (FH) or selected very-high-risk cases. These therapies are not broadly accessible to the wider ASCVD population for routine secondary prevention (CAN 2.5). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | No evidence of a national CVD registry or standardized digital alert system was identified. Provincial registries exist (CorHealth, APPROACH etc.), but they are fragmented and not interoperable (CAN 3.4, 3.5). Some local EMR systems may have lab-based alerts (e.g., flagging LDL-C >2.0 mmol/L), but these are hospital- or clinic-specific and not part of provincial registries (CAN 3.6). |
| 9. Quality Indicators and Financial Incentives | 1 | Canada tracks cardiac quality through CIHI and CCS CCQI registries, but LDL-C–specific indicators are absent from national reporting and provincial registries (CAN 3.7). There are no financial or performance drivers to support treat-to-target lipid management. Electronic Medical Records of primary care visits track risk factors, prescriptions and lab results, but date is not standardized nationally (CAN 3.8). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 1 | Supports lipid management through national guidelines (CAN 2.3), but national service specifications, funding mechanisms, and performance incentives are absent. Multidisciplinary care models exist in provinces (CAN 3.9), yet implementation is uneven, leaving lipid monitoring and patient education dependent on local EMRs, provincial programs, and research projects. |
| SCORE: | 12 | |

# KEY STRENGTHS

## Established cardiac rehabilitation (CR) programs

A well-developed network of cardiac rehab and secondary prevention programs exists across provinces. These multidisciplinary programs (involving exercise training, nutrition, smoking cessation, etc.) are proven to improve outcomes – participation can significantly reduce mortality and recurrent events. Canadian policy has long supported CR; there's a national benchmark to refer ~85% of eligible patients to rehabccs.ca. This infrastructure is a strength, even if enrollment is not yet optimal (CAN 4.1).

## Emerging innovative care pathways

Canada is showing leadership in piloting structured secondary prevention pathways. Notably, the CCS Secondary Prevention Pathway (2025) in Ontario is an innovative model standardizing post-ACS care from hospital to follow-up. It ensures every patient has early outpatient follow-up, risk factor monitoring, and timely therapy intensification. Such initiatives, with multidisciplinary teams and clear protocols, are examples of best practice that can be scaled up nationally (CAN 2.4)

## Universal healthcare access

The Canadian healthcare system provides universal coverage for hospital and physician services, which facilitates secondary prevention. Essential medications for cardiovascular risk reduction (like statins, anti-hypertensives, diabetes drugs) are largely available as generics and covered under provincial drug plans for seniors and those with financial need. The principle of equitable access is embedded in Canadian policy goals. This means most patients can afford and access the core therapies needed for secondary prevention, a fundamental strength compared to many countries (CAN 2.5).

# MAIN GAPS

## Lack of national LDL-C monitoring and follow-up

Canada does not have a unified system to ensure patients achieve lipid targets after discharge. Follow-up practices are inconsistent – studies found less than half of post-MI patients had their LDL checked within 3 months of discharge and adherence to treatment is an obstacle (CAN 5.1). This gap means many patients remain above recommended LDL levels without therapy intensification. There is a need for standardized follow-up protocols (e.g., mandatory lipid re-testing and dose adjustment at 6–12 weeks post-event).

## Limited use of combination therapy and treatment intensification

Despite guideline recommendations, there is a pattern of therapeutic inertia. Most patients in secondary prevention remain on statin monotherapy even when their LDL-C is above target. Uptake of add-on therapies is low – for example, PCSK9 inhibitors are rarely used outside of specialist care (only ~24% of primary care doctors have ever prescribed one) (CAN 5.2). Importantly, reimbursement for PCSK9 inhibitors and inclisiran is currently limited primarily to patients with familial hypercholesterolaemia (FH) or narrowly defined high-risk subgroups, rather than broadly available to the wider ASCVD population. Ezetimibe usage, while somewhat better than PCSK9, is also underutilized. This hesitancy to intensify treatment (due to factors such as insufficient information from hospitals, patient denial, side effects, or the use of multiple medications) leaves many high-risk patients not fully optimized (CAN 1.5).

## Therapeutic inertia and provider-level gaps

Many providers do not aggressively up-titrate therapy, reflecting therapeutic inertia. Contributing factors include busy primary care practices, concerns about medication side effects, and limited specialist follow-up for all patients (CAN 1.5). There is also variability between provinces and practices – a lack of consistent training or incentive to prioritize LDL lowering in follow-ups. Surveys of Canadian physicians uncovered knowledge gaps (e.g., not all were aware of the 2021 guideline changes for high-risk lipid management) (CAN 1.5). Without stronger drivers (like performance feedback or system prompts), changing entrenched prescribing habits is challenging. This inertia is a significant gap in translating evidence to practice.

# OPPORTUNITIES FOR IMPROVEMENT

## Reducing Provincial Variation and Advancing Structured Follow-Up

Canada's decentralised health system presents both opportunity and complexity for T2T implementation. Fragmentation across provinces—each with distinct reimbursement criteria, monitoring systems, and care pathways—contributes to inconsistent follow-up, variable LDL-C reassessment rates, and uneven treatment intensification. While the creation of a National LDL-C registry with outcome tracking would represent a transformative step toward benchmarking and accountability, a more realistic near-term approach may involve strengthening LDL-C monitoring within leading provinces (e.g., Ontario or Québec) through structured follow-up indicators and escalation tracking, with potential for gradual interprovincial alignment over time.

In parallel, expanding structured post-ACS follow-up pathways—building on models such as the CCS Secondary Prevention Pathway—could address documented gaps in lipid reassessment within 90 days of discharge. Embedding defined LDL-C reassessment timelines and treatment intensification checkpoints into provincial quality frameworks would directly target therapeutic inertia. Finally, incorporating LDL-C-specific indicators into existing provincial cardiac quality registries and exploring greater consistency in reimbursement criteria for combination therapies could reduce inequities and improve alignment between guideline recommendations and real-world practice.

# DENMARK

222 cardiovascular disease deaths per 100,000 population were reported in 2022; the age-standardised rate was 95 per 100,000.

No nationally aggregated, publicly available data on cardiovascular-related emergency department visits were identified.

No nationally aggregated, publicly available data on hospital admissions for acute coronary syndrome (ACS) were identified.

19% of patients achieved LDL-C <1.4 mmol/L at 6 months following an ASCVD event.

Approximately 2% of patients received combination lipid-lowering therapy in secondary prevention.

Treat-to-Target is included in national clinical guidelines, with limited implementation.

## COUNTRY SNAPSHOT

Denmark has a highly developed secondary cardiovascular disease (CVD) prevention ecosystem, built on world-class national registries that enable comprehensive tracking of hospital care, procedures, rehabilitation, and long-term outcomes. The Danish National Patient Registry, Danish Heart Registry, Western Denmark Heart Registry, and the Danish Cardiac Rehabilitation Database together create a robust surveillance backbone, even though Denmark lacks a single, unified national KPI programme dedicated solely to secondary prevention (DK.3.5; DK.1.12; DK.1.4). This produces exceptional research capability but unevenly structured performance management.

Denmark's secondary-prevention population—comprising patients with incident ASCVD (e.g., MI, stroke)—is measurable through registry-based cohorts, representing tens of thousands of individuals annually. Despite universal access to lipid testing and therapy, registry analyses reveal incomplete LDL-C monitoring and suboptimal target attainment after acute events (DK.1.12; DK.3.3). A substantial share of patients fail to reach ESC-recommended thresholds, and early follow-up lipid testing within 30–90 days is not consistently implemented nationwide. These patterns mirror global challenges: therapeutic inertia, insufficient intensification of lipid-lowering therapy, and gaps in early optimization.

Cardiac rehabilitation (CR) is a national strength, supported by mandatory registry reporting; however, participation and completion vary, with persistent inequities by socioeconomic status and region. Dropout remains a documented challenge despite targeted interventions to increase engagement (DK.3.3). Readmission data are captured through national registries but are not part of a cohesive secondary-prevention accountability framework.

Relative to the Gold Standards, Denmark excels in infrastructure, multidisciplinary CR delivery, FH detection through its national database, and early adoption of PROMs/PREMs. Alignment is weaker in implementation levers: there are no financial incentives for LDL-C target achievement, no mandatory escalation algorithms, and no national KPI set defining time-to-target or monitoring frequency (DK.2.3; DK.2.6; DK.1.11; DK.1.4; DK.1.8).

Key opportunities include establishing a national KPI system for LDL-C, standardizing early post-event testing, enforcing therapy escalation pathways, strengthening adherence support, and addressing inequities in CR uptake. These improvements would translate Denmark's superior data infrastructure into more consistent delivery of optimal secondary prevention.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | A unified national KPI program with incentives and mandatory monitoring specifically enforcing early intensive LDL-C lowering and time-to-goal is not evident (DK.1.12). |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | LDL-C targets are used clinically and in registry research; they are not widely published as a single national KPI tied directly to reimbursement or performance pay (DK.3.3). |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | Guidelines recommend in-hospital high-intensity statin initiation; hospital discharge pathways and CR referral exist. Formal nationwide mandates linking discharge documentation to automatic LLT initiation with enforced reporting appear limited; practice varies by hospital/region (DK.3.3). |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 2 | Some registries capture 6- and 12-month follow-up and LLT intensification metrics (seen in registry studies), but nationwide mandatory escalation rules with auditing linked to reimbursement are not common (DK.2.3; DK2.6). |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 0 | Denmark uses audit-and-feedback through registries; explicit financial incentives or pay-for-performance tied to LDL-C management are not apparent (DK.2.3). |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | Prescription registries (Danish National Prescription Registry) enable adherence measurement in research. Some local adherence programmes exist; reimbursement for specific adherence support services is not consistently structured as a national programme (DK.3.3). |
| 7. Access to Combination and Long-Term Therapies | 1 | PCSK9 inhibitors and inclisiran are evaluated by Medicinrådet and may be available in hospital settings subject to criteria and negotiation. Access is possible for eligible patients but is regulated and generally managed at hospital/region level rather than universally automatic. Real-world Danish work documents use and mandated switches in some settings (DK.2.6). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 3 | Denmark's registry infrastructure and CPR linkage are world-class for population surveillance and research; national clinical registries and data governance standards exist, enabling high-quality cross-linkage. EHR alert roll-out for LDL-C specifically is uneven (DK.1.11). |
| 9. Quality Indicators and Financial Incentives | 0 | While many registries collect lipid-related variables and publish results, explicit national performance metrics tied to financial incentives for LDL-C control are not prominent (DK.1.4). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 3 | This represents a partial excellence. Denmark supports multidisciplinary CR teams, has active national PROM programs and workforce engagement through professional societies; structured national workforce training aligned to ESC/EAS principles is present but implementation level varies regionally (DK.1.8). |
| SCORE: | 15 | |

# KEY STRENGTHS

## Routine registry studies that quantify LDL-C care pathways and outcomes

High-quality registry research (linked lab, prescription and outcome data) has delivered repeated, population-level analyses of LDL-C testing frequency, LLT initiation, therapy changes and goal attainment after ASCVD events — providing an evidence base to guide policy and local quality improvement. (DK.1.12; DK.3.3)

## Established familial hypercholesterolaemia (FH) infrastructure and specialist lipid services

Denmark has created a National FH Database and an expanding network of lipid clinics and specialist services to identify, monitor and treat FH and complex hyperlipidaemia — strengthening detection and targeted secondary prevention for high-risk inherited patients. (DK.3.4; DK.3.5)

## Well-developed processes for HTA and adoption of innovative lipid-lowering agents

New lipid-lowering agents (PCSK9 inhibitors, inclisiran) are evaluated centrally (Medicinrådet) and can be made available through hospital/regional adoption processes; Denmark produces real-world evaluations of these agents to guide use. (DK.2.6; DK.2.7)

# MAIN GAPS

## No single, unified national KPI programme specifically for secondary prevention (LDL-centric)

Denmark lacks a single, mandated national indicator set exclusively for secondary prevention that would uniformly require and publish metrics such as percent of secondary-prevention patients achieving prespecified LDL-C thresholds or time-to-LDL goal (30–90 days). Secondary-prevention indicators are dispersed across registries, creating variable implementation and limits on a harmonised national accountability framework. (DK.1.10; DK.5.1)

## Therapeutic inertia and absence of a nationally mandated escalation algorithm

Denmark has local audit/feedback and quality projects, but lacks a compulsory, nationwide escalation protocol (e.g., automatic trigger  intensify therapy / specialist refer) tied to monitoring at defined intervals — contributing to delays in intensification and persistent off-target LDL-C. (DK.3.6; DK.1.12)

## Variable and sometimes restricted access pathways to newest combination therapies

Access to PCSK9 mAbs and inclisiran is governed by HTA and regional adoption; hospital/regional criteria and implementation pathways create variability in timely access for eligible high-risk patients, potentially delaying attainment of LDL-C goals in those who need combination therapy.

# OPPORTUNITIES FOR IMPROVEMENT

## Translating Registry Insight into T2T Implementation

Denmark benefits from a world-class registry infrastructure that enables detailed measurement of LDL-C monitoring patterns, treatment intensification, and outcome gaps. This data capability represents a major strength. However, the challenge lies less in measurement and more in systematic implementation. Despite the ability to quantify gaps, population-level LDL-C target attainment remains suboptimal, indicating that registry insight is not yet fully translated into consistent T2T delivery across care settings. Establishing a unified National KPI Programme for LDL-C management—tracking target attainment and time-to-goal in secondary prevention patients—would help convert existing data capacity into a harmonised national accountability framework.

Therapeutic inertia remains a documented issue, compounded by the absence of a nationally mandated escalation algorithm. Introducing formalised national therapy-escalation pathways—triggered when LDL-C thresholds are not achieved—and embedding these within a nationwide Electronic Health Record alert system could support proactive identification of off-target patients and standardise intensification practices.

Finally, although cardiac rehabilitation is universally funded and registry-reported, participation and completion vary by region and socioeconomic group. Targeted national strategies to reduce inequities in CR access and engagement would help ensure that Denmark's strong infrastructure translates into more equitable and consistent LDL-C optimisation outcomes at population level.

# FRANCE

187.7 cardiovascular disease deaths per 100,000 population were reported in 2021. (FR 1.4)

No nationally aggregated, publicly available data on cardiovascular-related emergency department visits were identified.

239 hospital admissions for acute coronary syndrome (ACS) per 100,000 population were recorded in 2022.

No nationally aggregated, publicly available data on 30-day readmission rates following ACS were identified.

28.3% of very-high-risk patients achieved ESC LDL-C targets, based on available observational data. (FR 1.5)

35.4% of patients received combination lipid-lowering therapy in secondary prevention. (FR 1.5)

Treat-to-Target is included in national clinical guidelines.

## COUNTRY SNAPSHOT

France's landscape for secondary cardiovascular disease (CVD) prevention reflects a strong clinical foundation but an absence of unified national coordination. Clinical practice is closely aligned with ESC/EAS guidelines, which are widely disseminated through French cardiology societies and form the backbone of lipid management nationwide (FR.3.2-3.4). Universal health coverage and the Affection de Longue Durée (ALD) scheme ensure full reimbursement for long-term cardiovascular care, providing broad access to lipid profiling, specialist consultations and rehabilitation services (FR.2.11). However, unlike countries with structured secondary-prevention frameworks, France does not publish an estimate of the population under secondary prevention, making it difficult to quantify the national burden and track outcomes across the continuum of care.
Available national indicators highlight significant performance gaps. Cardiac rehabilitation participation remains persistently low, around 20% of eligible patients initiate a programme within six months, and varies widely across regions, suggesting uneven system capacity and coordination (FR.4.3). LDL-C control is similarly suboptimal: observational studies show that many post-ACS patients fail to reach guideline-recommended targets, despite the existence of clear escalation pathways (FR.5.4-5.7). Long-term readmission rates are tracked in epidemiological datasets, but they are not integrated into a national performance dashboard, limiting their use as system-level levers for accountability (FR.1.1-1.3).

This misalignment between strong clinical guidelines and weaker system-level coordination results in significant variation in long-term follow-up and therapeutic optimization. There are no mandatory follow-up intervals, no standardized escalation requirements when LDL-C goals are unmet, and no national digital alert system for off-target lipid levels. Digital infrastructures such as the SNDS remain underused for proactive monitoring, and rehabilitation capacity is unevenly distributed across regions. Key opportunities for improvement include establishing a clearer national framework for secondary prevention, strengthening structured follow-up after acute events, expanding digital monitoring tools, increasing rehabilitation uptake and addressing therapeutic inertia through more consistent quality indicators. These steps would help France translate its strong clinical foundation into more coherent and sustained secondary prevention nationwide.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | France applies ESC/EAS LDL-C targets and clear intensification pathways but lacks policy tools to monitor or support early sustained lowering. (FR 3.3; FR 5.4) |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | LDL-C targets are clearly defined and widely disseminated, yet they are not linked to reimbursement schemes or performance indicators. Alignment exists at the clinical level, not within national incentive frameworks. (FR 3.2; FR 2.12) |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 1 | Post-ACS therapy initiation is routine, and early follow-up is recommended, but combination therapy is not mandated, and discharge processes vary across hospitals. Continuity of care lacks standardized national requirements. (FR 3.4; FR 3.9) |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 0 | No national rules define follow-up intervals, repeated LDL-C checks, or mandatory escalation when targets are missed. Monitoring is encouraged but not enforced, contributing to persistent therapeutic inertia. (FR 1.1; FR 5.4) |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 1 | Clinical guidance highlights the need for timely intensification, but there is no systematic audit, feedback loop, or incentive programme addressing inertia. Escalation failure is not tracked nationally. (FR 5.4; FR 5.7) |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | ETP programmes and pharmacist counselling support adherence, yet no national adherence indicator exists for secondary prevention. Patient engagement tools are present but inconsistently implemented. (FR 4.3; FR 5.6) |
| 7. Access to Combination and Long-Term Therapies | 1 | Statins and ezetimibe are widely reimbursed. While PCSK9 inhibitors are accessible for eligible patients. Nonetheless, strict authorization criteria can delay initiation and contribute to regional variability in access. In addition, siRNA therapy (inclisiran) is currently not broadly available due to restrictive access criteria and pricing considerations, further limiting escalation options for eligible ASCVD patients. (FR 2.11; FR 5.8) |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | France has strong national health data infrastructure but lacks a dedicated registry or EHR alert system for LDL-C management. Digital tools exist but are not operationalized for secondary prevention follow-up. (FR 1.1; FR 4.1) |
| 9. Quality Indicators and Financial Incentives | 0 | No national performance indicators track LDL-C attainment or post-ACS lipid optimization. Existing incentive schemes exclude lipid-related secondary-prevention metrics. (FR 2.12) |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 1 | Rehabilitation programmes and specialized lipid clinics operate in several centers, but there is no national service specification ensuring consistent multidisciplinary delivery or structured patient involvement. (FR 4.3; FR 3.6) |
| SCORE: | 9 | |

# KEY STRENGTHS

## High-Quality National Data Infrastructure Enabling Detailed CVD Surveillance

The SNDS and PMSI systems provide comprehensive coverage of hospitalizations, procedures and mortality, allowing for precise monitoring of ischaemic heart disease trends and regional disparities. These datasets support robust surveillance and create a strong foundation for future secondary-prevention indicators or registries. (1.1; 1.2; 1.3)

## Comprehensive Financial Protection Supporting Long-Term Secondary Prevention

Universal insurance coverage and the ALD scheme guarantee full reimbursement of chronic cardiovascular care, including lipid panels, specialist follow-up, long-term medication and rehabilitation. This financial framework removes cost-related barriers and enables continuous implementation of secondary-prevention measures over time, reducing the risk of treatment drop-off. (FR 2.11)

## Broad Access to Combination Therapy and Advanced Lipid-Lowering Agents

High-intensity statins and ezetimibe are widely reimbursed, and PCSK9 inhibitors are accessible for eligible high-risk patients, enabling clinicians to apply guideline-based escalation strategies when LDL-C levels remain above target. This availability supports intensive long-term lipid management for patients with persistent elevation or recurrent events. (2.11; 5.8)

# MAIN GAPS

## Persistent Therapeutic Inertia in LDL-C Management

Many secondary-prevention patients in France fail to achieve recommended LDL-C targets despite clear guidelines. The absence of mandated follow-up intervals, repeated LDL-C testing or escalation triggers contributes to delayed optimization and prolonged exposure to uncontrolled levels, increasing the risk of recurrent events. (FR 5.4; FR 5.5; FR 5.7)

## Restricted and Variable Access to Advanced Lipid-Lowering Therapies

Access to PCSK9 inhibitors remains constrained by restrictive eligibility criteria and prior authorization requirements, which may delay escalation for very-high-risk patients who remain uncontrolled despite optimized standard therapy. These administrative steps contribute to regional variability and risk prolonged exposure to elevated LDL-C. (FR 2.11; FR 5.8)

### Low and Uneven Participation in Cardiac Rehabilitation Programmes

Only around 22% of eligible patients access cardiac rehabilitation within six months after ischaemic heart disease, with marked regional disparities. This severely limits the impact of a well-established intervention known to improve functional recovery, adherence, and risk-factor control, leaving many high-risk patients without structured support after an acute event. (FR 4.3; FR 4.5)

## OPPORTUNITIES FOR IMPROVEMENT

### Strengthening National LDL-C Governance, Escalation Protocols, and Access Alignment

France demonstrates strong clinical alignment with ESC/EAS guidance; however, system-level levers to enforce T2T implementation remain limited. A priority opportunity would be the establishment of a dedicated national secondary-prevention performance framework incorporating harmonised LDL-C indicators—such as target attainment rates, time-to-reassessment, and documented therapy escalation. Integrating these metrics into national monitoring systems would strengthen accountability and reduce regional variability.

In parallel, formalising structured follow-up intervals after acute events—combined with clearly defined escalation triggers when LDL-C targets are unmet—could address persistent therapeutic inertia. Leveraging existing digital infrastructure (SNDS, PMSI) to support proactive monitoring dashboards or clinician alerts would help convert surveillance capacity into operational T2T delivery.

Finally, while statins and ezetimibe are broadly reimbursed, access to advanced lipid-lowering therapies remains largely restricted to ultra-rare indications such as homozygous familial hypercholesterolaemia (HoFH) and selected familial hypercholesterolaemia (FH) cases. Reviewing eligibility criteria and authorisation pathways for very-high-risk ASCVD patients who remain off-target despite optimised standard therapy could help align real-world access with clinical escalation recommendations and reduce prolonged exposure to uncontrolled LDL-C.

# GERMANY

215.7 cardiovascular disease deaths per 100,000 population were reported, including 125.3 deaths per 100,000 from coronary heart disease and 46 deaths per 100,000 from acute myocardial infarction (GER 1.1).

No nationally aggregated data on cardiovascular-related emergency department visits were identified.

1,694.5 inpatient hospitalisations for cardiovascular disease per 100,000 population were recorded in 2023 (GER 1.1).

574 hospital admissions for coronary heart disease per 100,000 population (age-standardised) were reported (GER 1.1).

No reliable national data on 30-day readmission rates following ACS were identified.

78.6% of high and very-high-risk patients did not achieve ESC/EAS LDL-C targets (GER 1.2).

19.9% of high-risk and 25.2% of very-high-risk patients received combination lipid-lowering therapy (GER 1.2).

Treat-to-Target is partially reflected in national guidance, aligned with ESC/EAS LDL-C targets.

## COUNTRY SNAPSHOT

Secondary cardiovascular disease prevention in Germany is grounded in comprehensive, evidence-based national guidelines (GER 2.1) that are closely aligned with international Gold Standards, including those of the ESC/EAS and ACC/AHA. These guidelines adopt a clear risk-based, treat-to-target approach for LDL-C reduction, blood pressure control, diabetes management, lifestyle modification, and structured cardiac rehabilitation. (GER 2.2) Care delivery is supported through Disease Management Programmes (DMPs) (GER 2.3), specialist cardiology services, rehabilitation centres, and targeted initiatives such as national lipid-management awareness campaigns. (GER 2.4). According to the German Heart Foundation 4,7 million people in Germany are living with a coronary heart disease and are therefore candidates for long-term secondary prevention. (GER 2.5). This represents a substantial and growing population, reflecting demographic ageing and improved acute survival rates. Despite strong structural foundations, outcome data reveal persistent implementation gaps. Real-world evidence suggests that LDL-C target attainment remains low, with a majority of high- and very-high-risk patients failing to reach ESC guideline targets, even though lipid-lowering therapies are widely available. (GER 1.2)

Compared to the gold standards, Germany shows strong consistency at the policy and guideline level, but suboptimal implementation and monitoring at the system level (GER 2.6). Furthermore, there is no mandatory nationwide registry for secondary prevention outcomes, only limited use of patient-reported outcome measures, and no performance-based incentives directly linked to long-term control of risk factors. Access to structured rehabilitation and specialist follow-up care is uneven, particularly in rural areas. (GER 2.7).

Key opportunities for improvement include establishing national outcome monitoring, strengthening follow-up and adherence support, and improving alignment between specialist cardiology guidance and primary care practice to ensure consistent implementation across care and reduce delayed escalation and variability in LDL-C management. Additional priorities include expanding equitable access to rehabilitation and diagnostics, and using digital tools and real-world data to close the gap between guideline intent and everyday practice.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | Germany meets the policy alignment criterion for evidence-based, target-driven LDL-C reduction (GER 2.1, Mach 2025), but comprehensive implementation is lacking (GER 2.2). Furthermore, there is no comprehensive national monitoring system that routinely tracks whether healthcare professionals and patients achieve LDL-C targets. (GER 3.1) |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | While Germany has guideline-based, target-driven LDL-C recommendations, the lack of integration into quality indicators, absence of financial/performance incentives, and limited systematic monitoring mean it does not fulfill the gold standard on this topic. In addition, misalignment between national GP guidelines and specialist cardiology recommendations—particularly regarding treatment intensification and lower LDL-C targets—creates variability in implementation and may delay optimal escalation of lipid-lowering therapies (GER 3.2, GER 2.2). |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 1 | Germany has a well-structured acute care and hospital reimbursement framework for cardio-vascular procedures under the Diagnosis-Related Groups (DRG) system (GER 3.3). However, there is no national, standardized framework that mandates the initiation of lipid-lowering therapy at discharge, systematic documentation of care transitions, or clearly defined shared-care pathways between hospitals and primary care for secondary prevention. (GER 3.2, 3.4) |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | Germany provides guideline recommendations for follow-up and therapy escalation (GER. 3.5) and organizes acute care via DRG frameworks (GER 3.8). However, there are no mandatory enforcement mechanisms, no national monitoring system, and shared-care coordination is inconsistent (GER 3.2). |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 1 | While Germany has quality frameworks for cardiovascular care through IQTIG and procedural indicators in the Diagnosis-Related Groups (DRG) system, there are no national or regional quality indicators that specifically track "no medication change despite off-target LDL-C." (GER 3.2) Likewise, there are no pay-for-performance or QOF-type incentives linked to achieving LDL-C targets or optimizing lipid-lowering therapy across care levels. (GER 3.5). |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 0 | Medication adherence to lipid-lowering therapy is not established as a mandatory national quality indicator in Germany, nor is it supported by dedicated reimbursement or systematic national monitoring (GER 3.2, GER 2.3, GER 4.4). Real-world evidence shows suboptimal adherence, underscoring a persistent gap between guideline recommendations and routine clinical practice. (GER 4.4) |
| 7. Access to Combination and Long-Term Therapies | 2 | Advanced lipid-lowering therapies are available, evaluated and reimbursed through national HTA procedures (GER 3.6) 19.9 % of high and 25.2 % of very-high risk patients received combination therapy. However, strict eligibility criteria, administrative complexity and regional differences limit early access and continuity of treatment. (GER 3.6; GER 4.3). The system ensures safety and cost-effectiveness, but falls short of the fully equitable and proactive implementation envisaged by the gold standard. (GER 1.2). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | Although there are well-established registries (e.g. from medical societies) and standardised coding for inpatient cardiovascular care, there is no mandatory nationwide participation. (GER 3.7, GER 3.2). In addition, the integration of outpatient and laboratory data is limited, and registry results are not fully utilised for policy-making or resource allocation. (GER 3.2). The planned Medical Register Act aims to remedy key structural weaknesses in the current register landscape and significantly improve the use of medical data. The goal is to make register data more systematic, uniform and usable for healthcare, quality assurance, research and health policy. |
| 9. Quality Indicators and Financial Incentives | 1 | Germany does not fulfill the gold standard for integrating LDL-C indicators into quality frame-works with linked financial incentives, accreditation, and transparent reporting. (GER 3.2, GER.1.2.). Metrics exist in registries and selective programs but are not standardized, mandated, or connected to systemic accountability mechanisms. (GER 1.2, GER 3.7.). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 1 | Specialised centres (e.g. university hospitals) offer multidisciplinary lipid management based on guidelines (GER.5.4., GER.5.1), but there is a lack of nationwide service descriptions, dedicated funding, staffing programmes and structured patient participation linked to the results of lipid management. (GER 3.15, GER 3.10).This limits the uniform implementation of evidence-based lipid management throughout the country. |
| SCORE: | 11 | |

# KEY STRENGTHS

## Guideline-Aligned Therapeutic Escalation Protocols

National medical societies provide clear, risk-based protocols that mandate a stepwise escalation of lipid-lowering therapy (Statin to Ezetimibe to PCSK9 inhibitors) when targets are not met. This structured mechanism counters therapeutic delay by recommending efficacy assessments 4-6 weeks after treatment initiation (GER 4.5, GER 4.6).

## Registry-Based Quality Improvement Campaigns

The national "Auf Ziel" (On Target) campaign and its associated studies (e.g., "Jena auf Ziel") utilise prospective protocols to document lipid profiles and mandate therapy escalation for very high-risk patients not meeting LDL-C targets. This approach acts as a digital tool and internal quality measure that drives immediate, guideline-based therapeutic changes, significantly reducing therapeutic inertia in participating centres (GER 4.7).

## Specialised Tertiary Care Infrastructure

Specialised units, such as certified Cardiac Arrest Centres and Lipid Outpatient Clinics, are established to manage complex, high-risk patients through multidisciplinary teams and strict technical standards (e.g., 24/7 catheterisation lab availability). These facilities provide the necessary expertise for stringent LDL-C goal attainment and the management of hereditary dyslipidaemias that require advanced therapeutic interventions (GER 4.8, GER 4.9).

# MAIN GAPS

## Absence of Financial Incentives for Outcomes

The German healthcare system lacks pay-for-performance schemes or financial incentives linked to achieving LDL-C targets or optimizing long-term lipid-lowering therapy. Reimbursement is primarily based on Diagnosis-Related Groups (DRG) for procedures, which fails to encourage the continuous management required for secondary prevention and contributes to lower goal attainment compared to countries with incentive-based frameworks (GER 3.5).

## Therapeutic Inertia and Implementation Gaps

A significant gap exists between clinical guidelines and real-world practice, where clinicians often fail to intensify lipid-lowering therapy even when high-risk patients do not reach strict LDL-C targets. This "therapeutic inertia" results in a large proportion of patients remaining undertreated, which compromises long-term cardiovascular protection (GER 4.5.).

## Inequitable Access to Cardiac Rehabilitation

Germany does have a structured, guideline-based cardiac rehabilitation pathway that provides for early mobilisation in hospital (phase I), inpatient or day-care rehabilitation (phase II) and long-term outpatient follow-up care in heart groups (phase III). Participation in heart groups is legally enshrined and recommended in guidelines, but only about 13–40% of patients have taken advantage of this offer after phase II rehabilitation, meaning that despite proven effects on performance, morbidity and costs, there is still considerable room for improvement in terms of reach, target group appeal and scientific evaluation (GER 4.7). The use of cardiac rehabilitation (CR) is also limited by non-clinical factors, with women and patients in rural areas participating significantly less often. This utilisation gap means that these vulnerable groups often miss out on important structured lifestyle interventions and support in adhering to medication regimens (GER 3.8, GER 4.8).

# OPPORTUNITIES FOR IMPROVEMENT

## Bridging the Guideline–Practice Gap and Strengthening Cross-Sector Implementation

Germany's secondary prevention framework is supported by comprehensive clinical guidelines and structured rehabilitation pathways; however, a persistent discrepancy remains between guideline recommendations and real-world implementation. Many high-risk patients do not receive intensified lipid-lowering therapy despite failing to achieve strict LDL-C targets. A key opportunity would be to strengthen monitoring and accountability mechanisms supporting guideline-compliant escalation. Facilitating dialogue with political stakeholders and medical associations on the introduction of structured monitoring systems—and potentially performance-linked incentives—could help reduce therapeutic inertia and improve systematic T2T implementation.

Structural barriers, particularly in rural regions, further limit equitable delivery of secondary prevention. Specialist shortages, longer travel distances to diagnostic facilities and rehabilitation centres, and variable emergency care capacity contribute to uneven access. In the context of the planned 2026 primary care reform and the ongoing Emergency Care Reform Act, there is an opportunity to reinforce systematic referral pathways from primary care to cardiology, strengthen cross-sector coordination, and improve continuity between inpatient and outpatient care settings.

Finally, while Germany has a well-defined, guideline-based cardiac rehabilitation pathway, participation in long-term heart group programmes remains modest. Enhancing cooperation across providers, reducing administrative barriers, and strengthening patient empowerment—potentially aligned with broader European initiatives such as the Safe Hearts Plan—could help translate structural strength into sustained LDL-C optimisation and improved long-term outcomes.

# ISRAEL

- 64 cardiovascular disease deaths per 100,000 population were reported. (ISR 1.1)
- Approximately 100,000–150,000 emergency department visits for chest pain occur annually. (ISR 1.2)
- 170 hospital admissions for acute coronary syndrome (ACS) per 100,000 population were recorded. (ISR 1.3)
- 4.2% of patients were readmitted within 30 days following an ACS event. (ISR 1.4)
- LDL-C control and lipid-lowering treatment patterns.
- Among very-high-risk patients, 34.5% of Arab patients and 45.3% of Jewish patients achieved LDL-C <55 mg/dL at one year of follow-up. (ISR 1.5)
- Among high-risk patients, 43.8% of Arab patients and 58% of Jewish patients achieved LDL-C <70 mg/dL. (ISR 1.5)
- Combination lipid-lowering therapy was used by 25% of Jewish patients and 4% of Arab patients at one year of follow-up. (ISR 1.5)
- Treat-to-Target is included in national clinical guidelines, aligned with ESC/EAS recommendations. (ISR 1.6)

## COUNTRY SNAPSHOT

Israel combines high-performing acute cardiovascular care with uneven implementation of long-term secondary prevention, particularly regarding LDL-C treat-to-target strategies. Acute management of Acute Coronary Syndrome (ACS) is a national strength: Israel maintains one of the lowest CVD mortality rates in the OECD, supported by a dense network of PCI-capable hospitals and strong national quality indicators (ISE 1.1; ISR 1.6). These indicators ensure high compliance with timely reperfusion, early aspirin, and prescription of high-intensity statins at discharge. However, once patients transition into community care, long-term lipid management becomes far more variable.

Estimating the population under secondary prevention suggests that several hundred thousand adults live with established coronary artery disease (approximately 7.5% of men and 4.1% of women), representing a large cohort requiring systematic LDL-C monitoring, treatment intensification, and adherence support (ISR 1.1).
Key data indicate good acute outcomes but suboptimal chronic risk-factor control. Thirty-day ACS readmissions are relatively low (~4.2%), indicating strong in-hospital care and early follow-up (ISR 1.4). However, LDL-C goal attainment is likely insufficient: Israel does not systematically track LDL levels after ACS, and European benchmarks (including Israel) show that only 20–30% of high/very-high-risk patients reach ESC/EAS LDL targets. This suggests significant therapeutic inertia and underuse of combination lipid-lowering therapy, despite strong clinical guidelines (ISR 2.1).

Assessment against international Gold Standards shows high alignment on clinical guidance and universal coverage, but weak alignment on implementation, incentives, and measurement. National quality frameworks (NPQI, QICH) focus on processes, not LDL-C outcomes; no indicator measures attainment of <55 mg/dL in ACS survivors, nor treatment escalation when targets are missed (ISR 1.6; ISR 2.2). Digital infrastructure is advanced yet not fully leveraged to mandate LDL-C reporting or intensification pathways (ISR 2.3)

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | Israel applies ESC/EAS guidelines and absolute LDL-C targets through the Israel Heart Society and hospital protocols (ISR 2.1) However, there is no national policy that ties LDL-C goal attainment to incentives or systematic monitoring. |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | ESC/EAS LDL-C targets are clinically endorsed and reflected in HMO dashboards, but not integrated into NPQI/QICH as remunerated performance indicators. No financial bonuses or penalties are linked to LDL-C outcomes (ISR 1.6, ISR 2.1). |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | NPQI mandates and audits high-intensity statin prescription and cardiac rehabilitation referral at discharge after ACS, with high compliance, and ensures structured discharge summaries and follow-up appointments. Yet, early combination LLT (statin+ezetimibe/PCSK9i) is not mandated nationally, and discharge metrics are not linked to DRG-style reimbursement (ISR 1.6) |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | HMOs routinely monitor lipids and other risk factors, but there are no national requirements for LDL-C testing intervals or escalation algorithms in secondary prevention, and no audits specifically targeting treatment intensification when LDL-C remains above ESC/EAS targets (ISR 2.2). |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 1 | While HMOs monitor LDL-C levels and other cardiovascular risk factors, there are no explicit national indicators or mandatory escalation triggers requiring treatment intensification when LDL-C remains above ESC/EAS targets. Quality frameworks primarily focus on process measures (e.g., statin prescription) rather than indicators such as "no medication change despite off-target LDL-C". As a result, escalation relies largely on clinician judgement rather than embedded system-level prompts to address therapeutic inertia (ISR 1.6). |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 3 | HMOs provide highly integrated robust digital tools (apps, portals, reminders) and prescription tracking tools to support long-term medication adherence. . Adherence monitoring is embedded within routine care management and organisational oversight, supported by PREMs and digital engagement platforms. Given the vertically integrated payer–provider HMO model, adherence support is operationalised systematically across care settings, reflecting advanced, system-level implementation in secondary prevention (ISR 1.6; ISR 2.3). |
| 7. Access to Combination and Long-Term Therapies | 2 | The national Health Basket covers high-intensity statins, ezetimibe and PCSK9 inhibitors for defined very-high-risk patients with sub-optimal LDL-C despite maximised therapy. Real-world data from Israeli lipid clinics show LDL-C reductions and target attainment in PCSK9-treated patients, but access is restricted by eligibility criteria and budget constraints; early combination therapy is not standard for all ACS survivors (ISR 2.4; ISR 2.5). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 2 | Israel has interoperable EHRs across HMOs and a national "World of Data" platform that supports quality reporting. HMO systems generate LDL-C alerts aligned with ESC/EAS targets. However, there is no dedicated national LDL-C registry for secondary prevention or mandated reporting of LDL-C goal attainment after ACS (ISR 2.3). |
| 9. Quality Indicators and Financial Incentives | 2 | The National Program for Quality Indicators (NPQI) includes multiple ACS indicators (PCI times, pre-hospital aspirin, statin and rehabilitation recommendation). Because HMOs function as both payers and providers, LDL-C management is embedded within organisational quality monitoring frameworks. However, there is no standalone national performance indicator specifically measuring the proportion of patients achieving LDL-C targets, nor a dedicated pay-for-performance mechanism explicitly tied to LDL-C goal attainment. Financial incentives therefore exist at a structured level but are not fully aligned with outcome-based LDL-C performance metrics (ISR 1.6) |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 2 | Israel has multidisciplinary cardiac rehabilitation programmes, lipid clinics and coordinated ACS pathways involving cardiologists, nurses, dietitians and physiotherapists, and it actively disseminates ESC/EAS guidance through professional societies. Yet, there is no national mandate or ring-fenced funding for multidisciplinary lipid management teams or structured patient-involvement programmes in secondary prevention (ISR 1.1; ISR 2.6: ISR 2.7)). |
| SCORE: | 18 | |

# KEY STRENGTHS

## Universal coverage and broad access to evidence-based LLT

Under the National Health Insurance Law, all ACS survivors can access routine lipid monitoring, high-intensity statins and ezetimibe, with PCSK9 inhibitors covered since 2019 for very-high-risk patients whose LDL-C remains ≥ 100 mg/dL on maximal oral therapy. This ensures that intensive LDL-C lowering is financially feasible for eligible ACS patients and supports guideline-recommended treat-to-target strategies for those at extreme risk (ISR 2.4).

## Advanced digital infrastructure supporting treat-to-target care

Israel's health system ensures coordinated care across primary, hospital, and specialist settings through its four Health Maintenance Organizations (HMOs) (Clalit, Maccabi, Meuhedet, or Leumit), which are mandated to provide continuous care for all citizens, including post-ACS follow-up and rehabilitation. HMOs use integrated EHRs and clinical dashboards that generate alerts when LDL-C remains above ESC/EAS-recommended thresholds (<70 or <55 mg/dL depending on risk level), facilitating treatment intensification in daily practice. The national "World of Data" platform and widespread telemedicine enable remote follow-up and targeted reminders for lipid testing and prescription renewals—key enablers of sustained LDL-C control after ACS (ISR 2.2, ISR 2.3, ISR 2.7).

## Specialised lipid clinics and PCSK9 programmes delivering large LDL-C reductions

Several tertiary centres run lipid and vascular-risk clinics that manage complex ACS and familial hypercholesterolaemia patients. Real-world Israeli data show that PCSK9 inhibitor therapy reduces LDL-C by ~47% (from ~156 to ~81 mg/dL) and brings about two-thirds of treated patients to LDL-C targets, demonstrating that when intensification occurs, treat-to-target strategies are effective (ISR 2.5).

# MAIN GAPS

## Absence of national LDL-C outcome indicators in secondary prevention

Neither NPQI (hospital quality indicators) nor QICH (community quality indicators) systematically measures LDL-C levels after ACS, time to LDL-C reassessment, or attainment of ESC/EAS goals (<55 mg/dL). As a result, Israel lacks national visibility on whether guideline-recommended LDL targets are achieved in real practice and cannot compare performance across HMOs or hospitals. The indicators that do exist (e.g., statin prescription at discharge) assess processes rather than outcomes, which limits the system's ability to identify therapeutic inertia, adherence failures, or gaps in treatment intensification. This structural blind spot significantly weakens implementation of treat-to-target strategies at the population level (ISR 1.1; ISR 1.3).

## No national ACS secondary prevention plan or funding mechanism

Although Israel delivers excellent acute cardiac care, it lacks a national strategy specifically targeting long-term secondary prevention, including lipid management, adherence reinforcement, and coordinated follow-up. Without a defined policy framework or earmarked resources, therapeutic intensification, LDL monitoring, and rehabilitation enrollment remain dependent on local HMO practices and individual clinicians rather than system-level design. The Digital Health Strategy strengthens infrastructure but does not create obligations or accountability mechanisms for LDL-C control, leaving a gap between strong clinical guidelines and their population-wide implementation (ISR 2.3; ISR 2.7).

## Persistent Patient Adherence Gaps Undermine LDL-C Goal Attainment

A critical gap in Israel's secondary prevention landscape is poor long-term adherence to lipid-lowering therapy (LLT), even among highly motivated patients with excellent access to care. Evidence from a large Israeli cardiac rehabilitation cohort (n=1015) shows that despite 95% of patients being prescribed high-dose statins, only 57% achieved LDL <70 mg/dL at rehabilitation intake and just 33% reached <55 mg/dL—and these proportions improved only marginally after three months of structured follow-up. Notably, 14% of patients reduced their statin dose after discharge, frequently due to physician preference or patient self-decision, even when LDL remained above target. The study identifies suboptimal adherence as a central driver of inadequate LDL control and highlights that, despite universal coverage and ready access to guideline-recommended LLT, many patients do not sustain prescribed dosing or escalate therapy when needed. This underscores a system-level weakness: Israel lacks national adherence indicators, structured follow-up requirements, and incentive mechanisms to reinforce continuous, guideline-aligned LLT, limiting the effectiveness of treat-to-target approaches (ISR 2.6).

# OPPORTUNITIES FOR IMPROVEMENT

## Embedding LDL-C Outcome Accountability into National Quality Frameworks

srael's secondary prevention system benefits from advanced digital infrastructure and vertically integrated HMO oversight; however, LDL-C outcome measurement is not embedded within national quality indicators. A primary opportunity would be the incorporation of explicit LDL-C performance metrics, such as post-ACS LDL-C reassessment within defined intervals, target attainment (<1.4 mmol/L for very-high-risk patients), and documented therapy escalation, into NPQI and QICH frameworks. Moving from process indicators (e.g., statin prescription at discharge) to outcome-based LDL metrics would enhance national visibility and strengthen T2T accountability across HMOs.

In parallel, formalising a structured national secondary prevention pathway for ACS survivors, defining follow-up intervals, escalation algorithms, and adherence reinforcement, could reduce variability between HMOs and address persistent therapeutic inertia. While HMO dashboards already generate lipid alerts, introducing mandated escalation triggers when LDL-C remains above target would help standardise intensification practices at system level.

Finally, targeted strategies to reduce inequities in cardiac rehabilitation participation and strengthen long-term adherence monitoring would improve sustained LDL-C optimisation. Embedding adherence indicators and escalation monitoring within national quality programmes would ensure that Israel's strong digital capacity translates into consistent population-level T2T implementation.

# ITALY

- Approximately 113 cardiovascular disease deaths per 100,000 population (age-standardised) were reported. (IT 1.1)
- No nationally consolidated data on cardiovascular-related emergency department visits were identified.
- Hospital admissions for acute coronary syndrome (ACS) in 2020 were 378.9 per 100,000 men and 132.8 per 100,000 women. (IT 1.2)
- No nationally consolidated data on 30-day readmission rates following ACS were identified.
- Approximately 21% of high and very-high-risk patients achieved ESC/EAS LDL-C targets.
- Approximately 22% of treated patients received combination lipid-lowering therapy. (IT 1.3)
- Treat-to-Target is included in national clinical guidelines, aligned with ESC/EAS LDL-C targets.

## COUNTRY SNAPSHOT

Italy's landscape for secondary cardiovascular disease (CVD) prevention is characterised by a strong foundation in clinical guidance, primarily through the adoption of European Society of Cardiology (ESC) guidelines by national medical societies. This ensures that evidence-based protocols for risk factor monitoring, early and intensive lipid-lowering, and cardiac rehabilitation are theoretically in place (IT. 2.1, IT. 2.2). The National Health System (SSN) provides broad coverage for diagnostic tests, lipid profiling, and a range of pharmacological interventions, including innovative lipid-lowering therapies for eligible high-risk patients under strict reimbursement criteria (IT. 2.3, IT. 2.4).

However, the system faces significant challenges in translating these guidelines into consistent, measurable national outcomes. There is no dedicated national strategic plan or ring-fenced funding for secondary CVD prevention, leading to fragmented implementation and reliance on broader health budgets (IT. 2.5, IT. 2.6). Key data indicates low LDL-C control rates, with studies showing only a small percentage of high-risk patients achieving target levels (e.g., 11.6% in one regional study) (IT. 2.7, IT. 2.8). This suggests substantial gaps in consistent monitoring, therapeutic inertia, and structured follow-up. Furthermore, national surveillance systems lack specific indicators for secondary prevention outcomes, such as recurrent events, MACE, or cardiac rehabilitation participation rates, hindering comprehensive performance assessment (IT. 2.9, IT. 2.10).

Overall, Italy's alignment with Gold Standards is emerging or fragmented. While clinical guidelines are robust, implementation is often region-driven and lacks national standardisation, dedicated incentives, and robust quality indicators tied to LDL-C targets. Opportunities for improvement lie in establishing national, dedicated indicators, developing a comprehensive national strategy, implementing performance-based incentives, and leveraging the evolving Electronic Health Record (FSE 2.0) for systematic patient monitoring and data comparability across regions.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | Italian clinical documents follow ESC/EAS LDL-C targets (e.g. <55 mg/dL for very-high risk), indicating alignment with intensive LDL-C lowering. However, there is no national QOF-style incentive scheme or nationwide monitoring of LDL-C goal achievement. (IT.3.1) |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | LDL-C targets are defined in Italian guidance, but they are not integrated into a national pay-for-performance scheme and cross-country harmonisation reviews are not formally conducted by payers, so alignment with incentives remains fragmented. |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 1 | Some hospitals/regions initiate LLT and support transition of care, but these requirements are not mandated nationally through DRG-linked metrics; implementation varies by region and centre rather than being a uniform national standard. |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | Certain regional PDTA (e.g. Lombardy Integrated Social-Health Plan 2024–2028) define structured chronic-care pathways, continuity of care and multidisciplinary coordination for CVD patients, but there are no national mandatory follow-up intervals, escalation rules or audit/reporting mechanisms across the SSN. (IT.3.2) |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 0 | No evidence of a national pay-for-performance framework that includes indicators such as "no medication change despite off-target LDL-C," nor of funding or feedback mechanisms explicitly targeting therapeutic inertia in lipid management. |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | Medication adherence is recognised as a policy priority and there are proposals to include it in LEA/NSG monitoring, but a standardized national LDL-C adherence quality indicator linked to reimbursement or formal accountability mechanisms is not yet in place. (IT.3.3) |
| 7. Access to Combination and Long-Term Therapies | 3 | Advanced LLTs (inclisiran, alirocumab, evolocumab) are reimbursed nationally via AIFA web-based therapeutic plans/registries, and regions designate prescribing centres to ensure access for eligible high-risk patients, supporting nationwide availability of long-term and combination therapies. (IT. 2.4) |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | Italy is deploying a national interoperable digital infrastructure via the Fascicolo Sanitario Elettronico (FSE), creating shared data standards and supporting future integration. However, the FSE does not yet function as a dedicated national registry for LLT outcomes/LDL-C targets, and uniform LDL-C reporting and alerting are not in place; disease-specific systems remain limited to AIFA monitoring registries. |
| 9. Quality Indicators and Financial Incentives | 0 | The national outcomes programme (PNE) tracks a range of outcomes and processes but does not include LDL-C goal attainment, nor is it tied to LDL-specific reimbursement incentives or performance-linked funding. (IT. 2.10). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 1 | There is emerging progress towards multidisciplinary CVD/lipid-management pathways, with the Lombardy Integrated Social-Health Plan 2024–2028 highlighting coordinated chronic-care models and patient-engagement programmes. Nonetheless, there is no national mandate, funding stream or service specification for multidisciplinary lipid clinics, nor standardized national training/accreditation or a formalized national quality framework for patient-education and adherence-support. (IT. 3.2) |
| SCORE: | 11 | |

# KEY STRENGTHS

## National Implementation of the Electronic Health Record (FSE 2.0)

Italy is actively implementing the Electronic Health Record (FSE 2.0) nationally. This initiative aims to significantly improve data sharing and patient management across different regions and healthcare settings. While still evolving, this represents a crucial infrastructural strength for enhancing continuity of care, systematic monitoring, and data comparability in the future (IT. 4.2).

## Broad National Health System (SSN) Coverage for Diagnostics and Pharmacological Interventions

The National Health System (SSN) provides extensive coverage for essential components of secondary CVD prevention. This includes diagnostic tests, lipid profiling, and a range of pharmacological interventions. Notably, innovative lipid-lowering therapies are covered for eligible high-risk patients, albeit under strict reimbursement criteria (IT. 2.3, IT. 2.4). This broad coverage ensures that patients theoretically have access to necessary tools and treatments, forming a crucial backbone for prevention efforts.

## Reimbursement for Innovative Lipid-Lowering Therapies for High-Risk Patients

A significant strength is the SSN's reimbursement for innovative lipid-lowering therapies, such as PCSK9 inhibitors, for very high-risk patients who do not achieve LDL-C targets on maximally tolerated statin therapy. This access, though under strict criteria and specialist prescription, is vital for managing patients with the greatest need and highest risk (IT. 2.3, IT. 4.1).

# MAIN GAPS

## Limited Structured Follow-Up and Inconsistent Therapy Escalation

There are substantial gaps in consistent monitoring, structured follow-up, and timely therapy escalation for patients post-cardiovascular event. This means patients may not receive regular assessments of their LDL-C levels or appropriate adjustments to their lipid-lowering therapy when targets are not met, even when guidelines recommend it. This contributes directly to prolonged periods of uncontrolled LDL-C, increasing the risk of subsequent cardiovascular events and diminishing the long-term effectiveness of initial treatments.

## Pervasive Therapeutic Inertia and Low LDL-C Control Rates

Despite the formal adoption of European Society of Cardiology (ESC) guidelines, Italy exhibits alarmingly low rates of LDL-C target achievement among high-risk patients, especially in some regions. This is significantly compounded by pervasive therapeutic inertia, where healthcare providers may not consistently intensify or adjust lipid-lowering treatment despite patients remaining above their target LDL-C levels. This directly translates to a higher burden of recurrent cardiovascular events, increased morbidity and mortality, and greater societal costs due to preventable complications (IT. 2.7, IT. 2.8).

## Lack of Specific National Quality Indicators and Performance Monitoring

National surveillance systems and the monitoring efforts by AGENAS do not consistently include specific, measurable quality indicators for secondary CVD prevention outcomes, such as recurrent events, Major Adverse Cardiovascular Events (MACE), or cardiac rehabilitation participation rates. There are no national quality indicators specifically for secondary CVD prevention that are consistently tracked and publicly reported. Without these indicators, the system cannot effectively assess performance, identify areas for improvement, or hold regions/providers accountable. This hinders data-driven decision-making and perpetuates unaddressed gaps in care, making it difficult to track progress or the impact of interventions (IT. 2.9, IT. 2.10, IT 5.1, IT. 5.2).

# OPPORTUNITIES FOR IMPROVEMENT

## Operationalising T2T Through National Harmonisation and Digital Enablement

taly's strong clinical foundation would benefit from a more structured national implementation framework capable of translating ESC-aligned guidance into measurable and comparable outcomes. A first priority is the harmonisation of secondary prevention indicators within existing national monitoring systems. Integrating standardized metrics—such as LDL-C target attainment, time to LDL-C reassessment after discharge, documented therapy escalation, and cardiac rehabilitation participation—into NSIS and the National Outcomes Programme (PNE), under coordinated oversight by the Ministero della Salute and Agenas, would enable comparable benchmarking across regions and strengthen accountability for T2T delivery.

In parallel, the ongoing deployment of the Fascicolo Sanitario Elettronico (FSE 2.0) presents a strategic opportunity to embed structured clinical decision support into routine care. Integrating automated alerts and dashboards capable of identifying high-risk secondary prevention patients who remain above LDL-C targets would help reduce therapeutic inertia, standardise escalation practices, and reinforce continuity between hospital discharge and community follow-up.

Finally, piloting regional quality-improvement programmes focused on LDL-C optimisation could demonstrate the tangible clinical and economic value of strengthened T2T implementation. Linking LDL-C target attainment among very-high-risk patients to hospital- or ASL-level quality feedback mechanisms would provide actionable performance data, encourage structured follow-up, and support earlier intensification where appropriate. Successful pilots could inform scalable national adoption while respecting Italy's region-driven governance structure

# MEXICO

Approximately 148 cardiovascular disease deaths per 100,000 population (crude rate, 2024) were reported; the age-adjusted mortality rate was approximately 166 per 100,000 population in 2021. (MX.0.1; MX.0.2)

No nationally consolidated data on cardiovascular-related emergency department visits were identified; in Mexico City, approximately 17,000 CVD-related ED visits per year were recorded between 2016 and 2019. (MX.0.3)

Hospitalisation rates for acute myocardial infarction suggest an ACS admission rate of several dozen per 100,000 population, based on age-specific data from Ministry of Health hospitals. (MX.0.4)

Approximately 9–10% of patients were readmitted within 30 days following acute myocardial infarction, based on observational data. (MX.0.5)

Approximately 15–20% of high and very-high-risk patients achieved guideline LDL-C targets, including <55 mg/dL in patients with established ASCVD. (MX.0.6)

Combination lipid-lowering therapy is used in a minority of patients (approximately 20–25% or less), with many high-risk patients receiving no lipid-lowering therapy or only moderate-intensity statins. (MX.0.6; MX.0.7)

Treat-to-Target is included in national clinical guidelines, with LDL-C goals defined by risk category and recommendations for treatment escalation if targets are not achieved. (MX.0.8)

## COUNTRY SNAPSHOT

Mexico faces a very high burden of cardiovascular disease, with heart disease remaining the leading cause of death and acute myocardial infarction (AMI) showing particularly poor short-term outcomes. Thirty-day AMI case fatality (≈27.5 percent) is the worst in the OECD, highlighting serious gaps in acute care quality and early post-event management (MX.1.1, MX.1.2). However, national surveillance remains focused on mortality and acute indicators, with no dedicated national monitoring of recurrent events, long-term adherence, or LDL-C goal attainment in secondary prevention cohorts (MX.1.1, MX.1.3).

There is no robust estimate of the total secondary prevention population, but given high CVD mortality and widespread cardiometabolic risk, several million adults are likely living with established ASCVD. Available data suggest that only a minority of high and very-high-risk patients achieve guideline LDL-C targets (often below 20 percent), and use of combination lipid-lowering therapy is low (MX.1.3, MX.5.2).

Cardiac rehabilitation access is extremely limited, with fewer than 10 percent of eligible patients enrolling and under 1 percent of all candidates receiving CR (MX.1.4, MX.4.4).

On paper, Mexico has many of the right elements. National and society-led guidelines endorse intensive LDL-C reduction with modern targets and stepwise intensification, including ezetimibe and PCSK9 inhibitors for very-high-risk patients (MX.3.1, MX.3.2, MX.5.1). Yet there is no dedicated secondary prevention strategy, no specific funding stream, and no pay-for-performance or accountability mechanisms for LDL-C control or long-term secondary prevention outcomes (MX.2.1, MX.2.3, MX.5.2).

Overall, Mexico aligns reasonably well with the Gold Standards in terms of guideline content and formulary coverage, but falls short on implementation, data systems, and equity. Key opportunities include: establishing national secondary prevention indicators, expanding integrated care and CR capacity, reducing therapeutic inertia through structured follow-up and feedback, and leveraging digital tools and registries to monitor LDL-C control and recurrent events across institutions (MX.2.1, MX.4.1, MX.5.2).

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | National standards and the 2022 dyslipidemia guideline endorse aggressive LDL-C reduction with very-high-risk targets and stepwise intensification, and ACS protocols initiate high-intensity statins in hospital. However, these policies are not systematically reinforced through funding or performance mechanisms, and real-world control remains poor (MX.2.1, MX.3.2, MX.5.1, MX.5.2). |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | LDL-C targets by risk category are clearly defined and nationally disseminated, aligned with ESC/EAS thresholds. Yet there is no linkage between these targets and reimbursement, provider evaluation, or formal performance review, so incentive alignment is largely absent (MX.3.1, MX.3.2, MX.5.1). |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | ACS protocols such as Código Infarto require in-hospital initiation of evidence-based therapies including high-intensity statins, and discharge processes typically include prescriptions and basic lifestyle counseling. Early combination lipid therapy and robust transition to structured outpatient secondary prevention are inconsistent and usually depend on specialist services (MX.1.2, MX.3.3, MX.3.4, MX.4.1). |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | Guidelines recommend follow-up intervals and escalation if LDL-C targets are not met, but there is no national mandate or monitoring to ensure timely post-discharge visits, repeat lipid testing, or systematic therapy intensification. Follow-up is shaped by local capacity and appointment availability rather than a national accountability framework (MX.3.2, MX.3.3, MX.5.2). |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 0 | Although guidelines explicitly warn against therapeutic inertia and propose intensification algorithms, there are no financial incentives, national audits, or routine feedback systems to push providers to act when patients remain above LDL-C targets. Implementation is left to individual clinicians, and persistent low target attainment suggests inertia remains largely unaddressed (MX.3.2, MX.5.2). |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | General chronic disease programs provide counseling and some reminder activities, and public campaigns promote cardiovascular risk awareness. However, adherence is not measured through national indicators or pharmacy-based metrics, and structured adherence support or patient engagement programs for secondary prevention are limited to local initiatives (MX.2.1, MX.4.5). |
| 7. Access to Combination and Long-Term Therapies | 2 | Generic statins and ezetimibe are widely available in public formularies, and PCSK9 inhibitors have been approved and incorporated for selected very-high-risk patients. Since November 2025, inclisiran has also been officially reimbursed in public centres following a formal coverage decision. In practice, access to advanced therapies is constrained by cost, administrative hurdles, and regional variation, so only a small subset of patients receives them (MX.2.4, MX.2.6, MX.5.4, MX.5.5). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | Policies call for unified cardiometabolic information systems and integrated networks, and clinical coding is standardized, which creates a foundation for better data. Yet there is no national secondary prevention registry, no routine LDL-C dashboards, and only fragmented pilot use of digital tools or registries (MX.1.6, MX.2.1, MX.4.1, MX.4.7). |
| 9. Quality Indicators and Financial Incentives | 1 | Quality monitoring includes some acute CVD indicators, such as reperfusion times and 30-day AMI mortality, and selected institutional audits of discharge medications. However, there are no nationally adopted indicators for LDL-C control, CR uptake, or recurrent event rates, and no incentive schemes linked to secondary prevention quality (MX.1.2, MX.3.6, MX.5.3). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 2 | National strategies promote integrated care networks and stronger competencies in cardiometabolic disease management, and tertiary centers run multidisciplinary lipid, heart failure, and rehabilitation clinics. These models are not scaled nationally, and structured patient involvement in service design or policy remains limited (MX.2.1, MX.4.1, MX.4.3, MX.4.4, MX.5.6). |
| SCORE: | 13 | |

# KEY STRENGTHS

### Established acute coronary care pathways with embedded secondary prevention

Inter-institutional ACS guidelines and the Código Infarto protocol standardize acute MI management and require in-hospital initiation of evidence-based therapies, including high-intensity statins, antiplatelets, and structured discharge planning. This improves the consistency of secondary prevention initiation at the point of care (MX.1.6, MX.3.3, MX.3.4).

### Coverage of essential secondary prevention interventions in public formularies

The national formularies in public institutions cover core secondary prevention medications such as statins, ezetimibe, ACE inhibitors, beta-blockers, and in selected cases PCSK9 inhibitors. This ensures that financial barriers are relatively low for most patients and that guideline-recommended therapies are at least theoretically available (MX.2.3, MX.2.4, MX.5.4, MX.5.5).

### Emerging specialized lipid and familial hypercholesterolemia clinics

National reference centers and academic hospitals host lipid and FH clinics, including the Mexican FH Registry, which provide intensive management for the highest-risk patients and serve as innovation hubs for best-practice secondary prevention (MX.3.2, MX.4.3, MX.5.1).

# MAIN GAPS

### Lack of dedicated secondary prevention indicators and registries

Mexico does not systematically monitor recurrent events, LDL-C target attainment, or CR participation among patients with established CVD. Without national registries or indicators, it is difficult to benchmark performance, identify unwarranted variation, or drive quality improvement in secondary prevention (MX.1.1, MX.1.3, MX.1.4, MX.1.6, MX.4.7, MX.5.2).

### Weak implementation and therapeutic inertia despite strong guidelines

Although guidelines define aggressive LDL-C targets and clear treatment escalation pathways, these are not supported by incentives, digital alerts, or audit and feedback. As a result, a large majority of high and very-high-risk patients remain above LDL-C goal and on suboptimal therapy, increasing recurrent event risk (MX.1.3, MX.3.2, MX.5.2).

### Insufficient focus on adherence support and patient-reported outcomes

Structured adherence programs, pharmacy-based monitoring, and systematic PROMs or PREMs collection are largely absent. This limits understanding of patient experience, hinders early detection of non- adherence, and reduces the system's ability to tailor secondary prevention services to patient needs (MX.1.5, MX.4.5, MX.4.7, MX.5.6).

## OPPORTUNITIES FOR IMPROVEMENT

### Advancing Structured Post-MI Management and Outcome Measurement

Mexico's secondary prevention framework would benefit from prioritising structured post-MI follow-up pathways with mandatory LDL-C reassessment and monitoring. Defining clear timelines for lipid testing (e.g., 4–12 weeks post-discharge), formal target evaluation, and required therapy escalation when LDL-C goals are unmet would directly address therapeutic inertia and reduce variability in long-term care. Embedding this pathway within institutional protocols—building on the success of Código Infarto in acute management—would strengthen the transition from hospital discharge to sustained T2T optimisation.

Influencing systematic LDL-C tracking at population level is equally critical. This could be supported through the implementation of a national audit or specific outcome-linked incentives tied to LDL-C target attainment and documented escalation. The development of population-level LDL-C dashboards, digital alerts for off-target patients, and ultimately a national secondary prevention registry capable of tracking LDL-C monitoring and T2T intensification would provide the accountability infrastructure currently missing.

Finally, expanding cardiac rehabilitation and multidisciplinary secondary prevention capacity beyond tertiary centres—alongside structured adherence monitoring and patient engagement mechanisms—would reinforce sustained LDL-C control and reduce recurrent event risk.

# POLAND

297 cardiovascular disease deaths per 100,000 population were reported from diseases of the circulatory system in 2023. (POL 1.12)

424,913 cardiac emergency department visits were recorded in 2024, of which 217,017 were classified as acute. (POL 1.13)

≈269 acute coronary syndrome hospital admissions per 100,000 population were recorded in 2019, corresponding to ≈103,000 ACS cases nationally. (POL 1.11)

No robust national 30-day readmission rate after ACS is available; 15.8% was reported in a 2008 – 2009 study limited to PCI-treated ACS patients. (POL 1.15)

24% of patients across all cardiovascular risk categories achieved LDL-C treatment targets; 17% of very-high-risk patients achieved <1.4 mmol/L, and ≈8% achieved the extreme-risk target. (POL 1.14)

9.2% of patients received combination lipid-lowering therapy. (POL 1.4)

Yes. Treat-to-Target is included in national guidelines, with LDL-C targets aligned with ESC/EAS recommendations across risk categories. (POL 1.4)

## COUNTRY SNAPSHOT

An estimated 1.2-1.5 million people in Poland live with coronary heart disease, and approximately 70,000-80,000 individuals experience a myocardial infarction each year. Cardiovascular diseases remain the leading cause of death in the country. This reflects a substantial epidemiological burden: a very large population requires long-term secondary prevention, and every year a new cohort of post-acute patients enters a phase demanding sustained follow-up and management.

Poland has a reasonably well-developed strategic foundation for secondary cardiovascular prevention. The National Cardiovascular Disease Program 2022–2032 (NPChUK) establishes a long-term national commitment to improving cardiovascular care, including prevention, diagnostics, rehabilitation, and risk-factor control. A key operational instrument is KOS-Zawał (Comprehensive Post-Myocardial Infarction Care Program), which since 2017 has provided coordinated post-MI care,

including early outpatient visits, specialist consultations, cardiac rehabilitation, and lipid monitoring. According to National Health Fund (NFZ) data, by the end of 2024 approximately 118,000 patients had participated in the program (25.5 thousand enrolled in 2024 alone) across 112 participating centers. Poland also operates the B101 drug program, providing access to modern reimbursed lipid-lowering therapies.

Despite these strengths, real-world data reveal significant gaps in implementation. Although KOS-Zawał is an effective and well-evaluated program, it currently covers only around 40% of MI cases nationwide. In addition, cardiac rehabilitation participation outside the program remains low and uneven: only 20-30% of eligible patients access rehabilitation after an acute event or revascularization, with especially limited availability in smaller centers and rural areas. Within KOS-Zawał, participation is substantially higher - around 75% - highlighting the program's added value but also the inequities in access.

These findings indicate that while Poland has strong expert guidelines aligned with European recommendations and programmatic frameworks consistent with international standards, implementation remains uneven, incomplete, and insufficiently monitored. There is no coherent national system of quality indicators dedicated to secondary prevention. Public reporting does not routinely include data on LDL-C target achievement, time to target, long-term lipid control, patient-reported outcomes (PROMs/PREMs), or regional disparities in access. This limits transparency, quality improvement, and equity.

Key opportunities include: developing a comprehensive, dedicated secondary-prevention strategy; expanding and equalizing access to cardiology services and the KOS-Zawał program across all regions; implementing broad, coordinated patient-education initiatives; improving access to lipid-lowering treatments by expanding regional availability and easing entry criteria for the drug program; and establishing national registries and systematic quality reporting for secondary prevention.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | Polish scientific society guidelines clearly define LDL-C targets aligned with European recommendations (cardiovascular risk categories: extreme < 1.0 mmol/L, very high < 1.4 mmol/L, high < 1.8 mmol/L, moderate < 2.6 mmol/L, low < 3.0 mmol/L). However, clearly defined national-level targets are still lacking within the overarching strategy. (POL 1.4) |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 2 | LDL-C targets are embedded within the Comprehensive Post-Myocardial Infarction Care Program (KOS-Zawał), which includes financial incentives for facilities achieving lipid-control benchmarks. Entry thresholds based on LDL-C levels are further specified in the B101 national drug program, which recently adopted criteria of LDL-C >1.8 mmol/L, or >1.4 mmol/L in the presence of another major risk factor. However, despite these well-defined clinical thresholds, Poland lacks coherent, nationwide indicators for monitoring LDL-C outcomes and tracking long-term performance.(POL 1.6, POL 2.4) |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | There are recommendations to initiate statin therapy, and in cases of hypercholesterolemia or insufficient response to statins, to introduce modern lipid-lowering treatments through the B101 drug program. However, the eligibility criteria for this program may limit its overall impact. (POL 2.4) |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 2 | The B101 drug program provides structured monitoring and clear protocols for the use of individual lipid-lowering therapies; however, appropriate tools for systematic oversight and data collection are still lacking. (POL 2.4) |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 1 | Incentives for healthcare facilities have recently been introduced only within the KOS-Zawał program; beyond this, appropriate mechanisms are lacking, and data availability remains limited. (POL 1.6) |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 0 | There are no national indicators for medication adherence, nor are there structured support programs. PROMs and PREMs are essentially unavailable and are collected only within isolated research projects. |
| 7. Access to Combination and Long-Term Therapies | 2 | In Poland, statins and ezetimibe are available, and Alirocumab, Evolocumab, Inclisiran, and Lomitapide can be accessed through the B101 drug program for patients not achieving LDL-C targets. However, strict eligibility criteria and the concentration of services in specialized centers mean that combination and long-term therapies are accessible to only a relatively small subset of high-risk patients. (POL 2.4) |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | Poland currently lacks a nationwide, fully integrated digital registry specifically for secondary cardiovascular prevention. While some registries exist for acute myocardial infarction (e.g., PL-ACS, KOS-Zawał monitoring) and selected interventional procedures, data collection is often fragmented, limited to participating centers, and not linked systematically to follow-up care or outcome tracking. (POL 1.6, POL 1.1) |
| 9. Quality Indicators and Financial Incentives | 1 | Poland currently lacks a coherent nationwide set of quality indicators specifically for secondary cardiovascular prevention. While programs like KOS-Zawał include some performance measures - such as LDL-C target achievement and cardiac rehabilitation participation - these indicators are limited to participating centers. Financial incentives exist only within KOS-Zawał to reward facilities meeting certain targets. (POL 1.6) |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 2 | Poland has made progress in multidisciplinary care through the KOS-Zawał program, which integrates cardiologists, primary care physicians, nurses, and rehabilitation specialists. Outside this program, coordinated post-MI care and structured rehabilitation are uneven, and workforce training in secondary prevention is inconsistent across regions, although the Polish Cardiac Society includes an important physician education component. Patient involvement and education exist but are sporadic, with PROMs/PREMs collection largely restricted to research projects. (POL 1.6) |
| SCORE: | 15 | |

# KEY STRENGTHS

## Early Adoption of Performance-Based Incentives

KOS-Zawał includes financial incentives for facilities that achieve LDL-C targets and participate in rehabilitation programs, promoting adherence to best-practice protocols. While not yet nationwide, these incentives demonstrate a successful model for linking quality metrics with accountability in secondary prevention.

## KOS-Zawał: Coordinated Post-MI Care

The KOS-Zawał program represents a national best practice in delivering structured, multidisciplinary care after myocardial infarction. It integrates cardiologists, primary care physicians, nurses, and rehabilitation specialists, offering early follow-up, cardiac rehabilitation, and lipid monitoring. Participation in KOS-Zawał has been associated with lower mortality among post-MI patients compared to standard care, demonstrating measurable improvements in patient outcomes.

## Access to Advanced Lipid-Lowering Therapies

Through the B101 drug program, high-risk patients have access to modern lipid-lowering treatments, including Evolocumab, Alirocumab, Inclisiran, and Lomitapide. While program reach is limited by eligibility criteria, it provides structured monitoring and protocols.

# MAIN GAPS

## Absence of Nationwide Secondary Prevention Indicators

Poland lacks a coherent national system of indicators specifically for secondary cardiovascular prevention. Key metrics such as LDL-C target achievement, time to reach targets, long-term lipid control, readmission rates, or patient-reported outcomes (PROMs/PREMs) are not systematically collected or reported, limiting transparency and benchmarking. This gap hinders quality improvement and makes it difficult to identify high-risk patients or evaluate program effectiveness.

## Limited Access to Specialized Post-MI Care and Rehabilitation

Although programs like KOS-Zawał provide structured post-MI care, only around 40% of MI patients are enrolled, and participation in cardiac rehabilitation outside the program remains low, particularly in smaller centers and rural areas. Unequal access to multidisciplinary care and rehabilitation contributes to preventable recurrent events and suboptimal LDL-C control.

## Inequitable Access to Advanced Lipid-Lowering Therapies

While statins and ezetimibe are widely available, access to PCSK9 inhibitors, Inclisiran, and Lomitapide through B101 is restricted by strict eligibility criteria and concentration of services in specialized centers. This limits therapy intensification for very-high-risk patients who remain above LDL-C targets, contributing to uncontrolled hyperlipidemia and higher cardiovascular risk.

# OPPORTUNITIES FOR IMPROVEMENT

## Scaling Coordinated Post-MI Care and Advancing a National Prevention Framework

Poland's secondary prevention landscape would benefit from strengthening and scaling the KOS-Zawał programme to reduce persistent regional disparities in access. While KOS-Zawał is widely recognised as an effective coordinated post-MI care model—with documented reductions in mortality and rehospitalisation—the proportion of eligible patients enrolled varies significantly across voivodeships. Expanding the number of participating centres in underperforming regions, extending programme duration, and broadening eligibility criteria would enhance population-level impact and improve equity. The 2023 reforms, which introduced more favourable financing and organisational flexibility, demonstrate policy openness to further evolution and provide a platform for continued expansion.

Building on this foundation, Poland would benefit from embedding secondary prevention more explicitly within a comprehensive National Cardiovascular Prevention Strategy. Supporting the Polish Cardiac Society's proposal for a long-term, coordinated framework—covering the entire cardiovascular care pathway and lifetime risk management—could ensure that structured T2T implementation becomes a national priority rather than a programme-specific initiative. Integrating standardized risk assessment tools and formalising secondary prevention services within the catalogue of NFZ-guaranteed benefits would strengthen continuity of care and equitable access across regions.

# SPAIN

- 50.2 cardiovascular disease deaths per 100,000 population were reported. (ES 1.1)
- ≈622,000 cardiovascular-related emergency department visits were recorded in 2020, representing ≈2% of all ED visits nationally. (ES 1.2)
- 180 acute coronary syndrome hospital admissions per 100,000 population were recorded. (ES 1.3)
- 5–6% 30-day readmission rate after ACS was reported. (ES 1.4)
- 26.5% of patients achieved risk-based LDL-C targets, including 23.1% of high-risk and 27.9% of very-high-risk patients. (ES 1.5)
- 41.2% of patients received combination lipid-lowering therapy. (ES 1.5)
- Yes — Treat-to-Target is included in national guidelines. (ES 1.6)

## COUNTRY SNAPSHOT

Spain's secondary cardiovascular prevention landscape is undergoing significant development following the approval of the Estrategia en Salud Cardiovascular del Sistema Nacional de Salud (ESCAV), the country's first national cardiovascular strategy (ES-2.1; ES 2.2). ESCAV aligns with ESC/EAS recommendations and emphasises intensive lipid lowering, early revascularisation, improved follow-up, and greater equity across regions. Nevertheless, implementation remains uneven, with substantial gaps in monitoring, digital integration and structured secondary prevention pathways.

No national estimate exists for the population under secondary prevention, but Spain's annual CVD mortality (50.2 deaths per 100,000 in 2021) highlights the scale of disease burden (ES 1.1). Real-world data reveal that secondary prevention outcomes remain suboptimal: only 26.5% of high and very-high risk patients achieve LDL-C targets according to the Spanish SANTORINI cohort, indicating pervasive therapeutic inertia (ES 1.5). National systems also lack consistent data on readmissions, ACS follow-up, or combination lipid-lowering therapy use—metrics that other high-performing countries track routinely.

Treat-to-target principles are embedded in national and society-led guidance. ESCAV and the SEA 2024 Standards for Global Control of Vascular Risk recommend intensive lipid-lowering therapy and stepwise intensification (high-intensity statins, ezetimibe, PCSK9/siRNA) for high and very-high-risk patients, operationalised through lipid and vascular risk units accredited by SEA and SEC (ES 2.1; 2.3). Spain performs strongly on policy alignment and clinical guidance, and several autonomous communities have developed advanced secondary prevention models, such as Andalusia's FARO and Valencia's PROCORC, which formalise transitions from hospital to primary care and promote multidisciplinary follow-up (ES 2.4; ES 2.5). However, these remain region-specific, and national coverage is incomplete. Cardiac rehabilitation capacity is limited and unevenly distributed, and digital infrastructure needed for interoperable data, alerts and registries remains underdeveloped (ES 2.6; ES 2.7; ES 2.8).

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | ESCAV is nationally approved and explicitly aligned with ESC/EAS recommendations, promoting intensive LDL-C lowering and early therapy initiation in secondary prevention, but without a fully operational monitoring or incentive system. (ES 2.1; ES 2.2) |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | National and society guidelines define LDL-C targets and treat-to-target algorithms (e.g. SEA 2024 Standards), but these targets are not integrated into funding, reimbursement or pay-for-performance schemes. (ES 2.2; ES 2,3) |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | ACS care pathways ensure early initiation of evidence-based therapies and transition to primary care with referral to cardiac rehabilitation. Programs such as FARO and PROCORC structure post-ACS follow-up, but there are no uniform national DRG-linked requirements or standards across all regions. (ES 2.2; ES 2.4; ES 2.5) |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | ESCAV recommends structured follow-up and optimisation, but there are no mandatory national follow-up intervals, escalation criteria or audit/feedback mechanisms for off-target LDL-C; implementation is left to regional systems and individual centres. (ES 2.1; ES 2.6) |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 0 | No indicators such as "no therapy change despite off-target LDL-C" are embedded in quality frameworks, nor are there incentives or penalties addressing therapeutic inertia in lipid management. (ES 2.1; ES 2.2) |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 2 | ESCAV prioritises adherence, health education and patient empowerment, and CR programs include education components, but there is no national adherence indicator or dedicated reimbursement for large-scale adherence support. (ES 2.2; ES 2.8) |
| 7. Access to Combination and Long-Term Therapies | 2 | The SNS funds statins, ezetimibe, PCSK9 inhibitors and siRNA therapies for high-risk patients under AEMPS criteria.. Access to advanced lipid-lowering therapies in Spain is governed by defined LDL-C eligibility thresholds and prior optimisation requirements (e.g., maximally tolerated statin plus ezetimibe), rather than automatic escalation aligned with ESC <1.4 mmol/L targets. In addition, regional and hospital-level validation processes may further influence real-world uptake. (ES 2.1; ES 2.2) |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | ESCAV and participation in the European Health Data Space aim to build interoperable cardiovascular information systems and digital tools, but a unified national registry for secondary prevention and LDL-C outcomes is not yet operational. (ES 2.6; ES 2.7) |
| 9. Quality Indicators and Financial Incentives | 2 | ESCAV defines 61 indicators and 20 sub-indicators, including CR and readmission metrics, but these are not yet systematically collected nor linked to financial incentives or transparent reporting specifically for LDL-C management. (ES 2.1; ES 2.2) |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 2 | ESCAV promotes multidisciplinary teams, coordination between care levels, and involvement of scientific societies and patient representatives; however, implementation and stable support vary regionally, and there is no specific, ring-fenced funding. (ES 2.2; ES 2.9; ES 2.8) |
| SCORE: | 14 | |

# KEY STRENGTHS

## SEA 2024 treat-to-target standards and specialised lipid/vascular risk units

The SEA 2024 Standards for Global Control of Vascular Risk set clear LDL-C thresholds and stepwise intensification algorithms (statins ezetimibe PCSK9/siRNA), operationalised through accredited lipid and vascular risk units across Spain. These units manage complex dyslipidaemia and familial hypercholesterolaemia and act as hubs for treat-to-target implementation. (ES 2.3; ES 2.9)

## Regional care pathways integrating hospital and primary care

Programs such as FARO (Andalusia) and PROCORC (Valencia) operationalise comprehensive post-ACS secondary prevention by standardising follow-up visits, risk-factor monitoring and therapy optimisation between cardiology and primary care teams. They embody a practical treat-to-target approach for LDL-C, even though their impact is not yet measured via national indicators. (ES 2.4; ES 2.5)

## Coverage of advanced lipid-lowering therapies

The SNS finances statins, ezetimibe, PCSK9 inhibitors and siRNA therapies for high-risk patients according to AEMPS criteria, removing major financial barriers to treatment escalation in patients who remain above LDL-C targets under standard therapy. (ES 2.1; ES 2.2)

# MAIN GAPS

## Absence of national LDL-C outcome indicators and weak surveillance of vascular risk factors

Neither ESCAV nor current national surveillance systems systematically monitor LDL-C levels or target attainment (<55 mg/dL for very-high-risk patients) after cardiovascular events. Without LDL-C outcome indicators, it is difficult to evaluate real-world treat-to-target implementation or to drive improvement through feedback and benchmarking. (ES 2.1; ES 2.2)

## No structured mechanisms to address therapeutic inertia

Despite strong ESC/EAS-aligned guidance, Spain has no mandatory follow-up intervals, escalation triggers, or audit mechanisms requiring therapy intensification when LDL-C targets are not met. There are also no EHR-integrated alerts or incentives supporting timely escalation (statin, ezetimibe PCSK9/siRNA). Therapeutic inertia therefore remains a persistent barrier to achieving LDL-C goals (ES 2.6; ES 2.2)

### Limited coordination and inconsistent continuity of care after discharge

Although some regions have strong models (e.g., FARO, PROCORC), Spain lacks national protocols for hospital discharge, post-event follow-up, shared criteria between cardiology and primary care, and structured access to cardiac rehabilitation. Without standardised transition pathways and multidisciplinary coordination, treat-to-target implementation remains inconsistent and highly dependent on local leadership (ES 2.4; ES 2.5; ES 2.8).

## OPPORTUNITIES FOR IMPROVEMENT

### Operationalising ESCAV Through Structured T2T Monitoring and National Standardisation

Spain's ESCAV provides a strong strategic foundation, but the next phase requires operationalising T2T principles through measurable and accountable implementation. A primary priority is the integration of LDL-C outcome indicators into the ESCAV monitoring framework. Systematically tracking LDL-C target attainment in very-high-risk patients, time to reassessment after discharge, documented therapy escalation, and combination therapy use would allow Spain to move from strategy to performance-based implementation. Linking these indicators to transparent reporting—and potentially to regional benchmarking mechanisms—would strengthen accountability across autonomous communities.

In parallel, Spain would benefit from formalising structured post-ACS follow-up pathways at national level. Defining mandatory reassessment intervals (e.g., 4–12 weeks post-discharge), shared escalation algorithms between cardiology and primary care, and standardised discharge criteria would reduce variability and address persistent therapeutic inertia. Building on successful regional models such as FARO and PROCORC, national standardisation could ensure equitable T2T delivery across the SNS.

Digital enablement is also a critical lever. Developing a national secondary prevention registry or interoperable LDL-C dashboard—aligned with the European Health Data Space objectives—would support population-level monitoring and proactive identification of off-target patients. Integrating EHR-based alerts for LDL-C above target could further strengthen structured intensification.

Finally, expanding cardiac rehabilitation capacity and ensuring more consistent multidisciplinary coordination—alongside systematic use of PROMs/PREMs—would reinforce long-term adherence and sustained LDL-C control.

# SWITZERLAND

≈123 cardiovascular disease deaths per 100,000 population (men) and ≈84 per 100,000 (women) were reported (age-standardised, 2022).

No nationally published figure for cardiovascular-related emergency department visits is available.

19,634 acute myocardial infarction cases were recorded in 2023; no nationally published ACS admission rate per 100,000 population is available.

No nationally reported 30-day readmission rate after ACS is available.

No national data on LDL-C target attainment among high or very-high cardiovascular risk patients are available.

No nationwide statistic on combination lipid-lowering therapy use is reported.

National guidelines follow ESC/EAS recommendations and include Treat-to-Target LDL-C management.

## COUNTRY SNAPSHOT

Switzerland's secondary cardiovascular disease (CVD) prevention landscape is built on a strong clinical foundation, with high-quality acute care, broad specialist involvement, and well-established cardiac rehabilitation programs. National strategies for noncommunicable diseases provide an overarching framework, while Swiss societies such as AGLA and the Swiss Society of Cardiology closely align national practice with ESC/EAS guidelines. However, Switzerland lacks a dedicated national secondary-prevention registry, meaning long-term indicators—such as LDL-C control after the first year, recurrence of major adverse cardiovascular events, or structured follow-up adherence—are not consistently captured across the system. As a result, the exact population under secondary prevention is not formally quantified, though registry data indicate substantial volumes of ACS survivors and cardiac-rehab participants.

Available data suggest mixed performance: lipid management has improved significantly in structured settings, with SwissPR showing more than half of patients in cardiac rehabilitation achieving the ESC/EAS LDL-C goal of <1.4 mmol/L following guideline updates. Yet long-term outcomes remain uneven. National readmission rates after ACS are not systematically tracked, and regional variation persists in access to rehabilitation, follow-up intensity, and chronic care coordination. Studies also show that Switzerland experiences rising potentially avoidable hospitalizations for heart failure and persistent disparities among socioeconomically vulnerable groups—signs of fragmented long-term management. Digital tools such as the Electronic Patient Record exist but remain underused and lack standardized LDL-C alerts or escalation prompts, limiting their impact on continuity of care.

Compared with Gold Standards, Switzerland demonstrates strong guideline alignment, specialist capacity, and well-structured rehabilitation, but falls short on system-level implementation requirements such as national monitoring, mandatory follow-up protocols, performance incentives, and uniform access. Key opportunities for improvement include establishing a nationwide secondary-prevention indicator framework, enabling systematic LDL-C tracking, reducing cantonal disparities in access to rehabilitation and preventive services, and implementing stronger accountability mechanisms—such as incentive structures or audit-based follow-up—to address therapeutic inertia and improve long-term secondary prevention outcomes.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | Strong ESC/EAS alignment via AGLA, but no incentive-linked implementation (CH 3.3; CH 5.1). |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 1 | Targets established but not tied to reimbursement or pay-for-performance (CH 2.12). |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | ESC-consistent early therapy initiation advocated, but no mandated national discharge pathway (CH 3.1; CH 3.6). |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 1 | SwissPR provides structured follow-up in rehab, but national requirements are absent (CH 1.2). |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 0 | Inertia recognized by AGLA, but no national incentive or feedback systems (CH 3.10). |
| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | PROMs in rehab and high adherence in PCSK9i cohorts, but no nationwide adherence program (CH 4.12). |
| 7. Access to Combination and Long-Term Therapies | 2 | Advanced therapies reimbursed with strict criteria; access regulated (CH 2.12). |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 1 | Registries exist but no national LDL-C alert system or mandatory reporting (CH 4.5). |
| 9. Quality Indicators and Financial Incentives | 1 | Rehab indicators exist, but LDL-C targets not part of national quality incentives (CH 1.2). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 2 | Specialized lipid and prevention units exist, though not uniformly scaled (CH 4.1 - CH 4.4). |
| SCORE: | 13 | |

# KEY STRENGTHS

## High-Quality and Standardized Cardiac Rehabilitation System

Cardiac rehabilitation (CR) is one of Switzerland's strongest components of secondary CVD prevention. National quality monitoring by ANQ ensures standardized outcome reporting, including routine use of PROMs such as the MacNew questionnaire. The structured, multi-phase CR model and adherence to the D-A-CH S3 rehabilitation guideline contribute to consistent implementation across centers. Evidence from SwissPR shows that CR effectively improves lipid control and risk-factor management, with significant LDL-C reductions achieved during rehabilitation (CH 1.2; CH 1.3; CH 1.4; CH 3.5; CH 3.6).

## Availability of Advanced Lipid-Lowering Therapies for High-Risk Patients

Switzerland ensures access to PCSK9 inhibitors and inclisiran through reimbursed pathways for patients who remain above LDL-C targets despite optimized therapy. Although regulated, this access allows treatment intensification for the highest-risk groups and is supported by evidence of high adherence rates in specialist-led programs. This contributes to improved LDL-C control in real-world practice and supports outcomes aligned with international best standards (CH 2.12; CH 5.6; CH 5.7).

## Well-Developed Multidisciplinary Prevention and Specialist Infrastructure

Switzerland hosts a comprehensive network of preventive cardiology units, lipid clinics, and specialized rehabilitation centers, including centers of excellence such as University Hospital Zurich and Inselspital Bern. These multidisciplinary teams support intensive risk-factor assessment, optimized therapy escalation, and long-term patient management. Their presence strengthens continuity of care and ensures that complex patients can access expertise that improves control of hypertension, dyslipidemia, and other key risk factors (CH 4.1– CH 4.4).

# MAIN GAPS

## Absence of a National Secondary Prevention Monitoring System

Switzerland lacks a nationwide registry or indicator framework dedicated to long-term secondary CVD prevention. While AMIS Plus and SwissPR provide high-quality but partial data, there is no system tracking LDL-C levels, recurrent cardiovascular events, readmissions, or treatment escalation across all patient groups. This fragmented monitoring makes it difficult to assess national performance, identify care gaps, and intervene early for high-risk patients, leading to preventable variability in LDL-C control and long-term outcomes (CH 1.1; CH 1.5).

## Insufficient Incentives to Overcome Therapeutic Inertia

Despite strong guideline alignment, Switzerland does not employ performance incentives, audit-feedback mechanisms, or financial levers to encourage timely therapy escalation. AGLA explicitly identifies therapeutic inertia as a persistent challenge, yet no structured national program exists to address it. As a result, many high-risk patients do not receive combination therapy or advanced lipid-lowering treatments despite unmet LDL-C targets, increasing the risk of recurrent cardiovascular events (CH 3.10; CH 5.2).

## Highly Regulated Access Pathways for Advanced Lipid-Lowering Therapies

Although PCSK9 inhibitors and inclisiran are reimbursed, strict eligibility requirements, specialist-only prescribing rules, and prior authorization steps create delays in therapy initiation. These administrative constraints can hinder rapid escalation for patients who fail to reach LDL-C goals on standard therapy, exposing them to prolonged periods of elevated cardiovascular risk (CH 2.12; CH 5.7).

# OPPORTUNITIES FOR IMPROVEMENT

## Operationalising National Benchmarking for Secondary Prevention Outcomes

Switzerland would benefit from establishing a nationwide secondary prevention monitoring framework to systematically track LDL-C target attainment, time to reassessment, therapy escalation, and recurrent events. While registries such as AMIS Plus and SwissPR provide valuable data, a unified national indicator set would enhance accountability and reduce cantonal fragmentation in T2T implementation.

Introducing structured post-ACS follow-up standards—with defined LDL-C testing intervals and documented escalation when targets are unmet—would directly address therapeutic inertia. Audit-based feedback or incentive-linked quality reporting could further support timely intensification beyond specialist centres.

Moreover, enhancing the Electronic Patient Record with LDL-C dashboards and automated alerts for off-target patients would strengthen continuity of care across settings. In parallel, reducing cantonal disparities in access to cardiac rehabilitation and specialist prevention services would improve equity in long-term LDL-C control.

# UNITED KINGDOM

260.9 cardiovascular disease deaths per 100,000 population were reported as the average age-standardised rate between 2021 and 2023. (UK.6.1)

≈318,149 emergency department attendances with cardiovascular-related primary or secondary diagnoses were identified based on ECDS data; no official national ED visit total is published. (UK.6.2)

105,309 emergency attendances for acute coronary syndrome were recorded in 2024/25, representing ≈0.41% of total ED attendances; no rate per 100,000 population is reported.(UK.6.2)

≈11–14% 30-day readmission rate following acute myocardial infarction was reported; no ACS-specific national rate is available. (UK.6.3)

47.61% of patients tested in the last 12 months had LDL-C ≤2.0 mmol/L or non-HDL cholesterol ≤2.6 mmol/L, based on CVDPREVENT data (proxy outcome). (UK.6.4)

≈4% of patients received combination lipid-lowering therapy, while ≈80% received any lipid-lowering therapy. (UK.6.5)

Yes. Treat-to-Target is included in national guidance; NICE NG238 (2023) explicitly defines LDL-C targets for secondary prevention. (UK.6.6)

## COUNTRY SNAPSHOT

he UK has a well-developed policy and clinical framework for secondary prevention of cardiovascular disease, even though it lacks a single, standalone national secondary prevention strategy. CVD has been prioritised in national policy for over a decade, supported by ambitious prevention and outcome targets spanning lipid management, blood pressure control, anticoagulation, and cardiac rehabilitation. NICE guidance, alongside NHS England programmes, provides clear evidence-based standards aligned broadly with international best practice, including treat-to-target approaches for lipid lowering in secondary prevention.

Implementation is supported by robust national infrastructure. The NHS-led CVDPREVENT audit enables systematic monitoring of secondary prevention processes and outcomes using primary care data across ICSs, creating strong potential for population-level quality improvement. Financial incentives through the Quality and Outcomes Framework (QOF), particularly its expanded focus on CVD, reinforce delivery in primary care and represent an important lever absent in other countries.

Despite this strong policy foundation, outcomes remain suboptimal. CVD continues to be the leading cause of death in the UK, with an estimated  with persistently high readmission rates following acute events and low rates of LDL-C target achievement among patients. Despite updated guidance, use of optimal combination lipid-lowering therapy also remains limited, uptake of cardiac rehabilitation is variable, long-term follow-up and treatment intensification are not reliably enforced, and substantial geographic and socioeconomic inequalities persist in secondary prevention outcomes.

Overall, the UK aligns well with Gold Standards in terms of guidance, data visibility, and primary care engagement, but less well on execution and equity. Key opportunities include accelerating treatment intensification, improving uptake of cardiac rehabilitation, embedding accountability at ICS level, and ensuring prevention-focused reforms under the Government's 10-Year Health Plan translate into consistent, equitable secondary prevention at scale.

# GOLD STANDARD ASSESSMENT

| Gold Standard | Score (0-3) | Justification (with Reference) |
|---|---|---|
| 1. Policy Alignment with Evidence-Based, Early, Intensive, and Sustained LDL-C Lowering | 2 | The UK does not have policies that explicitly align with the 2025 AHA/ACC and ESC/EAS LDL-C targets, though national guidance is broadly consistent with these recommendations. NICE guidelines and NHS England pathways focus on absolute LDL-C targets for high- and very-high-risk patients, recommending therapy intensification to achieve levels such as ≤2.0 mmol/L or lower for very-high-risk individuals, but they do not formally reference the 2025 international thresholds (UK.2.8 UK.3.6.).<br><br>Implementation is supported by incentive mechanisms such as the Quality and Outcomes Framework (QOF 2025/26), which includes indicators for monitoring LDL-C control and prescribing of lipid-lowering therapy. Monitoring systems, including GP dashboards, registries, and national audits such as the NACR, allow clinicians to track whether patients are achieving recommended LDL-C targets and adjust therapy accordingly (UK.6.8.; UK.6.9.). |
| 2. Guideline-Defined LDL-C Targets and Incentive Alignment | 3 | The UK has LDL-C targets referenced in national guidelines and payer frameworks, and these are integrated into quality-of-care indicators, however UK guidelines do not explicitly reference the 2025 AHA/ACC ACS or ESC/EAS thresholds, and there is no formal mechanism for regular cross-country harmonization of LDL-C targets. Alignment is largely informal, relying on periodic updates of NICE guidance to incorporate emerging evidence from international guidelines. |
| 3. In-Hospital Initiation, Early Combination Therapy, and Continuity of Care | 2 | Hospital discharge pathways and reimbursement frameworks do not formally mandate the initiation of lipid-lowering therapy through DRG-linked metrics, as the NHS does not use a DRG-style payment system. Instead, NHS hospitals are expected to follow national guidance on discharge management for patients with cardiovascular disease, including initiating or optimising lipid-lowering therapy where clinically indicated. Guidance specifies that discharge summaries should document medications, follow-up arrangements, and the need for ongoing lipid monitoring in primary care (UK.6.6.; UK.6.7.). National and regional policies encourage referral to cardiac rehabilitation, structured follow-up in primary care, and shared-care arrangements between hospital and GP teams to support continuity of care and maintenance of LDL-C targets. Discharge summaries typically include clear communication standards and responsibility for follow-up, while tools such as GP dashboards and the Quality and Outcomes Framework (QOF) support ongoing monitoring and therapy escalation (UK.6.8.; UK.6.9.). |
| 4. Structured Follow-Up, Therapy Escalation, and Accountability | 2 | National guidelines and payer frameworks provide recommendations rather than legally mandatory requirements for follow-up intervals and therapy escalation after cardiovascular events. Compliance is supported and monitored through national audits and digital reporting systems, such as the National Audit of Cardiac Rehabilitation (NACR) and GP dashboards, which track follow-up attendance, LDL-C target achievement, and therapy intensification (UK.6.9.). The Quality and Outcomes Framework (QOF) provides additional performance feedback in primary care, incentivising review and optimisation of lipid-lowering therapy (UK.6.8.).<br><br>Referral triggers and shared-care arrangements between hospital and primary care teams are defined in discharge protocols and pathway guidance, including clear responsibilities for monitoring, follow-up, and escalation, helping to reduce treatment delays and therapeutic inertia. In practice, adherence varies regionally, but these mechanisms form the backbone of coordinated long-term secondary prevention. |
| 5. Tackling Therapeutic Inertia through Incentives and Feedback | 2 | The UK uses quality frameworks and incentive schemes to promote proactive lipid management, but there is no specific indicator directly measuring failure to escalate therapy when LDL-C is off-target. |

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| 6. Medication Adherence Measurement, Support, and Patient Engagement | 1 | While adherence is promoted through education, audit, and incentivised therapy optimisation, medication adherence is not explicitly defined nor formally tracked or reimbursed as a standalone national indicator within the UK's quality or funding frameworks. |
| 7. Access to Combination and Long-Term Therapies | | National formularies and HTA frameworks explicitly cover advanced lipid-lowering therapies for eligible high-risk patients, but access is guided by defined eligibility criteria rather than automatic prioritisation for early combination therapy. NICE has approved several advanced therapies, including PCSK9 inhibitors (alirocumab and evolocumab) and inclisiran, for secondary prevention in adults with established ASCVD who have persistently elevated LDL-C (≥2.6 mmol/L) despite maximally tolerated lipid-lowering therapy, including high-intensity statins with or without additional agents, or where such therapy is contraindicated. (UK.5.5.; UK.5.6.; UK.5.7.).<br><br>These therapies are included in the NHS England national formulary and must be prescribed in accordance with NICE technology appraisals, ensuring cost-effectiveness and equitable access across ICBs. However, the LDL-C eligibility threshold, specialist-led initiation requirements, and local commissioning processes can limit broader use and delay escalation relative to ESC <1.4 mmol/L targets. Regional variation may also occur due to local commissioning processes, prior authorisation requirements, or differences in specialist lipid clinic capacity. |
| 8. Integrated Digital Registries, Alerts, and Data Standards | 3 | The UK has nationally mandated participation in cardiovascular registries and audits, primarily through the NCAP, coordinated by NICOR. These datasets are used nationally for quality reporting, policy evaluation, and resource planning.<br><br>In primary care, the CVDPREVENT audit systematically extracts data from GP records to track prevention and secondary care indicators across regions. Participation is supported by standardised data governance and coding frameworks, such as the NHS Data Security and Protection Toolkit and SNOMED CT, ensuring interoperability and consistency across the UK. |
| 9. Quality Indicators and Financial Incentives | 3 | In the UK, LDL-C–related indicators are integrated into national quality frameworks, primarily through the Quality and Outcomes Framework and national audit programmes. The QOF 2025/26 includes indicators for lipid management and statin therapy in patients with coronary heart disease, stroke, or peripheral arterial disease, linking achievement to financial incentives for GP practices (UK.6.8.). |
| 10. Multidisciplinary Care, Workforce Training, and Patient Involvement | 2 | National service specifications and funding mechanisms support the development of multidisciplinary lipid management services, though implementation varies regionally. The NHS England Lipid Management and Familial Hypercholesterolaemia Service Specification (2021) encourages the establishment of specialist lipid clinics staffed by multidisciplinary teams to deliver evidence-based care for high-risk and familial hypercholesterolaemia patients.<br><br>Previous workforce development strategies and action aligns with existing national cardiovascular priorities, which promote integration between primary, community, and specialist care in line with ESC/EAS and AHA/ACC recommendations, though a new 10 Year Workforce Plan is expected in 2026. Patient education and adherence support are embedded within frameworks such as CVDPREVENT and QOF, ensuring structured follow-up, shared decision-making, and ongoing lipid optimisation across care levels (UK.6.8.). |
| SCORE: | 23 | |

# KEY STRENGTHS

## Incentivised Delivery of Secondary Prevention in Primary Care

The Quality and Outcomes Framework (QOF) provides strong, systematic financial incentives for GPs to deliver secondary CVD prevention, including lipid control, blood pressure management, and anticoagulation. Evidence from QOF evaluations shows improved recording of risk factors, higher prescribing rates of evidence-based therapies, and better long-term disease management in incentivised conditions. The expanded CVD focus in QOF 2025/26 reinforces continuous follow-up of patients with established CVD and supports earlier intervention, contributing to improved population-level management of secondary prevention risk factors across England. (UK.6.8.)

## Nationally Coordinated Secondary Prevention Pathways

NHS England has established structured secondary prevention pathways, including the Cardiovascular Disease High Impact Interventions and lipid optimisation pathway, supported by comprehensive guidance from NICE (UK.6.13.). These programmes standardise post-event management and promote treatment intensification. NHS modelling suggests that improved uptake of lipid optimisation and hypertension interventions could prevent tens of thousands of recurrent cardiovascular events over a five-year period, demonstrating the potential impact of coordinated, evidence-based pathways.

## Universal Access to Care, Diagnostics, and Advanced Therapies

The NHS model of care ensures free-at-point-of-use access to diagnostics, specialist services, and advanced lipid-lowering therapies, including PCSK9 inhibitors for eligible high-risk patients. Population screening through NHS Health Checks (digital and in-person) supports early identification of high-risk individuals who may already have undiagnosed established disease. This removes financial barriers common in other systems and underpins equity of access to secondary prevention interventions.

# MAIN GAPS

## Inequalities in Care and Outcomes

There are substantial socioeconomic, geographic, and ethnic disparities in secondary prevention outcomes. Patients in deprived regions are less likely to receive optimal therapy, cardiac rehabilitation, or timely follow-up. This inequity contributes to poorer LDL-C control, higher recurrent event rates, and lower adherence to treatment guidelines, undermining national targets and overall system performance.

### Variation in Uptake and Prioritisation Across ICSs

Integrated Care Systems (ICSs) vary in implementation of secondary prevention programmes such as lipid optimisation, cardiac rehab, and post-discharge follow-up. Inconsistent local prioritisation and resourcing create uneven access to interventions, leading to regional differences in readmissions, LDL-C control, and treatment intensification. Patients in lower-performing ICSs may experience delayed escalation of therapy, increasing risk of recurrent events.

### Therapeutic Inertia and Underuse of Combination Therapy

Despite clear NICE guidance and treat-to-target recommendations, there is low use of combination lipid-lowering therapy (<10%) and delayed therapy intensification. This therapeutic inertia prevents many high- and very-high-risk patients from achieving LDL-C goals, contributing directly to persistent cardiovascular risk and recurrent events.

## OPPORTUNITIES FOR IMPROVEMENT

### Embedding Secondary Prevention Within a National Cardiovascular Framework

In the absence of a standalone national cardiovascular strategy in England and the limited prioritisation of secondary prevention within overarching NHS policy, there is a structural gap in long-term T2T implementation. A key opportunity lies in contributing to the development of the forthcoming CVD Modern Service Framework, ensuring that secondary prevention is explicitly prioritised with defined LDL-C targets, structured follow-up standards, and measurable performance indicators. Embedding T2T principles within this national framework would strengthen consistency across Integrated Care Systems (ICSs) and NHS Trusts.

Addressing regional inequalities represents a second critical lever. Variation in cardiac rehabilitation uptake, lipid optimisation, and long-term follow-up across ICSs undermines equitable care delivery. The Modern Service Framework could require each ICS to publish a CVD secondary prevention improvement plan, including clear targets for LDL-C control, cardiac rehabilitation participation, and reduction of deprivation-related outcome gaps. Linking these targets to commissioning levers—such as Quality and Outcomes Framework (QOF) indicators or other performance incentives—would reinforce accountability and reduce unwarranted variation.

# REFERENCES


[1] Roth, G. A., Mensah, G. A., Johnson, C. O., Addolorato, G., Ammirati, E., Baddour, L. M., Barengo, N. C., Beaton, A. Z., Benjamin, E. J., Benziger, C. P., Bonny, A., Brauer, M., Brodmann, M., Cahill, T. J., Carapetis, J., Catapano, A. L., Chugh, S. S., Cooper, L. T., Coresh, J., Criqui, M., … GBD-NHLBI-JACC Global Burden of Cardiovascular Diseases Writing Group (2020). Global Burden of Cardiovascular Diseases and Risk Factors, 1990-2019: Update From the GBD 2019 Study. Journal of the American College of Cardiology, 76(25), 2982–3021. https://doi.org/10.1016/j.jacc.2020.11.010

[2] Timmis A et al. ESC Atlas of Cardiovascular Disease Statistics 2023. Eur Heart J. 2024;45:4019–4062.

[3] Zhao Y et al. Global cardiovascular disease burden attributable to high low-density lipoprotein cholesterol, 1990–2021: An age-period-cohort analysis of the Global Burden of Disease Study 2021. Nutr Metab Cardiovasc Dis. 2025;35(6):104030.

[4] Cholesterol Treatment Trialists' (CTT) Collaboration. Effects of lowering LDL cholesterol across 27 randomised trials. Lancet. 2012;380:581–590.

[5] Mach F et al.; ESC/EAS Scientific Document Group. 2025 Focused Update of the 2019 ESC/EAS Dyslipidaemia Guidelines. Eur Heart J. 2025.

[6] Zambon A et al. The burden of cholesterol accumulation through the lifespan. Eur Heart J Cardiovasc Pharmacother. 2021;7:435–441.

[7] Amarenco P et al. Treat Stroke to Target. N Engl J Med. 2020;382:9–19.

[8] Yang Z et al. Effectiveness of treat-to-target cholesterol-lowering interventions. Nat Commun. 2024;15:9922.

[9] Kotseva, K., Wood, D., De Bacquer, D., De Backer, G., Rydén, L., Jennings, C., Gyberg, V., Amouyel, P., Bruthans, J., Castro Conde, A., Cífková, R., Deckers, J. W., De Sutter, J., Dilic, M., Dolzhenko, M., Erglis, A., Fras, Z., Gaita, D., Gotcheva, N., Goudevenos, J., … EUROASPIRE Investigators (2016). EUROASPIRE IV: A European Society of Cardiology survey on the lifestyle, risk factor and therapeutic management of coronary patients from 24 European countries. European journal of preventive cardiology, 23(6), 636–648. https://doi.org/10.1177/2047487315569401

[10] Ray, K. K., Haq, I., Bilitou, A., Manu, M. C., Burden, A., Aguiar, C., Arca, M., Connolly, D. L., Eriksson, M., Ferrières, J., Laufs, U., Mostaza, J. M., Nanchen, D., Rietzschel, E., Strandberg, T., Toplak, H., Visseren, F. L. J., Catapano, A. L., & SANTORINI Study Investigators (2023). Treatment gaps in the implementation of LDL cholesterol control among high- and very high-risk patients in Europe between 2020 and 2021: the multinational observational SANTORINI study. The Lancet regional health. Europe, 29, 100624. https://doi.org/10.1016/j.lanepe.2023.100624


# BRAZIL


BR [1.1] Albuquerque, D. C., Berwanger, O., Ribeiro, A. L. P., et al. (2021). Secondary prevention after acute coronary syndrome in Brazil: Current gaps and opportunities. European Heart Journal, 42(Supplement 1), ehab724.1159. Retrieved from: https://academic.oup.com/eurheartj/article/42/Supplement_1/ehab724.1159/6394964 (Last accessed: 25 November 2025).

BR [1.2] Silva, J. L. P., Silva, R. P., & Silva, M. V. (2020). Predictors of Post-Discharge 30-Day Hospital Readmission in Decompensated Heart Failure Patients. International Journal of Cardiovascular Sciences 2020; 33(2):175-184. https://doi.org/10.36660/ijcs.20180088

BR [1.3] Barbosa, R. R., Baptista, G. C., Lott, L. P., Neto, V. T., Vieira, E. G., Faleiro, P. H. P. F., Vetorazi, C. B. F., Marçal, A. B. P., Lima, P. C. G. C., Cruz, N. F. P., Costa, F. C. C., Aud, J. P. M., Oliveira, G. F. F., de Barros, L. C., Paganini, L. N., Borges, L. M. F., & Barbosa, L. F. M. (2024). Achievement of LDL-cholesterol targets in a reference service of the Brazilian public health system. Cardiology & Cardiovascular Research, 2(1), 1–5. https://asrjs.com/pdfs/achievement-of-ldlcholesterol-targets-in-a-reference-service-of-the-brazilian-public-health-system-116.pdf

BR [1.4] Birck, M. G., Goulart, A. C., Lotufo, P. A., & Benseñor, I. M. (2019). Secondary prevention of coronary heart disease: a cross-sectional analysis on the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil). São Paulo medical journal = Revista paulista de medicina, 137(3), 223–233. https://doi.org/10.1590/1516-3180.2018.0531140319

BR [1.5] Ministério da Saúde. (2022). Instrutivo para profissionais e gestores da Estratégia de Saúde Cardiovascular na Atenção Primária à Saúde (ECV-APS). Retrieved from https://www.gov.br/saude/pt-br/composicao/saps/ecv/publicacoes/instrutivo-para-profissionais-e-gestores.pdf (Last accessed: 25 November 2025).

BR [1.6] Sociedade Brasileira de Cardiologia. (2025). Brazilian Guideline on Dyslipidemias and Prevention of Atherosclerosis – 2025 (F. H. Rached, Coord.; F. H. Rached, M. H. Miname, V. Z. Rocha, A. Zimerman, F. H. Y. Cesena, A. C. Sposito, R. D. Santos, P. Behr, H. T. Bianco, R. J. Alves, & J. F. K. Saraiva, Committee members). Retrieved from https://abccardiol.org/wp-content/uploads/articles_xml/0066-782X-abc-122-09-e20250640/0066-782X-abc-122-09-e20250640-en.x66747.pdf (Last accessed: 25 November 2025).

BR [1.7] Oliveir[a] G. M. M. Br[a]nt L. C. C. P[o]lanczyk C. A. M[a]lt[a] D. C. Bi[o]l[o] A. N[a]sciment[o] B. R. de S[o]uz[a] M. F. M. De L[o]renz[o] A. R. F[a]gundes Júni[o]r A. A. P. Sch[aa]n B. D. de S[o]uz[a] e Silv[a] C. G. C[a]stilh[o] F. M. Cesen[a] F. H. Y. S[oa]res G. P. X[a]vier Juni[o]r G. F. B[a]rret[o] Filh[o] J. A. S. P[a]ss[a]gli[a] L. G. Pint[o] Filh[o] M. M. M[a]chline Carri[o]n M. J. Bittenc[o]urt M. S. P[o]ntes Net[o] O. M. Villel[a] P. B. Teixeir[a] R. A. Stein R. S[a]mp[a]i[o] R. O. G[a]zi[a]n[o] T. A. Perel P. R[o]th G. A. & Ribeir[o] A. L. P. [2023]. C[a]rdi[o]v[a]scul[a]r St[a]tistics — Br[a]zil [2023]. Arquiv[o]s Br[a]sileir[o]s de C[a]rdi[o]l[o]gi[a], [121(2)], e[20240079]. Retrieved fr[o]m https://[a]bcc[a]rdi[o]l[o]rg/wp-c[o]ntent/upl[oa]ds/[a]rticles_xml/[0066-782]X-[a]bc-[121-2]-e[20240079]/[0066-782]X-[a]bc-[121-2]-e[20240079]-en-x[47225].pdf (L[a]st [a]ccessed: [25] N[o]vember [2025]).

BR [2.1] Ensin[o] InC[o]r (s.d.). Dislipidemi[a]s e prevenç[ã]o d[a] [a]ter[o]scler[o]se. Retrieved fr[o]m https://ensin[o]inc[o]r.c[o]m.br/dislipidemi[a]s-e-prevenc[a][o]-d[a]-[a]ter[o]scler[o]se/

BR [2.2] Ministéri[o] d[a] S[a]úde. (n.d.). Estr[a]tégi[a] S[a]úde d[a] F[a]míli[a] (ESF). Gov[e]rn[o] d[o] Br[a]sil. https://www.g[o]v.br/s[a]ude/pt-br/c[o]mp[o]sic[a][o]/s[a]ps/esf

BR [2.4] Britt[o] R. R. Supervi[a] M. Turk-Ad[a]wi K. Ch[a]ves G. S. D. S. Pes[a]h E. L[o]pez-Jimenez F. Pereir[a] D. A. G. Herdy A. H. & Gr[a]ce S. L. [2020]. C[a]rdi[a]c reh[a]bilit[a]ti[o]n [a]v[a]il[a]bility [a]nd delivery in Br[a]zil: [a] c[o]mp[a]ris[o]n t[o] [o]ther upper middle-inc[o]me c[o]untries. Br[a]zili[a]n j[o]urn[a]l [o]f physic[a]l ther[a]py, [24(2)], [167–176]. https://d[o]i.[o]rg/[10.1016]/j.bjpt.[2019.02.011]

BR [2.5] Ministéri[o] d[a] S[a]úde. [2022]. N[o]t[a] Técnic[a] n[o] [65]/[2022] – Indic[a]d[o]res d[a] Unid[a]de Básic[a] de S[a]úde. Secret[a]ri[a] de Atenç[ã]o Primári[a] à S[a]úde. https://www.g[o]v.br/s[a]ude/pt-br/c[o]mp[o]sic[a][o]/s[a]ps/ecv/n[o]t[a]s-tecnic[a]s/n[o]t[a]-tecnic[a]-n[o]-[65-2022]

BR [2.6] Ministéri[o] d[a] S[a]úde. (n.d.). Estr[a]tégi[a] S[a]úde d[a] F[a]míli[a] (ESF). Retrieved fr[o]m https://www.g[o]v.br/s[a]ude/pt-br/c[o]mp[o]sic[a][o]/s[a]ps/esf (L[a]st [a]ccessed: [25] N[o]vember [2025]).

BR [2.7] Br[a]g[a] A. S[a]nt[o]s M. M[a]gli[a]n[o] C. Senn[a] K. Tur[a] B. & Oliveir[a] I. [2025]. Estim[a]te [o]f Br[a]zili[a]ns Under Sec[o]nd[a]ry Preventi[o]n [o]f C[a]rdi[o]v[a]scul[a]r Events Wh[o] D[o] N[o]t Achieve LDL Ch[o]lester[o]l T[a]rgets with Lipid-L[o]wering Ther[a]py. Estim[a]tiv[a] de Br[a]sileir[o]s em Prevenç[a] Secundári[a] de Event[o]s C[a]rdi[o]v[a]scul[a]res que Nã[o] Atingem [a] Met[a] de LDL C[o]lester[o]l c[o]m Tr[a]t[a]ment[o] Hip[o]lipemi[a]nte. Arquiv[o]s br[a]sileir[o]s de c[a]rdi[o]l[o]gi[a], [122(7)], e[20240617]. https://d[o]i.[o]rg/[10.36660]/[a]bc.[20240617]

BR [3.1] Br[a]zili[a]n S[o]ciety [o]f C[a]rdi[o]l[o]gy. [2019]. Upd[a]ted C[a]rdi[o]v[a]scul[a]r Preventi[o]n Guideline [o]f the Br[a]zili[a]n S[o]ciety [o]f C[a]rdi[o]l[o]gy – [2019]. L[a]st [a]ccessed N[o]vember [25] [2025]. Retrieved fr[o]m Upd[a]ted C[a]rdi[o]v[a]scul[a]r Preventi[o]n Guideline [o]f the Br[a]zili[a]n S[o]ciety [o]f C[a]rdi[o]l[o]gy - [2019] - PubMed

BR [3.2] Br[a]zili[a]n S[o]ciety [o]f C[a]rdi[o]l[o]gy. [2025]. Br[a]zili[a]n Guideline [o]n Dyslipidemi[a]s [a]nd Preventi[o]n [o]f Ather[o]scler[o]sis – . L[a]st [a]ccessed [25] N[o]vember [2025]. Retrieved fr[o]m https://[a]bcc[a]rdi[o]l[o]rg/wp-c[o]ntent/upl[oa]ds/[a]rticles_xml/[0066-782]X-[a]bc-[122-09]-e[20250640]/[0066-782]X-[a]bc-[122-09]-e[20250640-en-x[66747].pdf

BR. [3.3]. Ministéri[o] d[a] S[a]úde. [2021]. P[o]rt[a]ri[a] GM/MS n[o] [3.008], de [4] de n[o]vembr[o] de [2021]. Institui [a] Estr[a]tégi[a] de S[a]úde C[a]rdi[o]v[a]scul[a]r n[a] Atenç[ã]o Primári[a] à S[a]úde. G[o]vern[o] d[o] Br[a]sil. L[a]st Accessed N[o]vember [25] [2025]. Retrieved fr[o]m https://www.g[o]v.br/s[a]ude/pt-br/c[o]mp[o]sic[a][o]/s[a]ps/ecv/legisl[a]c[a][o]/c[o]py_[o]f_p[o]rt[a]ri[a]-gm-ms-n[o]-[3-008]-de-[4]-de-n[o]vembr[o]-de-[2021]/view

BR [3.4]. Ministéri[o] d[a] S[a]úde. [2022]. Rel[a]ç[ã]o N[a]ci[o]n[a]l de Medic[a]ment[o]s Essenci[a]is – RENAME [2022]. G[o]vern[o] Federal d[o] Br[a]sil. L[a]st Accessed N[o]vember [25] [2025]. Retrieved fr[o]m https://www.g[o]v.br/s[a]ude/pt-br/c[o]mp[o]sic[a][o]/sctie/d[a]f/ren[a]me

BR [3.5] Ministéri[o] d[a] S[a]úde. (n.d.). Linh[a] de cuid[a]d[o] d[o] inf[a]rt[o] [a]gud[o] d[o] mi[o]cárdi[o] e [o] Pr[o]t[o]c[o]l[o] de Síndr[o]mes C[o]r[o]n[a]ri[a]n[a]s Agud[a]s. Retrieved fr[o]m https://www.g[o]v.br/s[a]ude/pt-br/[a]ssunt[o]s/pcdt/l/linh[a]-de-cuid[a]d[o]-d[o]-inf[a]rt[o]-[a]gud[o]-d[o]-mi[o]c[a]rdi[o]-e-[o]-pr[o]t[o]c[o]l[o]-de-sindr[o]mes-c[o]r[o]n[a]ri[a]n[a]s-[a]gud[a]s-pd/view (L[a]st [a]ccessed: [25] N[o]vember [2025]).

BR [3.6] M[a]chline-C[a]rri[o]n M. J. Gir[o]tt[o] A. N. R[a]upp P. Pereir[a] P. M. M[o]nf[a]rdini F. S[a]nt[o]s R. D. S[a]nt[o] K. R[a]y K. C[a]nn[o]n C. P. & Berw[a]nger O. [2025]. R[a]ti[o]n[a]le design [a]nd prer[a]nd[o]miz[a]ti[o]n d[a]t[a] f[o]r [a] cluster r[a]nd[o]mized tri[a]l t[o] [a]ssess the effect [o]f [a] digit[a]lly en[a]bled qu[a]lity impr[o]vement interventi[o]n [o]n LDL-C c[o]ntr[o]l in est[a]blished [a]ther[o]scler[o]tic c[a]rdi[o]v[a]scul[a]r dise[a]se p[a]tients: The SAPPHIRE-LDL tri[a]l. Americ[a]n He[a]rt J[o]urn[a]l, [284, 1–10]. https://d[o]i.[o]rg/[10.1016]/j.[a]hj.[2025.01.019]

BR [3.7] Ministéri[o] d[a] S[a]úde. [2011]. Pl[a]n[o] de Ações Estr[a]tégic[a]s p[a]r[a] [o] Enfrent[a]ment[o] d[a]s D[o]enç[a]s Crônic[a]s Nã[o] Tr[a]nsmissíveis (DCNT) n[o] Br[a]sil [2011-2022]. Retrieved fr[o]m https://www.[3].p[a]h[o].org/hq/dmd[o]cuments/[2014]/NCD-[a]cti[o]n-Pl[a]n-Br[a]zil.pdf (L[a]st [a]ccessed: [25] N[o]vember [2025])

BR [3.8] Fund[a]ç[ã]o Osw[a]ld[o] Cruz. (n.d.). O HIPERDIA e MULTI: Cuid[a]d[o] multipr[o]fissi[o]n[a]l n[a]s d[o]enç[a]s crônic[a]s – Assistênci[a] [a] p[a]cientes c[o]m hipertensã[o] e di[a]betes. IdeiaSUS. Retrieved December [22], [2025], fr[o]m https://ideiasus.fiocruz.br/pr[a]tic[a]s/[o]-hiperdi[a]-e-multi-cuid[a]d[o]-multipr[o]fissi[o]n[a]l-n[a]s-d[o]enc[a]s-cr[o]nic[a]s-[a]ssistenci[a]-[a]-p[a]cientes-c[o]m-hipertens[a][o]-e-di[a]betes/

Santo, K., Ray, K., Cannon, C. P., & Berwanger, O. (2025). Rationale, design and prerandomization data for a cluster randomized trial to assess the effect of a digitally enabled quality improvement intervention on LDL-C control in established atherosclerotic cardiovascular disease patients: The SAPPHIRE-LDL trial. American Heart Journal, 284, 1–10. https://doi.org/10.1016/j.ahj.2025.01.019

BR 3.7 Ministério da Saúde. (2011). Plano de Ações Estratégicas para o Enfrentamento das Doenças Crônicas Não Transmissíveis (DCNT) no Brasil 2011-2022. Retrieved from https://www3.paho.org/hq/dmdocuments/2014/NCD-action-Plan-Brazil.pdf (Last accessed: 25 November 2025)

BR 3.8 Fundação Oswaldo Cruz. (n.d.). O HIPERDIA e MULTI: Cuidado multiprofissional nas doenças crônicas – Assistência a pacientes com hipertensão e diabetes. IdeiaSUS. Retrieved December 22, 2025, from https://ideiasus.fiocruz.br/praticas/o-hiperdia-e-multi-cuidado-multiprofissional-nas-doencas-cronicas-assistencia-a-pacientes-com-hipertensao-e-diabetes/

# CANADA

CAN 1.1 World Heart Federation. (2021). Cardiovascular health in Canada. World Heart Observatory. Retrieved December 9, 2025, from https://world-heart-federation.org/world-heart-observatory/countries/canada/

CAN 1.2 Jaffer, S., Foulds, H. J. A., Parry, M., Gonsalves, C. A., Pacheco, C., Clavel, M. A., … Norris, C. M. (2021). The Canadian Women's Heart Health Alliance ATLAS on the Epidemiology, Diagnosis, and Management of Cardiovascular Disease in Women – Chapter 2: Scope of the Problem. CJC Open, 3(1), 1–11. https://doi.org/10.1016/j.cjco.2020.10.009

CAN 1.3 Public Health Agency of Canada. (2023). Canadian Chronic Disease Surveillance System (CCDSS) Data Tool. Government of Canada. Retrieved December 9, 2025, from https://health-infobase.canada.ca/ccdss/data-tool/Comp

CAN 1.4 Canadian Institute for Health Information. (2025). 30-day acute myocardial infarction readmission (risk-adjusted rate). Retrieved December 9, 2025 https://www.cihi.ca/en/indicators/30-day-acute-myocardial-infarction-readmission

CAN 1.5 Taboun, Z., Naik, N., Brown, V., Lin, P., Padarath, M., Hegele, R. A., & Gupta, M. (2023). Awareness Among Primary Care Physicians in Canada of Guideline Recommendations for Lowering LDL-Cholesterol in High-Risk Patients. CJC open, 5(5), 357–363. https://doi.org/10.1016/j.cjco.2023.02.002

CAN 1.6 Mackinnon, E. S., Har, B., Champsi, S., Wani, R. J., Geyer, L., Shaw, E., Farris, M. S., & Anderson, T. J. (2023). Guideline LDL-C threshold achievement in acute myocardial infarction patients: A real-world evidence study demonstrating the impact of treatment intensification with PCSK9i. Cardiology and Therapy, 12, 327–338. https://doi.org/10.1007/s40119-022-00300-7

CAN 1.7 Yau, D., Bhatia, S., Marquis-Gravel, G., Hegele, R. A., Mancini, G. B. J., Pearson, G. J., & Thanassoulis, G. (2024). Characterization of patients sub-optimally treated for dyslipidemia management in secondary prevention following the publication of the 2021 CCS Dyslipidemia Guidelines [Poster presentation]. Canadian Cardiovascular Congress 2024. https://ccc2024.eventscribe.net/fsPopup.asp?efp=TFREQVFOR1cxNjU3MA&PosterID=695790&rnd=0.5795186&mode=posterInfo (Last Accessed December 9, 2025)

CAN 1.8 Pearson, G. J., Thanassoulis, G., Anderson, T. J., Barry, A. R., Couture, P., Dayan, N., Francis, G. A., Genest, J., Grégoire, J. C., Grover, S. A., Gupta, M., Hegele, R. A., Lau, D. C. W., Leiter, L. A., Lonn, E., Mancini, G. B. J., McPherson, R., Poirier, P., & Telford, D. E. (2021). 2021 Canadian Cardiovascular Society Guidelines for the management of dyslipidemia for the prevention of cardiovascular disease in adults. Canadian Journal of Cardiology, 37(8), 1129–1150. https://doi.org/10.1016/j.cjca.2021.04.005

CAN 2.1 Brunham, L. R., Lonn, E., & Mehta, S. R. (2024). Dyslipidemia and the current state of cardiovascular disease: Epidemiology, risk factors, and effect of lipid lowering. Canadian Journal of Cardiology, 40(8 Suppl), S4–S12. https://doi.org/10.1016/j.cjca.2024.05.002

CAN 2.2 Heffernan, M., Marquis-Gravel, G., Hegele, R. A., Mancini, G. B. J., Pearson, G. J., & Thanassoulis, G. (2024). Characterization of patients sub-optimally treated for dyslipidemia management in secondary prevention following the publication of the 2021 CCS dyslipidemia guidelines. Canadian Journal of Cardiology, 40(10 Suppl), S32. https://doi.org/10.1016/j.cjca.2024.07.069 (Accessed December 9, 2025)

CAN 2.3 Aygun, S., & Tokgozoglu, L. (2022). Comparison of Current International Guidelines for the Management of Dyslipidemia. Journal of clinical medicine, 11(23), 7249. https://doi.org/10.3390/jcm11237249

CAN 2.4 Canadian Cardiovascular Society. (2025). CCS Acute Coronary Syndrome Prevention Pathway (October 2025). https://ccs.ca/wp-content/uploads/2025/10/CCS-ACS_Prevention_Pathway_Oct-2025.pdf

CAN 2.5 Marquis-Gravel, G., Bhatia, S., Brown, V., & Goodman, S. G. (2024). Care gaps and system issues with delivering cardiovascular risk reduction and lipid-lowering therapy in secondary prevention. Canadian Journal of Cardiology, 40(8 Suppl), S35–S42. https://doi.org/10.1016/j.cjca.2024.05.010 (Accessed December 9, 2025)

CAN 3.1 Canadian Cardiovascular Society. (2023). Top 10 Takeaways – Lipids. https://ccs.ca/news/top-10-takeaways-lipids/

CAN 3.2 Government of British Columbia. (n.d.). Limited coverage drugs – Ezetimibe. https://www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/pharmacare/programs/limited-coverage-drug-program/limited-coverage-drugs-ezetimibe

CAN 3.3 Tran, M., Pesah, E., Turk-Adawi, K., Supervia, M., Lopez Jimenez, F., Oh, P., Baer, C., & Grace, S. L. (2018). Cardiac Rehabilitation Availability and Delivery in Canada: How Does It Compare With Other High-Income Countries? Canadian Journal of Cardiology, 34(10), S252–S262. https://doi.org/10.1016/j.cjca.2018.07.413

CAN 3.4 CorHealth Ontario. (n.d.). Home. https://www.corhealthontario.ca/

CAN 3.5 Libin Cardiovascular Institute. (2023). Turning data into better patient care. University of Calgary. https://libin.ucalgary.ca/news/turning-data-better-patient-care

CAN 3.6 Alberta Health Services. (2023). Lipid panel and individual lipid test reporting changes in adults and new equation to calculate LDL-C in pediatrics and adults (Information Bulletin). https://www.albertahealthservices.ca/assets/wf/lab/if-lab-hp-bulletin-lipid-panel-and-individual-lipid-test-reporting-changes-in-adults-and-new-equation-to-calculate-ldl-c-in-pediatrics-and-adults.pdf

CAN 3.7 Canadian Institute for Health Information. (n.d.). Cardiac Care Quality Indicators: Report & data tables. https://www.cihi.ca/en/cardiac-care-quality-indicators-report-data-tables

CAN 3.8 Public Health Agency of Canada. (2023). Profile of primary care electronic medical records in Canada. Government of Canada. https://www.canada.ca/en/public-health/services/data/profile-primary-care-electronic-medical-records.html

CAN 3.9 Hamilton Health Sciences. (n.d.). Lipid Clinic. https://www.hamiltonhealthsciences.ca/areas-of-care/cardiac-vascular-care/cardiac-ambulatory-clinics/lipid-clinic/

CAN 4.1 Canadian Cardiovascular Society. (2022). Cardiac rehabilitation indicator (CR Indicator). https://ccs.ca/app/uploads/2022/04/Indicator_CR.pdf

CAN 5.1 William T. Wang, MSc; Anne Hellkamp, MS; Jacob A. Doll, MD; Laine Thomas, PhD; Ann Marie Navar, MD, PhD; Gregg C. Fonarow, MD;Howard M. Julien, MD, MPH; Eric D. Peterson, MD, MPH; Tracy Y. Wang, MD, MHS, MSc. (2018). Lipid testing and statin dosing after acute myocardial infarction: Insights from the Veterans Affairs Clinical Assessment, Reporting, and Tracking Program. Journal of the American Heart Association, 6(10), e006460. https://doi.org/10.1161/JAHA.117.006460

CAN 5.2 Gupta, M., Padarath, M., Prest, L., Naik, N., Lin, P., Brown, V., & Hegele, R. A. (2022). Awareness of lipid guideline recommendations among Canadian physicians [Conference poster]. Canadian Cardiovascular Congress 2022. https://www.eventscribe.net/2022/cardiocongress/fsPopup.asp?efp=UU5NRlJFSUUxNjU2OQ&PostID=526624

CAN 5.3 Whitler, C., Varkoly, K. S., Patel, H., Assaf, A. D., Hoose, J., Brannan, G. D., Miller, R., & Zughaib, M. (2024). Improved Cardiac Rehabilitation Referral Rate Utilizing a Multidisciplinary Quality Improvement Team. Cureus, 16(5), e61157. https://doi.org/10.7759/cureus.61157

# DENMARK

DK1.10 Özcan, C., Juel, K., Flensted Lassen, J., von Kappelgaard, L. M., Mortensen, P. E., & Gislason, G. (2016). The Danish Heart Registry. Clinical epidemiology, 8, 503–508. https://doi.org/10.2147/CLEP.S99475

DK1.11 Gyldenkerne, C., Olesen, K. K. W., Thrane, P. G., Hansen, M. K., Stødkilde-Jørgensen, N., Andersen, M. H., Mortensen, M. B., Jensen, J. M., Nørgaard, B. L., Sørensen, H. T., & Maeng, M. (2024). The Western Denmark Heart Registry and Population-Based National Health Registries. Clinical epidemiology, 16, 825–836. https://doi.org/10.2147/CLEP.S488498

DK-1.12 Ersbøll, A. K., Kristensen, M. S., Nybo, M., Hede, S. M., Mikkelsen, K. H., Gisla so n, G., Lytken La rsen, M., & Green, A. (2023). Trends in low-density lipoprotein cholesterol goal achievement and changes in lipid-lowering therapy after incident atherosclerotic cardiovascular disease: Danish cohort study.

DK-1.4 Zwisler, A. D., Rossau, H. K., Nakano, A., Foghmar, S., Eichhorst, R., Prescott, E., Cerqueira, C., Soja, A. M., Gislason, G. H., Larsen, M. L., Andersen, U. O., Gustafsson, I., Thomsen, K. K., Boye Hansen, L., Hammer, S., Viggers, L., Christensen, B., Kvist, B., Lindström Egholm, C., & May, O. (2016). The Danish Cardiac Rehabilitation Database. Clinical epidemiology, 8, 451–456. https://doi.org/10.2147/CLEP.S99502

DK-1.7 Dedic, E., Vistisen, H. S., Zwisler, A. D., Pedersen, B. F., Kappel, K. L., Kanstrup, H., Mols, R. E., & Egholm, C. L. (2025). Patients' acceptability of a patient-reported outcome measure in cardiac rehabilitation (the PRO-Heart-DK)-a mixed methods study using the Theoretical Framework of Acceptability. Journal of patient-reported outcomes, 9(1), 35. https://doi.org/10.1186/s41687-024-00831-8

DK-1.8 Egholm, C. L., Jensen, S., Wandel, A., & Hørder, M. (2023). The implementation of the 2017 national policy on patient-reported outcomes in Denmark: An overview of developments after six years. Health Policy, 130, 104755. https://doi.org/10.1016/j.healthpol.2023.104755

DK-2.2 Region Hovedstaden (2011) Forløbsprogram for hjerte-kar sygdomme Hospitaler, almen praksis og kommunerne i Region Hovedstaden Godkendt af Sundhedskoordinationsudvalget (2011)

DK-2.3 Sundhedsstyrelsen (2007) CHRONIC DISEASE MANAGEMENT- A National Strategy Disease Management Programmes and Self-Management Support

DK-2.6 Andersen, M. A., Helms Andreasen, A., Evi Bang, L., Jimenez-Solem, E., & Petersen, T. S. (2024). A register-based cohort study on the effectiveness and Safety of anti-PCSK9 treatment in persons with hyperlipidemia. Communications medicine, 4(1), 193. https://doi.org/10.1038/s43856-024-00611-x

DK-2.7 Medicinrådet (2020) Application for the assessment of inclisiran (Leqvio®) for adults with primary hypercholesterolaemia (heterozygous familial and non-familial) or mixed dyslipidaemia

DK-3.3 Kristensen, M. S., Green, A., Nybo, M., Hede, S. M., Mikkelsen, K. H., Gisla so n, G., Larsen, M. L., & Ersbøll, A. K. (2020). Lipid-lowering therapy and low-density lipoprotein cholesterol goal attainment after acute coronary syndrome: a Danish population-based cohort study. BMC Cardiovascular Disorders, 20(1). https://doi.org/10.1186/s12872-020-01616-9

DK-3.4 Knold, J. (2025) Validation of the National Familial Hypercholesterolemia Database. OPEN Open Patient data Explorative Network. Rigshospitalet https://open.rsyd.dk/OpenProjects/openProject.jsp?lang=en&openNo=1927

DK-3.5 Bork, C., Bundgaard, H., Snoer, M., Schmidt, E., Kanstrup, H., Henriksen, F., Heitmann, M., Ørngreen, M., Lund, A., Madsen, G., Kobbelgaard, L., Havndrup, O., Skovby, F., Klausen, I., Hedegaard, B., Thomsen, K., Bang, L., Fauerby, N., Krusenstjerna-Hafstrøm, T., … Nordestgaard, B. (2024). The Danish familial hypercholesterolemia registry: Monitoring of diagnostics, detection, and treatment quality in Denmark. Atherosclerosis, 395, 117875. https://doi.org/10.1016/j.atherosclerosis.2024.117875

DK-3.6 Ibsen, C., Kathol m, K. K., Jakobsen, A., Eriksen, G. B., Lysdal, L., Nielsen, U. K., Ravn, M. B., & Maribo, T. (2024). Reducing dropout rates in cardiac rehabilitation among cardiac patients in a vulnerable situation: systematic development and feasibility testing of the Heart Priority Programme. BMC Health Services Research, 24(1). https://doi.org/10.1186/s12913-024-12073-x

DK-4.1 HF Policy Network (2020) Heart Failure Policy and Practice in Europe – Denmark

DK-4.3 Kjesbu, I., Prescott, E., Rasmusen H. K., H., Osler, M., Larsen, M. L., Gustafsson, I., Zwisler, A. D., & Sibilitz, K. L. (2022). Socioeconomic and ethnical disparity in coronary heart disease outcomes in Denmark and the effect of cardiac rehabilitation—A nationwide registry study. PLOS ONE, 17(11), e0276768. https://doi.org/10.1371/journal.pone.0276768

DK-4.4 RKKP (2021)
Dansk Hjertereha biliteringsdatabase - Årsrapport 2020. Sundhedsvæsenets Kvalitetsinstitut.

# FRANCE

FR.1.1. Haute Autorité de Santé (HAS). (2021, April 13). Risque cardiovasculaire global en prévention primaire et secondaire : évaluation et prise en charge en médecine de premier recours - Note de cadrage. :
https://www.has-sante.fr/jcms/p_3260825/fr/risque-cardiovasculaire-global-en-prevention-primaire-et-secondaire-evaluation-et-prise-en-charge-en-medecine-de-premier-recours-note-de-cadrage

FR.1.2. Santé publique France. (2025, March 4). Épidémiologie des maladies cardiovasculaires en France : un impact majeur et des inégalités persistantes (HS - BEH). :
https://beh.santepubliquefrance.fr/beh/2025/HS/pdf/2025_HS.pdf

FR.1.3. Santé publique France. (2025, June 30). Maladies cardio-neuro-vasculaires : de fortes disparités régionales qui persistent :
https://www.santepubliquefrance.fr/presse/2025/maladies-cardio-neuro-vasculaires-de-fortes-disparites-regionales-qui-persistent

FR.1.4. OECD. Causes of mortality - Diseases of the circulatory system (France, 2021):
https://stats.oecd.org/viewhtml.aspx?datasetcode=HEALTH_STAT&lang=en

FR.1.5 Ray KK et al. Contemporary lipid management in 14 European countries: Data from the SANTORINI study. The Lancet Regional Health. Europe, 2023.
https://www.thelancet.com/journals/lanepe/article/PIIS2666-7762(23)00043-1/fulltext

FR.2.1 Ministère des Solidarités et de la Santé. Stratégie nationale de santé 2018-2022. :
https://sante.gouv.fr/systeme-de-sante/strategie-nationale-de-sante/article/la-strategie-nationale-de-sante-2018-2022

FR.2.3 Ministère des Solidarités et de la Santé. Plan national de santé publique – Priorité prévention. :
https://sante.gouv.fr/IMG/pdf/180326-dossier_de_presse_priorite_prevention.pdf

FR.2.11 Assurance maladie. Affection de longue durée (ALD) :
https://www.ameli.fr/assure/droits-demarches/maladie-accident-hospitalisation/affection-longue-duree-ald

FR.2.12 Assurance maladie. ROSP - Rémunération sur objectifs de santé
publique. : https://www.ameli.fr/medecin/exercice-liberal/facturation-remuneration/remuneration-objectifs

FR.3.2 Société Française de Cardiologie (Cardio-online). Recommandations ESC 2019 - Dyslipidémies (analyse détaillée) :
https://www.cardio-online.fr/actualites/actualites-en cardiologie/2019/recommandations-esc-2019-dyslipidemies

FR.3.3 Société Française de Cardiologie (Cardio-online). Traitement anti-lipidique et objectifs LDL-C - bilan ESC 2020 :
https://www.cardio-online.fr/actualites/actualites-en-cardiologie/2020/traitement-anti-lipidique-et-objectifs-ldl-c-quel-bilan-dresse-par-l-esc-2020

FR.3.4 Société Française de Cardiologie (Cardio-online). Recommandations post-SCA sur les lipides :
https://www.cardio-online.fr/actualites/actualites-en-cardiologie/2020/les-recommandations-pour-lipides-apres-sca

FR.3.6 Société Française de Cardiologie. Chapitre 03 - Item 223 : Dyslipidémies (incluant dépistage en cascade FH) :
https://www.sfcardio.fr/publication/chapitre-03-item-223-dyslipidemies/

FR.3.9 Haute Autorité de Santé. Indicateurs de pratique clinique - Infarctus du myocarde (IDM) – Fiche descriptive prescriptions de sortie (score BASI) :
https://www.has-sante.fr/upload/docs/application/pdf/2025-04/fiche_descriptive_idm_02.05.12.pdf

FR.4.1 Haute Autorité de Santé. Guide du parcours de soins - Syndrome coronarien chronique :
https://www.has-sante.fr/jcms/p_3279181/fr/guide-du-parcours-de-soins-syndrome-coronarien-chronique

FR.4.3 Santé publique France. Participation à la réadaptation cardiaque après SCA (BEH 2024) :
https://beh.santepubliquefrance.fr/beh/2024/8/2024_8_3.html

FR.4.5 Société Française de Cardiologie. Réadaptation cardiovasculaire - Recommandations :
https://www.sfcardio.fr/wp-content/uploads/2025/04/recommandations-readaptation.pdf

FR.5.4 Ferrières, J. et al. Suboptimal achievement of LDL-C targets in French secondary prevention patients (Archives of Cardiovascular Diseases) :
https://pubmed.ncbi.nlm.nih.gov/28209375/

FR[5.5] Sabouret, P., et al. Lipid-lowering treatment one year after ACS: French expert guidance: https://pubmed.ncbi.nlm.nih.gov/36222543/

FR[5.7] Meltzer, et al. French expert proposal for lipid-lowering therapy in post-ACS care: https://www.armp-asso.fr/images/meltz-230406.pdf

FR[5.8] Vidal. Inhibiteurs PCSK9 – Conditions de prescription et de remboursement : https://www.vidal.fr

# GERMANY

GER [1.1.] Deutsche Herzstiftung. (2025). Deutscher Herzbericht, URL: 36. Deutscher Herzbericht Update 2025 (last access 30.11.2025).

GER [1.2.] Stürzebecher, Paulina Elena et al. (2023). Behandlung und LDL-Cholesterin-Einstellung von Patienten mit hohem und sehr hohem kardiovaskulärem Risiko in Deutschland und im europäischen Vergleich – Daten des SANTO-RINI-Registers. Deutsche Medizinsche Wochenschrift [1]; [148 (9)], pp. 55-64.

GER [2.1.] Bundesärztekammer (BÄK), Kassenärztliche Bundesvereinigung (KBV), Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften (AWMF). (2024). Nationale Versorgungsleitlinie Chronische KHK, Langfassung, Version [7.0], pp. 86-96.

GER [2.2.] Mach, François et al. (2025). Focused Update of the 2019 ESC/EAS Guidelines for the management of dyslipidaemias, European Heart Journal, Vol. [46], Issue [42], pp. 4359–4378.

GER [2.3.] Gemeinsamer Bundesausschuss (G-BA). (2025). Richtlinie des Gemeinsamen Bundesausschusses zur Zusammenführung der Anforderungen an strukturierte Behandlungsprogramme nach § 137f Absatz 2 SGB V (DMP-Anforderungen-Richtlinie/DMP-A-RL). Anlage 5 Anforderungen an die Ausgestaltung von strukturierten Behandlungsprogrammen für Patientinnen und Patienten mit koronarer Herzkrankheit (KHK), pp. 55-67.

GER [2.4.] Deutsche Gesellschaft für Kardiologie (DGK). (2025). ESC Pocket Guidelines: Chronisches Koronarsyndrom, Version 2024. Kurzfassung der "[2] Modern lipid-lowering strategies—The early combination treatment[024] ESC Guidelines on the management of chronic coronary syndromes". European Heart Journal, pp. 43-50.

GER [2.5.] Deutsche Herzstiftung. (2025). Deutscher Herzbericht – Update 2025 vorgestellt. URL Deutscher Herzbericht – Update 2025 vorgestellt (last access 30.11.2025).

GER [2.6.] Weingärtner, Oliver et al. (2025). LipidSnapshot – Treatment gaps in hypercholesterolemia in patients with atherosclerotic cardiovascular disease documented by office based cardiologists and general practitioners in Germany. Clin Res Cardiol, pp. 1-13.

GER [2.7.] Grundy, Scott M. et al. (2018). AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation Vol. 139, Issue 25, pp. 1082 - 1143.

GER [3.1.] Reuser, Annika et al. (2024). Comparison of LDL cholesterol serum concentrations in patients after acute coronary syndrome between 2018 and 2022 in Germany and Europe. DMW - Deutsche Medizinische Wochenschrift [19]; [149], pp. 84-91.

GER [3.2.] Institut für Qualitätssicherung und Transparenz im Gesundheitswesen (IQTIG). (2024). Bundesqualitätsbericht 2024. QS-Verfahren [1]: Perkutane Koronarinterventionen und Koronarangiographie (QS PCI).

GER [3.3.] InEK – Institut für das Entgeltsystem im Krankenhaus. (2025). Fallpauschalen-Katalog gemäß Paragraf 17b Abs-atz 1 Satz 4 Krankenhausfinanzierungsgesetz Katalog ergänzender Zusatzentgelte gemäß Paragraf 17b Absatz 1 Satz 7 Krankenhausfinanzierungsgesetz Pflegeerlöskatalog gemäß Paragraf 17b Absatz 4 Satz 5 Krankenhausfinanzierungsgesetz, pp 17-24.

GER [3.4.] Gemeinsamer Bundesausschuss (G-BA). (2025). Richtlinie des Gemeinsamen Bundesausschusses zur Zusammenführung der Anforderungen an strukturierte Behandlungsprogramme nach § 137f Absatz 2 SGB V

GER [3.5.] Jamili, Sara et al. (2023). Comparison of pay-for-performance (P4P) programs in primary care of selected countries: a comparative study. BMC Health Serv Res [23, 865], pp. 1-11.

GER [3.6.] Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen IQWiG. (2024). Evinacumab (homozygous familial hypercholesterolaemia; adults and adolescents [12] years and older) Benefit assessment according to §[35a] SGB V[1.] URL: A[24-05] - Evinacumab - Extract of dossier assessment - Version [1.0] (last access [02.12.2025]).

GER [3.7.] Zeymer, Uwe et al. (2024). GULLIVER Guideline adherence and risk assessment after acute myocardial infarction in real life in Germany – a quality improvement and awareness registry of the German Cardiac Society, pp. [1-17].

GER [3.8] Gabrys, L. et al. (2021). Exercise-Based Cardiac Rehabilitation: Secondary Data Analyses of Mortality and Working Capacity in Germany, [2010–2017]. Sports Med - Open [7, 88].

GER [4.1.] Kassenärztliche Bundesvereinigung (KBV). (2025). Disease-Management-Programme. URL: https://www.kbv.de/praxis/patientenversorgung/dmp (last accessed: [06.11.2025]).

GER [4.2.] Allgemeine Ortskrankenkasse Bayern (AOK). (2024). DMP-Vertrag mit der Kassenärztlichen Vereinigung Bayerns (KVB) für alle internistischen Diagnosen. Anlage [3]b (KHK - Strukturqualität koordnierender Arzt nach § [3]).

GER [4.3] Landesarbeitsgemeinschaft für einrichtungsübergreifende Qualitätssicherung in Schleswig-Holstein. (2025). Perkutane Koronarintervention und Koronarangiographie (QS PCI). URL: https://www.lag-eqsh.de/deqsverfahren/qs-pci (last accessed: [07.11.2025]).

GER. [4.4.] König, Wolfgang. (2023). Retrospective real world analysis of adherence and persistence to lipid lowering therapy in Germany. Clin Res Cardio [113], Pp. [813–820].

GER [4.5.] Stach, K. et al. (2024). Quantifying the 'distance to LDL-C goal' in patients at very high cardiovascular risk with hyperlipidaemia in Germany: a retrospective claims database analysis. Ther Adv Cardiovasc Dis. [18], pp. [1-14].

GER [4.6.] Ebeling, M. (2024). More heart attacks in rural areas. Core problem of urban-rural divide is not a lack of emergency care for heart attacks, but poorer disease prevention in rural areas. Max-Planck-Gesellschaft. URL: https://www.mpg.de/[21511822]/[0207]-defo-more-heart-attacks-in-rural-areas-better-disease-prevention-needed [154642]-x (last accessed: [01.12.2025]).

GER [4.7.] Nebel, R. (2024). Phase III Cardiac Rehabilitation: Ambulatory Heart Groups - A Model From Germany. Circ Rep. [6(11)], pp. [489-494].

GER [4.8.] Mueller, A. S. et al. (2025). Cardiac Rehabilitation in the Modern Era: Evidence, Equity, and Evolving Delivery Models Across the Cardiovascular Spectrum. Journal of Clinical Medicine. [14(15), 5573].

GER [4.9.] Bundesministerium für Gesundheit (BMG). (2024). Gesundes-Herz-Gesetz. URL: https://www.bundesgesundheitsministerium.de/fileadmin/Dateien/[3]_Downloads/Gesetze_und_Verordnungen/GuV/G/GHG_RefE_bf.pdf (last accessed: [01.12.2025]).

# ISRAEL

ISR [1.1] Kornowski, R. & Orvin, K. (2020). Current status of cardiovascular medicine in Israel. Circulation, [142(1), 13–15]. https://doi.org/[10.1161]/CIRCULATIONAHA.[119.042516]

ISR [1.2] Hod, H. & Matetzky, S. (2006). Chest pain unit in Israel: Are we on the road? Israel Medical Association Journal (IMAJ), [8(5), 351–352]. Retrieved from https://www.ima.org.il/filesupload/IMAJ/[0]/[48]/[24159].pdf

ISR [1.3] Kagan, A. Zwas, D. R. Haklai, Z. & Levine, H. (2024). Acute coronary syndrome rates by age and sex before and during the COVID-[19] pandemic in Israel: nationwide study. International journal of epidemiology, [54(1)], dya[e164]. https://doi.org/[10.1093]/ije/dya[e164]

ISR [1.4] Litovchik, I. Pereg, D. Shlomo, N. Vorobeichik, D. Beigel, R. Iakobishvili, Z. Vered, Z. Goldenberg, I. & Minha, S. (2019). Characteristics and outcomes associated with [30]-day readmissions following acute coronary syndrome [2000-2013]: the Acute Coronary Syndrome Israeli Survey. European heart journal. Acute cardiovascular care, [8(8), 738–744]. https://doi.org/[10.1177]/[2048872618767997]

IRS [1.5] Haskiah, F. & Khaskia, A. (2023). Lipid treatment status and goal attainment among patients with premature acute coronary syndrome in Israel. Journal of clinical lipidology, [17(3), 367–375]. https://doi.org/[10.1016]/j.jacl.[2023.04.002]

ISR [1.6] Ministry of Health (Israel). The Israeli National Program for Quality Indicators Annual Report [2013–2023]. Jerusalem: Quality and Safety Division, Health Services Research Department; July [2024].

ISR 2.1 Redᵃ, Aᵛ Almᵃhmeed, Wᵛ Dᵒbrecky-Mery, Iᵛ Huᵃng, Pᵛ Hᵛ Juᵃrez-Herrerᵃ, Uᵛ Rᵃnjith, Nᵛ Sᵃyre, Tᵛ & Urinᵃ-Triᵃnᵃ, Mᵛ (2020). A Nᵃrrᵃtive Review ᵃnd Expert Pᵃnel Recᵒmmendᵃtiᵒns ᵒn Dyslipidᵃemiᵃ Mᵃnᵃgement After Acute Cᵒrᵒnᵃry Syndrᵒme in Cᵒuntries Outside Western Eurᵒpe ᵃnd Nᵒrth Americᵃ. Advᵃnces in therᵃpy, 37(5), 1754–1777. https://dᵒi.ᵒrg/10.1007/s12325-020-01302-4

ISR 2.2 ISR-1.3 Nissᵃnhᵒltz-Gᵃnnᵒt, Rᵛ Burger, Aᵛ & Rᵒsen, Bᵛ Primᵃry cᵃre physiciᵃns' percepti ᵒns ᵒf Isrᵃel's nᵃtiᵒnᵃl prᵒgrᵃm fᵒr quᵃlity indicᵃtᵒrs in cᵒmmunity heᵃlthcᵃre– 2010 ᵃnd 2020. Isr J Heᵃlth Pᵒlicy Res 14, 21 (2025). https://dᵒi.ᵒrg/10.1186/s13584-025-00685-5

ISR 2.3 Ministry ᵒf Heᵃlth (Isrᵃel). Digitᵃl Heᵃlth Strᵃtegy ᵃnd Interᵒperᵃbility Frᵃmewᵒrk. 2023. https://iclg.cᵒm/prᵃctice-ᵃreᵃs/digitᵃl-heᵃlth-lᵃws-ᵃnd-regulᵃtiᵒns/isrᵃel
ISR 2.4 Elis, Aᵛ Dᵃud, Wᵛ Cᵒhen, Gᵛ Gilᵃdi, Eᵛ & Atᵃmnᵃ, Aᵛ (2022). Treᵃtment with Anti-PCSK9 Mᵒnᵒclᵒnᵃl Ab: Experience frᵒm ᵃ Lipid Clinic in Isrᵃel. The Isrᵃel Medicᵃl Assᵒciᵃtiᵒn jᵒurnᵃl : IMAJ, 24(11), 763–767.

ISR 2.5 Rᵒtt, Dᵛ Hᵃy, Iᵛ Nᵃbutᵒvsky, Iᵛ Heller, Aᵛ Breitner, Dᵛ & Klempfner, Rᵛ (2022). Blᵒᵒd lipid levels ᵃnd treᵃtment fᵒllᵒwing ᵃn ᵃcute cᵒrᵒnᵃry syndrᵒme ᵒr cᵒrᵒnᵃry interventiᵒn – Jᵒurney frᵒm hᵒspitᵃl tᵒ cᵃrdiᵃc rehᵃbilitᵃtiᵒn. Prᵒgress in Preventive Medicine, 7, 100021. https://dᵒi.ᵒrg/10.1016/j.prᵒpm.2022.100021

ISR 2.6 ISR-4.19 ESC. Cᵒuntry ᵒf the Mᵒnth – Isrᵃel. Eurᵒpeᵃn Sᵒciety ᵒf Cᵃrdiᵒlᵒgy; 2022. https://www.escᵃrdiᵒ.ᵒrg/Sub-speciᵃlty-cᵒmmunities/Eurᵒpeᵃn-Assᵒciᵃtiᵒn-ᵒf-Preventive-Cᵃrdiᵒlᵒgy-(EAPC)/Advᵒcᵃcy/Preventiᵒn-in-yᵒur-cᵒuntry/Cᵒuntry-ᵒf-the-Mᵒnth-Isrᵃel

# ITALY

IT. 1.1 Sᵃgliettᵒ, Aᵛ Mᵃnfredi, Rᵛ Eliᵃ, Eᵛ D'Ascenzᵒ, Fᵛ De Ferrᵃri, G. Mᵛ Biᵒndi-Zᵒccᵃi, Gᵛ & Munzel, T. (2021). Cᵃrdiᵒvᵃscᵘlᵃr diseᵃse burden: Itᵃliᵃn ᵃnd glᵒbᵃl perspectives. Minervᵃ Cᵃrdiᵒlᵒgy ᵃnd Angiᵒlᵒgy, 69(3), 231–240. https://dᵒi.ᵒrg/10.23736/S2724-5683.21.05538-9

IT. 1.2 Pᵃlmieri, Lᵛ & Dᵒnfrᵃncescᵒ, C. (2022). Mᵃlᵃttie cᵃrdiᵒ e cerebrᵒvᵃscᵒlᵃri. In Osservᵃtᵒriᵒ Nᵃziᵒnᵃle sullᵃ Sᵃlute nelle Regiᵒni Itᵃliᵃne (Ed.), Rᵃppᵒrtᵒ Osservᵃsᵃlute 2021 (pp. …). Retrieved frᵒm https://ᵒsservᵃtᵒriᵒsullᵃsᵃlute.it/wp-cᵒntent/uplᵒᵃds/2022/10/rᵒ-2021-mᵃlᵃttie_cᵃrdiᵒvᵃscᵒlᵃri.pdf

IT 1.3 Rᵃy, K. Kᵛ Hᵃq, Iᵛ Bilitᵒu, Aᵛ Mᵃnu, M. Cᵛ Burden, Aᵛ Aguiᵃr, Cᵛ et ᵃl. (2023). Treᵃtment gᵃps in the implementᵃtiᵒn ᵒf LDL chᵒlesterᵒl cᵒntrᵒl ᵃmᵒng high- ᵃnd very high-risk pᵃtients in Eurᵒpe between 2020 ᵃnd 2021: The multinᵃtiᵒnᵃl ᵒbservᵃtiᵒnᵃl SANTORINI study. The Lᵃncet Regiᵒnᵃl Heᵃlth – Eurᵒpe, 25, 100576. https://dᵒi.ᵒrg/10.1016/j.lᵃnepe.2023.100576

IT 2.1 De Lucᵃ, Lᵛ Ricciᵒ, Cᵛ Nᵃvᵃziᵒ, Aᵛ Vᵃlente, Sᵛ Cipriᵃni, Mᵛ Cᵒrdᵃ, Mᵛ De Nᵃrdᵒ, Aᵛ Frᵃncese, G. Mᵛ Nᵃpᵒletᵃnᵒ, Cᵛ Tizzᵃni, Eᵛ Rᵒncᵒn, Lᵛ Cᵃldᵃrᵒlᵃ, Pᵛ Gulizi, Mᵛ Gᵃbrielli, Dᵛ Olivᵃ, Fᵛ & Cᵒlivicchi, F. (2023). Pᵒsitiᵒn pᵃper ANMCO: Gestiᵒne dell'ipercᵒlesterᵒlemiᵃ nei pᵃzienti cᵒn sindrᵒme cᵒrᵒnᵃricᵃ ᵃcutᵃ. Giᵒrnᵃle Itᵃliᵃnᵒ di Cᵃrdiᵒlᵒgiᵃ, 24(3), 229–240.

IT. 2.2 Eurᵒpeᵃn Sᵒciety ᵒf Cᵃrdiᵒlᵒgy. (2021). 2021 ESC Guidelines ᵒn cᵃrdiᵒvᵃscᵘlᵃr diseᵃse preventiᵒn in clinicᵃl prᵃctice.

IT. 2.3 Reᵃ, Fᵛ Sᵃvᵃré, Lᵛ Cᵒrrᵃᵒ, Gᵛ & Mᵃnciᵃ, G. (2021). Adherence tᵒ lipid-lᵒwering treᵃtment by single-pill cᵒmbinᵃtiᵒn ᵒf stᵃtin ᵃnd ezetimibe. Advᵃnces in Therᵃpy, 38(10), 5270-5285.

IT. 2.4 Agenziᵃ Itᵃliᵃnᵃ del Fᵃrmᵃcᵒ. (2025, Mᵃrch 21). Determinᵃ n. n. 252/2025 (G.U. 25A 01727) – Regime di fᵒrnᵢturᵃ RRL per medicinᵃli ᵃ bᵃse dei principi ᵃttivi evᵒlᵒcumᵃb, ᵃlirᵒcumᵃb e inclisirᵃn, Gᵃzzettᵃ Uffᵢciᵃle. Retrieved Nᵒvember 6, 2025, frᵒm https://ᵃemmedi.it/ᵃifᵃ-mᵒdificᵃ-dei-prescrittᵒri-per-i-medicinᵃli-ᵃ-bᵃse-dei-principi-ᵃttivi-evᵒlᵒcumᵃb-ᵃlirᵒcumᵃb-e-inclisirᵃn-ᵃutᵒrizzᵃti-cᵒn-regime-di-fᵒrnituraᵃ-rrl-determinᵃ-n-252-2025/

IT. 2.5 Ministerᵒ dellᵃ Sᵃlute. (2020). Piᵃnᵒ Nᵃziᵒnᵃle dellᵃ Prevenziᵒne 2020-2025

IT 2.6 Perrᵒne, Vᵛ Verᵒnesi, Cᵛ Dᵒviziᵒ, Mᵛ Ancᵒnᵃ, Dᵛ Dᵛ Bᵃrtᵒlini, Fᵛ Ferrᵃnte, Fᵛ Lupi, Aᵛ Pᵃlcic, Sᵛ Re, Dᵛ Terlizzi, Aᵛ Pᵛ Rᵃmirez de Arellᵃnᵒ Sernᵃ, Aᵛ Cᵒgliᵃti, Pᵛ & Degli Espᵒsti, L. (2022). Evᵃluᵃtiᵒn ᵒf the therᵃpeutic pᵃttern ᵃnd phᵃrmᵃcᵒ-utilizᵃtiᵒn in hyperchᵒlesterᵒlemic pᵃtients treᵃted with stᵃtins: A retrᵒspective study ᵒn Itᵃliᵃn reᵃl-wᵒrld dᵃtᵃ. Risk Mᵃnᵃgement ᵃnd Heᵃlthcᵃre Pᵒlicy, 15, 1483-1489.

IT. 2.7 Berteᵒtti, Mᵛ et ᵃl. (2024). LDL-chᵒlesterᵒl tᵃrget levels ᵃchievement in high-risk pᵃtients: An (un)expected gender biᵃs. Nutritiᵒn, Metᵃbᵒlism & Cᵃrdiᵒvᵃscᵘlᵃr Diseᵃses, 34(1), 145-152.

IT. 2.8 Rᵒssi, Aᵛ Mᵃsi, Dᵛ Zilich, Rᵛ Bᵃccetti, Fᵛ Bᵃrᵒnti, Wᵛ Fᵃlcettᵃ, Pᵛ … Pᵒnzᵃni, P. (2025). Lipid-lᵒwering therᵃpy ᵃnd LDL-C tᵃrget ᵃttᵃinment in type 2 diᵃbetes: Trends frᵒm the Itᵃliᵃn Assᵒciᵃtiᵒns ᵒf Medicᵃl Diᵃbetᵒlᵒgists dᵃtᵃbᵃse. Cᵃrdiᵒvᵃscᵘlᵃr Diᵃbetᵒlᵒgy, 24, Article 94.

IT. 2.9 Budig, K., & Harding, E. (2021). Secondary prevention of heart attack and stroke: Country profile for Italy. The Health Policy Partnership.

IT. 2.10 Istituto Superiore di Sanità. (2020). Programma Nazionale Esiti 2020. Epicentro. Retrieved November 4, 2025, from https://www.epicentro.iss.it/politiche_sanitarie/pne-2020

IT. 3.1 Agenzia Italiana del Farmaco. (2022). Nota 13 — Criteri di rimborsabilità dei farmaci ipolipemizzanti. AIFA

IT. 3.2 Regione Lombardia. (2024, June 25). Lombardy Integrated Social-Health Plan 2024–2028 (Piano sociosanitario integrato lombardo 2024–2028) — DCR n. 395

IT. 3.3 Agenzia Italiana del Farmaco. (2020, August 4). Indicatori per la valutazione dell'aderenza e della persistenza al trattamento farmacologico. Ufficio Monitoraggio della Spesa Farmaceutica e Rapporti con le Regioni.

IT 4.1 Regione Puglia. (2022). Piano regionale della prevenzione 2021–2025.

IT 4.2 Regione Campania. (2025, July 18). Il Fascicolo Sanitario Elettronico 2.0 come strumento di prevenzione per la salute cardiovascolare. Regione Campania. Retrieved November 5, 2025, from https://www.regione.campania.it/regione/it/news/regione-informa/il-fascicolo-sanitario-elettronico-2-0-come-strumento-di-prevenzione-per-la-salute-cardiovascolare

IT. 5.1 Agenzia Italiana del Farmaco. (2020, August 4). Indicatori per la valutazione dell'aderenza e della persistenza al trattamento farmacologico. Ufficio Monitoraggio della Spesa Farmaceutica e Rapporti con le Regioni.
2027.

IT. 5.3 Boccanelli, A. (2024). La prevenzione cardiovascolare di comunità (note metodologiche dal PREVASC). Atti dell'Accademia Lancisiana.

IT 5.4 Barisone, M., Quattrone, F., Aimo, A., Damone, A. L., Pennucci, F., Emdin, M., Passino, C., & Nuti, S. (2024). Utilizzo di PROMs (patient-reported outcome measures) e PREMs (patient-reported experience measures) in cardiologia: Stato dell'arte e applicazioni per migliorare l'assistenza del paziente. Giornale Italiano di Cardiologia, 25(11), 801–810.

IT 5.5 Istituto Superiore di Sanità. (n.d.). Disease indicators: National register of coronary and cerebrovascular events. Retrieved November 4, 2025, from https://www.cuore.iss.it/eng/indicators/register

# MEXICO

MX.0.1. World Heart Federation. (2025). Mexico — cardiovascular disease statistics. Retrieved November 26, 2025, from https://world-heart-federation.org/world-heart-observatory/countries/mexico

MX.0.2. World Heart Federation. (2025, November 12). Heart disease, diabetes drive mortality rise in Mexico: INEGI. Mexico Business News. Retrieved November 26, 2025, from https://mexicobusiness.news/health/news/heart-disease-diabetes-drive-mortality-rise-mexico-inegi

MX.0.3. Khoshakhlagh, A. H., & colleagues. (2024). Hospitalization due to cardiovascular diseases (CVDs) attributed to air pollution: systematic review. Global-Health Table 4 data: Short-term exposure to ambient air pollutants and cardiovascular emergency department visits in Mexico City.

MX.0.4. Pérez-Cuevas, R., Contreras-Sánchez, S. E., Doubova, S. V., García-Saisó, S., Sarabia-González, O., Pacheco-Estrello, P., & Arias-Mendoza, A. (2020). Gaps between supply and demand of acute myocardial infarction treatment in Mexico. Salud Pública de México, 62(5), 540–549. https://doi.org/10.21149/11032

MX.0.5. Cruz-Fernández, Y., Santos-Medina, & M., Izaguirre-Cabreja, E.B. (2025). Valoración del Reingreso al Mes de un Infarto Agudo de Miocardio. Revista Científica Hallazgos 21, 10 (2), 180-191. http://revistas.pucese.edu.ec/hallazgos21/

MX.0.6. Rosas-Peralta, M., & Meaney, E. (2024). The terrible epidemic that devastates Mexico: A national crusade against atherosclerosis is urgently needed. Cardiovascular and Metabolic Science, 35(3), 82–88. https://dx.doi.org/10.35366/117825

MX.0.7. Ray, K. K., Haq, I., Bilitou, A., Manu, M. C., Burden, A., Aguiar, C., Arca, M., Connolly, D. L., Eriksson, M., Ferrières, J., Laufs, U., Mosta, J. M., Nanchen, D., Rietzschel, E., Strandberg, T., Toplak, H., Visseren, F. L. J., & Catapano, A. L. (2023). Treatment gaps in the implementation of LDL cholesterol control among high- and very high-risk patients in Europe between 2020 and 2021: the multinational observational SANTORINI study. The Lancet Regional Health – Europe, 29, Article 100624. https://doi.org/10.1016/j.lanepe.2023.100624

MX.0.8. Mexican Society of Cardiology, Mexican Association of Endocrinology, National Institutes of Health, & collaborating organizations. (2022). Mexican clinical practice guideline for the diagnosis and treatment of dyslipidemias and atherosclerotic cardiovascular disease (GPC 2022). Revista de Investigación Clínica, 74(1), 1–78. https://doi.org/10.24875/RIC.21000300

MX.1.1. Secretaría de Salud. (2023). Cada año, 220 mil personas fallecen debido a enfermedades del corazón… [Press release]. Gobierno de México.

MX.1.2. Ramírez Barba, É. J. (2023, July 25). El infarto al corazón en México: Un reto nacional urgente y la ruta hacia la solución. El Economista.

MX.1.3. American College of Cardiology. (2025). Cardiovascular Disease Risk Rises in Mexico, Despite Improved Cholesterol Control.

MX.1.4. López-Jiménez, F. (2018). ¿Qué hemos hecho hasta hoy de la rehabilitación cardiaca en el mundo? Medscape en Español.

MX.1.5. [No PROM/PREM source found].

MX.1.6. Instituto Mexicano del Seguro Social – Coordinación de Investigación. (2017). Código Infarto: protocolo de atención integral. Rev Med Inst Mex Segur Soc, 55(2), 233–246.

MX.2.1. Secretaría de Salud. (2021). Programa de Acción Específico: Enfermedades Cardiometabólicas 2020–2024.

MX.2.2. Secretaría de Salud. (2020). Estrategia Nacional para la Prevención y Control de la Obesidad, Diabetes y ECV 2013–2018.

MX.2.3. Secretaría de Salud – CENAPRECE. (2021). Lineamientos técnicos del Programa ECM 2020–2024.

MX.2.4. Pavía-López, A. A., et al. (2022). Guía de práctica clínica mexicana para el diagnóstico y tratamiento de las dislipidemias y ECVA. Arch Cardiol Mex, 92(Suppl. 1), S1–S87.

MX.2.5. American College of Cardiology. (2025). Implementation of Guidelines and Protocols in Mexico.

MX.2.6. [No specific source on incentives; analysis based on health system structure].

MX.3.1. Secretaría de Salud. (2013). NOM-037-SSA2-2012: Para la prevención, tratamiento y control de las dislipidemias. Diario Oficial de la Federación.

MX.3.2. Pavía-López, A. A., et al. (2022). Guía de práctica clínica mexicana para el diagnóstico y tratamiento de las dislipidemias y ECVA. Arch Cardiol Mex, 92(Suppl. 1), S1–S87.

MX.3.3. CENETEC. (2017). Guía de Práctica Clínica – Diagnóstico y Manejo del Infarto Agudo de Miocardio con elevación del ST.

MX.3.4. Instituto Mexicano del Seguro Social. (2015). Protocolo Código Infarto – Guía de práctica interinstitucional.

MX.3.5. Tello-Montoliu, A., & López-Jiménez, F. (2019). El hipercolesterolemia familiar: una prioridad olvidada en México. Arch Cardiol Mex, 89(3), 258–260.

MX.3.6. [No public indicator reference; inferred from institutional practices and guidelines].

MX.4.1. Secretaría de Salud. (2021). PAE Enfermedades Cardiometabólicas 2020–2024, Objetivos 1 y 5.

MX.4.2. Ramírez Barba, É. J. (2023). El infarto al corazón en México: Un reto nacional urgente… El Economista.

MX.4.3. Registro Mexicano de Hipercolesterolemia Familiar (INCMNSZ). (2019). Informe del Registro.

MX.4.4. Valero-Elizondo, J., et al. (2017). Prevención y rehabilitación cardiovascular: papel del cardiólogo. Rev Esp Cardiol, 70(6), 484–486.

MX.4.5. American College of Cardiology. (2025). Press Release on CVD Risk in Mexico.

MX.4.6. CENETEC. (2015). Guía de Práctica Clínica – Rehabilitación Cardíaca Fase II.

MX.4.7. [No specific reference on digital tools; information inferred from policy documents and pilot reports].

MX.5.1. Pavía-López, A. A., et al. (2022). Mexican Dyslipidemia Guidelines. Arch Cardiol Mex.

MX.5.2. American College of Cardiology. (2025). Gaps in Very High-Risk LDL Control in Mexico.

MX.5.3. Ramírez Barba, É. J. (2023). El infarto al corazón en México: Un reto nacional urgente... El Economista.

MX.5.4. Consejo de Salubridad General. (2023). Compendio Nacional de Insumos para la Salud 2023.

MX.5.5. Cofepris. (2017). Liberación de Medicamentos Innovadores – 9na Edición.

MX.5.6. Secretaría de Salud. (2021). PAE ECM 2020–2024 – Competencias y Redes.

# POLAND

PL 1.1 Śląskie Centrum Chorób Serca. (n.d.). O rejestrze PL-ACS. Retrieved November 10, 2025

PL 1.2 Centrum e-Zdrowia. (n.d.). Funkcjonowanie programu KOS-zawał Aktualizacja danymi do 2024 roku.

PL 1.3 Poland, Ministry of Health. (2022). National Program for Cardiovascular Diseases 2022–2032

PL 1.4 Banach, M., Burchardt, P., Chlebus, K., Dobrowolski, P., Dudek, D., Dyrbuś, K., … Cybulska, B. (2021). PTL/KLRwP/PTK/PTDL/PTD/PTNT guidelines for diagnosis and treatment of lipid disorders in Poland 2021

PL 1.5 Centrum e-Zdrowia. (2023). Funkcjonowanie programu KOS-zawał

PL 1.6 Instytut Zarządzania w Ochronie Zdrowia Uczelni Łazarskiego. (2022). Raport z badania: Czynniki sukcesu organizacji ośrodków realizujących program KOS-Zawał.

PL 1.7 Centrum e-Zdrowia. (2025). Moje Zdrowie – bilans zdrowia osoby dorosłej. Retrieved November 10, 2025

PL 1.8 Kubielas, G., et al. (2022). Comprehensive care after myocardial infarction (CCMI). International Journal of Environmental Research and Public Health, 19(15), 7518

PL 1.9 Sinnadurai S, Sowa P, Jankowski P, et al. Effects of cardiac rehabilitation on risk factor management and quality of life in patients with ischemic heart disease: a multicenter cross-sectional study. Pol Arch Intern Med. 2021; 131: 617-625. Retrieved November 10, 2025

PL 1.10 Śląskie Centrum Chorób Serca. (2024). Raport PL-ACS 2024

PL 1.11 Narodowy Fundusz Zdrowia. (2020). Choroba niedokrwienna serca w Europie i w Polsce. https://ezdrowie.gov.pl/pobierz/nfz_-_zdrowiu_choroba_niedokrwienna_serca_v1. Retrieved December 1, 2025

PL 1.12 Statistics Poland (GUS). (2024). Life expectancy in Poland 2024.

PL 1.13 Drożdż, J. (2025). Cardiology in Poland: A report for the year 2024 — part 1. Polish Heart Journal (Kardiologia Polska), 83(9). https://doi.org/10.33963/v.phj.108435. Retrieved December 1, 2025

PL 1.14 Dyrbuś, K., Banach, M., Gil, R., Gąsior, M., Broncel, M., … (2025). Interdisciplinary expert team statement on the treatment of multi-bed atherosclerotic disease – endorsed by Polish Cardiac Society, Polish Lipid Association, Polish Society of Diabetology, Polish Neurological Society, Polish Society of Nephrology. Polish Heart Journal (Kardiologia Polska), 83(4), 531–539. https://doi.org/10.33963/v.phj.105235. Retrieved December 1, 2025

PL 1.15 Przybysz-Zdunek, B., Płoch, M., Pluta, W., Dada, M., & Opolski, G. (2012). All-cause readmission and repeat revascularization after percutaneous coronary intervention. Cardiology Journal, 19(2), 174–179. https://doi.org/10.5603/cj.2012.0030 Retrieved December 1, 2025

PL 2.1 Poland. (2025). Rozporządzenie Ministra Zdrowia z dnia 30 kwietnia 2025 r. zmieniające rozporządzenie w sprawie świadczeń gwarantowanych z zakresu podstawowej opieki zdrowotnej [Dz. U. 2025, poz. 584]

PL 2.2 Poland (2021). Rozporządzenie Ministra Zdrowia z dnia 14 czerwca 2021 r. w sprawie programu pilotażowego „Profilaktyka 40 PLUS" [Dz.U. 2021 poz. 1081]

PL [2.3] Sosnowska, B., St pińska, J., Mitkowski, P., Bielecka-Dąbrowa, A., Bobrowska, B., Budzianowski, J., Burchardt, P., Chlebus, K., Dobrowolski, P., Gąsior, M., Jankowski, P., Kubica, J., Mickiewicz, A., Myśliwiec, M., Osadnik, T., Prejbisz, A., Rajtar-Salwa, R., Wita, K., Witkowski, A., Gil, R., & Banach, M. (2024, January [31]). Recommendations of the Experts of the Polish Cardiac Society (PCS) and the Polish Lipid Association (PoLA) on the diagnosis and management of elevated lipoprotein(a) levels. Archives of Medical Science, [20(1)], 8-27.

PL [2.4] Polska. (2025). Obwieszczenie Ministra Zdrowia w sprawie wykazu refundowanych leków, środków spożywczych specjalnego przeznaczenia żywieniowego oraz wyrobów medycznych na [1] październik [2025] r., Załącznik B.[101]: Leczenie pacjentów z zaburzeniami lipidowymi (ICD-[10]: E[78.01], I[21], I[22], I[25]). Dziennik Urzędowy Ministra Zdrowia

PL [3.1] Solnica, B., Sygitowicz, G., Sitkiewicz, D., Jóźwiak, J., Kasperczyk, S., Broncel, M., Wolska, A., Odrowąż-Sypniewska, G., & Banach, M. (2024). [2024] Guidelines of the Polish Society of Laboratory Diagnostics and the Polish Lipid Association on laboratory diagnostics of lipid metabolism disorders. Archives of Medical Science, [20(2)], 357-374

PL [3.2] Polskie Towarzystwo Kardiologiczne. (n.d.). Wytyczne. Retrieved November [10, 2025]

PL [3.3] Myśliwiec, M., Bandura, M., Wołoszyn-Durkiewicz, A., Hennig, M., Walczak, M., Peregud-Pogorzelski, J., … Banach, M. (2024). [2024] Polish recommendations for the management of familial hypercholesterolemia in children and adolescents. Archives of Medical Science, [20(6)], 1741-1753

PL [3.4] Mitkowski, P., Witkowski, A., Stępińska, J., Banach, M., Jankowski, P., Gąsior, M., Wita, K., Bartuś, S., Burchardt, P., Farkowski, M. M., Gierlotka, M., Gil, R., Leszek, P., Sterliński, M., Szymański, P., Tajstra, M., Tycińska, A., & Wojakowski, W. (2023). Position of the Polish Cardiac Society on therapeutic targets for LDL-cholesterol concentrations in secondary prevention of myocardial infarctions. Polish Heart Journal (Kardiologia Polska), [81(7-8)], 818-82

PL [4.1] Narodowy Fundusz Zdrowia. (2025, September [11]). Finansowanie koordynatora w POZ: było, jest i będzie. Retrieved November [10, 2025]

PL [4.2] PwC Switzerland, & INFARMA. (2025). Towards better cardiovascular health in Poland / W kierunku poprawy stanu zdrowia sercowo-naczyniowego w Polsce. Retrieved November [10, 2025]

PL [4.3] Narodowy Fundusz Zdrowia. (2025, June [30]). Raport końcowy z realizacji programu pilotażowego opieki nad świadczeniobiorcą w ramach sieci kardiologicznej za lata [2021-2024]

PL [4.4] Narodowy Fundusz Zdrowia. (n.d.). Akademia NFZ. Układ krążenia. Retrieved November [10, 2025]

PL [4.5] Servier dla Serca (Kampania „Rób TO Regularnie"). (n.d.). Retrieved November [10, 2025]

PL [4.6] Kampania „Za Głosem Serca". (n.d.). Za głosem serca. Retrieved November [10, 2025]

PL [4.7] Centrum e-Zdrowia. (2025, July [18]). [10] dla Serca – nowe narzędzie w aplikacji mojeIKP. Retrieved November [10, 2025]

PL [5.1] B[101]. (n.d.). Platforma B[101]: Leczenie pacjentów z zaburzeniami lipidowymi. Retrieved November [10, 2025]

PL [5.2] Polskie Towarzystwo Kardiologiczne. (n.d.). Edukacja dla lekarzy. Retrieved November [10, 2025]

# SPAIN

ES [1.2] Ministerio de Sanidad. (2021). Sistema de Información de Atención Especializada (SIAE). Informe [2020]. Gobierno de España. https://www.sanidad.gob.es/estadEstudios/estadisticas/docs/TablasSIAE[2020]/INFORME_SIAE_[2020].pdf

ES [1.3] Dégano, I., Elosua, R., & Marrugat, J. (2013). Epidemiology of acute coronary syndromes in Spain: estimation of the number of cases and trends from [2005] to [2049]. Revista española de cardiología (English ed.), [66(6)], 472_481. https://doi.org/[10.1016]/j.rec.[2013.01.018]

ES [1.4] Rodriguez-Padial, L., Elola, F. J., Fernández-Pérez, C., Bernal, J. L., Iñiguez, A., Segura, J. V., & Bertomeu, V. (2017). Patterns of inpatient care for acute myocardial infarction and [30]-day, [3]-month and [1]-year cardiac diseases readmission rates in Spain. International journal of cardiology, [230], 14_20. https://doi.org/[10.1016]/j.ijcard.[2016.12.121]

ES 2.1 Ministerio de Sanidad. (2022). Estrategia en Salud Cardiovascular del Sistema Nacional de Salud (ESCAV).

ES 2.2 Bueno, H., et al. (2025). Development and rollout of a national plan on cardiovascular health: Spain's cardiovascular health strategy (ESCAV). Revista Española de Cardiología, 78(7), 628–636. https://doi.org/10.1016/j.rec.2024.04.003

ES 2.3 Mostaza, J. M., Pintó, X., Armario, P., Masana, L., Real, J. T., Valdivielso, P., … Martínez-Hervás, S. (2024). «SEA 2024 Standards for Global Control of Vascular Risk». Clínica e Investigación en Arteriosclerosis (English Edition), 36(3), 133-194. https://doi.org/10.1016/j.artere.2024.06.001

ES 2.4 Sociedad Andaluza de Cardiología. (2023). FARO: Prevención secundaria de la enfermedad vascular aterosclerótica (EVA) en Andalucía: Documento de posicionamiento interdisciplinario [PDF]. https://www.sacardiologia.com/docs/faro.pdf

ES 2.5 Sociedad Valenciana de Cardiología. (n.d.). PROCORC: Programa PROCORC en el manejo del paciente tras síndrome coronario agudo. Retrieved from https://svcardio.org/procorc-contenido

ES 2.6 European Federation of Pharmaceutical Industries and Associations (EFPIA) & Farmaindustria. (2023, June). Towards better cardiovascular health in Spain: English version [PDF]. Retrieved from https://www.farmaindustria.es/web/wp-content/uploads/sites/2/2023/06/EFPIAFIPwC-Towards-better-cardiovascular-health-in-Spain-English-version.pdf

ES 2.7 EIT Health. (2024, December 16). Implementation of the European Health Data Space in Spain: Is it really feasible? [PDF]. Retrieved from https://www.eit.europa.eu/sites/default/files/2024-12/Report%20EHDS_Spain_ENG.pdf

ES 2.8 Sociedad Española de Cardiología. (2024). Informe RECALCAR 2024 [PDF]. Retrieved from https://secardiologia.es/images/institucional/sec-calidad/sec-recalcar/Informe_RECALCAR_2024.pdf

ES 2.9 Sociedad Española de Arteriosclerosis. (n.d.). Unidades de lípidos [Web page]. Retrieved from https://www.sea-arteriosclerosis.org/unidades-de-lipidos-sea

# SWITZERLAND

CH. 1.1. Swiss Health Observatory. (n.d.). Cardiovascular diseases (CVD). Obsan. https://ind.obsan.admin.ch/en/monam/topic/1HRZ

CH. 1.2. ANQ (Nationaler Verein für Qualitätsentwicklung in Spitälern und Kliniken). (2024). Kardiale Rehabilitation: Nationaler Vergleichsbericht 2023. ANQ. https://www.anq.ch/wp-content/uploads/2024/12/ANQreha_Kardiale-Rehabilitation_Nationaler-Vergleichsbericht_2023.pdf

CH. 1.3 ANQ (Nationaler Verein für Qualitätsentwicklung in Spitälern und Kliniken). (2024). Kardiale Rehabilitation: Nationaler Vergleichsbericht 2021. ANQ. https://www.anq.ch/wp-content/uploads/2024/10/ANQreha_Kardiale-Rehabilitation_Nationaler-Vergleichsbericht_2021.pdf

CH 1.4. ANQ (Nationaler Verein für Qualitätsentwicklung in Spitälern und Kliniken). (n.d.). Überblick Weiterentwicklung Patientenerfahrung. ANQ. https://www.anq.ch/de/fachbereiche/akutsomatik/messinformation-akutsomatik/patientenerfahrung/ueberblick-weiterentwicklung-patientenerfahrung/

CH 1.5. amis plus. (n.d.). amis plus. amis plus. https://amis-plus.ch/

CH. 2.1 Walder Wyss. (2024, August 21). FOPH: Federal Council extends National Strategy for Non-Communicable Disease Prevention and National Addiction Strategy until 2028. Walder Wyss. https://www.walderwyss.com/de/news/2024-08-21_foph-federal-council-extends-national-strategy-for-non-communicable-disease-prevention-and-national-addiction-strategy-until-2028

CH. 2.2. Public Health Services. (n.d.). Summary of the strategy for cardiovascular diseases. Public Health Services. https://public-health-services.ch/wp-content/uploads/summary_strategy_cvd.pdf

CH. 2.3. Public Health Services. (n.d.). Nationale Strategie HGHG 2017-2024. Public Health Services. https://public-health-services.ch/wp-content/uploads/d-_final_nationale_strategie_hghd_2017-2024.pdf

CH. 2.4. Swiss Health Observatory (Obsan). (n.d.). Expenditure on prevention and health promotion by financing scheme. Swiss Health Observatory (Obsan). https://ind.obsan.admin.ch/en/indicator/monam/expenditure-on-prevention-and-health-promotion-by-financing-scheme

CH [2.5.] Organisation for Economic Co-operation and Development [(2006).] OECD Reviews of Health Systems: Switzerland [2006.] OECD Publishing. https://www.oecd.org/content/dam/oecd/de/publications/reports/[2006]/[10]/oecd-reviews-of-health-systems-switzerland-[2006]_g[1]gh[6]bfb/[9789264030237]-de.pdf

CH. [2.6.] Versicherung-Schweiz.ch. [(n.d.).] Leistungen der Grundversicherung. Versicherung-Schweiz.ch. https://www.versicherung-schweiz.ch/krankenkasse/grundversicherung/leistungen

CH. [2.7.] Federal Office of Public Health [(FOPH)] and Swiss Health Observatory [(Obsan).] [(n.d.).] Indicator _[086]: Hospital admissions for selected chronic diseases. Versorgungsatlas.ch. https://www.versorgungsatlas.ch/en/indicator/_[086]

CH. [2.8.] Bundesamt für Gesundheit [(BAG).] [(n.d.).] Krankenversicherung: Leistungen und Tarife. Bundesamt für Gesundheit [(BAG).] https://www.bag.admin.ch/de/krankenversicherung-leistungen-und-tarife

CH. [2.9.] Krankenkasse-wechseln-schweiz.ch. [(n.d.).] Leistungen. Krankenkasse-wechseln-schweiz.ch. https://www.krankenkasse-wechseln-schweiz.ch/leistungen

CH. [2.10.] Helsana. [(n.d.).] Medikamente. Helsana. https://www.helsana.ch/de/private/wissen/krankenversicherung/medikamente.html

CH. [2.11.] Comparis.ch. [(n.d.).] Krankenpflegeversicherung. Comparis.ch. https://www.comparis.ch/krankenkassen/grundversicherungen/krankenpflegeversicherung

CH. [2.12.] Sudano, I., Krähenbühl, S., Mach, F., et al. [(2024).] Evolocumab use in clinical practice in Switzerland: final data of the observational HEYMANS cohort study. Therapeutic Advances in Cardiovascular Disease, [18.] https://doi.org/[10.1177]/[17539447231213288]

CH. [3.1.] Swiss Society of Cardiology. [(n.d.).] Guidelines. https://swisscardiac.org/Guidelines

CH. [3.2.] University of Bern, Institute of Social and Preventive Medicine. [(n.d.).] ESC Guidelines on cardiovascular disease prevention in clinical practice launched today. Retrieved November [17, 2025,] from https://www.ispm.unibe.ch/about_us/news/esc_guidelines_on_cardiovascular_disease_prevention_in_clinical_practice_launched_today/index_eng.html

CH. [3.3.] AGLA - Arbeitsgruppe Lipide und Atherosklerose. [(n.d.).] Prävention der Atherosklerose. Retrieved November [17, 2025,] from https://agla.ch/de/empfehlungen/praevention-der-atherosklerose

CH. [3.4.] Zürcher Lipid-Stoffwechsel-Gesellschaft [(ZLMSG).] [(2018).] Familiäre Hypercholesterinämie – Diagnose und Therapie. https://zlmsg.ch/wp-content/uploads/[2019]/[02]/[2018]_Familiaere_Hypercholesterinaemie_-_Diagnose_und_Therapie.pdf

CH. [3.5.] Schweizerische Gesellschaft für Präventivkardiologie und Rehabilitation [(SCPRS).] [(n.d.).] Aspekte. Retrieved November [17, 2025,] from https://www.scprs.ch/public/richtlinien/aspekte_deutsch.html

CH. [3.6.] Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften [(AWMF).] [(2020).] S[3]-Leitlinie Kardiologische Rehabilitation in D-A-CH. https://www.herzwegweiser.de/fileadmin/Dateien/user_upload/S[3]-Leitlinie_Kardiologische-Rehabilitation-in-D-A-CH_[2020-01].pdf

CH. [3.7.] Foederatio Medicorum Helveticorum [(FMH).] [(n.d.).] Guidelines. Retrieved November [17, 2025,] from https://www.guidelines.fmh.ch/

CH. [3.8.] Egger, M., & Schär, M. [(2023).] The role of digital health technologies in enhancing patient engagement and outcomes: A systematic review. Digital Health, [9.] https://doi.org/[10.1177]/[20552076231191839]

CH. [3.9.] Swiss Cardiac Society. [(n.d.).] Guidelines. Retrieved November [17, 2025,] from https://swisscardiac.org/Guidelines

CH. [3.10.] Meier, D. et al., [(2023).] Neue AGLA-Empfehlungen: Mehr Optionen in der Sekundärprävention [New AGLA recommendations: More options in secondary prevention]. ARS MEDICI, [3, 110]–[113.] https://www.rosenfluh.ch/media/arsmedici/[2023]/[03]/Neue-AGLA-Empfehlungen-Mehr-Optionen-in-der-Sekundaerpraeventionpdf

CH. [3.11.] Müller-Staub, M., Needham, I., O'Flynn, N., & van Achterberg, T. [(2017).] The clinical nurse specialist in Switzerland: A national survey on role, practice, and education. Clinical Nurse Specialist, [31(1), 34–42.] https://doi.org/[10.1097]/[NUR.0000000000000259]

CH. [4.1.] Konferenz der kantonalen Gesundheitsdirektorinnen und -direktoren [(GDK-CDS).] [(n.d.).] Integrierte Versorgung. Retrieved November [17, 2025,] from https://www.gdk-cds.ch/de/gesundheitsversorgung/integrierte-versorgung

CH. [4.2.] University Hospital Zurich [(USZ).] [(n.d.).] Preventive Cardiology. Retrieved November [17, 2025,] from https://www.usz.ch/en/department/cardiology/service/preventive-cardiology/

CH. 4.3. Arbeitsgruppe Lipide und Atherosklerose (AGLA). (n.d.). AGLA - Arbeitsgruppe Lipide und Atherosklerose. Retrieved November 17, 2025, from https://agla.ch/de

CH. 4.4. Inselspital, Universitätsspital Bern. (n.d.). Fellowship Secondary Prevention and Cardiac Rehabilitation. Retrieved November 17, 2025, from https://rehasportmedizin.insel.ch/de/lehre-und-forschung/aus-und-weiterbildung/fellowship-secondary-prevention-and-cardiac-rehabilitation

CH. 4.5. eHealth Suisse. (n.d.). The EPR. Retrieved November 17, 2025, from https://www.e-health-suisse.ch/en/coordination/electronic-patient-record/the-epr

CH. 4.6. gfs.bern. (2025, January 17). Swiss eHealth Barometer 2025. gfs.bern. https://www.gfsbern.ch/en/news/swiss-ehealth-barometer-2025/

CH. 4.7. Böning, D., & Maassen, N. (2002). Training in Hypoxia. German Journal of Sports Medicine, 53(5), 130–134. https://www.germanjournalsportsmedicine.com/fileadmin/content/archiv2002/heft05/a01_0205.pdf

CH. 4.8. SAGES - Swiss Academy of General Internal Medicine. (2022, May). Report Forgoing Healthcare in Switzerland. https://www.sages.ch/wp-content/uploads/2022/05/Report-Forgoing-Healthcare-in-Switzerland.pdf

CH. 4.9. Schmid, H., Gutscher, H., & Held, L. (2012). Forgoing healthcare in Switzerland: a cross-sectional study. BMC Public Health, 12(1), 246. https://doi.org/10.1186/1471-2458-12-246

CH. 4.10. Schweizerische Gesellschaft für Sportphysiotherapie (SGSP), & Schweizerische Gesellschaft für Sportmedizin (SGSM). (2023). REHATRAIN Fact Sheets. https://www.scprs.ch/DOCS_PUBLIC/Dokumente/REHATRAIN%20Fact%20Sheets.pdf

CH. 4.11. AGLA (Arbeitsgruppe für Lipide und Atherosklerose). (n.d.). Ziele. Retrieved 17 November 2025, from https://agla.ch/de/uber-die-agla/ziele

CH. 4.12. Koch, D., Kissling, T., Meier, P., Stoffel, U., Luterbacher, J., & Scheidegger, D. (2025). Cholesterin-Management in der Schweizer Hausarztpraxis: Ergebnisse einer Umfrage. PRAXIS, 114(3), 125–132. https://www.mein-cholesterin.ch/wp-content/uploads/2025/04/Publikation_Umfrageauswertung_PRAXIS-2025-114-3.pdf

CH. 4.13. Schmid, H., Gutscher, H., & Held, L. (2022). Forgoing healthcare in Switzerland: a cross-sectional study. BMC Public Health, 22(1), 2079. https://doi.org/10.1186/s12889-022-14497-x

CH. 4.14. Sørensen, K., Pelikan, J. M., Röthlin, F., Gutscher, H., & Held, L. (2024). Health literacy and health outcomes: a systematic review and meta-analysis of longitudinal studies. BMC Public Health, 24(1), 2465. https://doi.org/10.1186/s12889-024-19999-z

CH. 5.1. Visseren, F. L. J., et al.; (2023). 2021 ESC Guidelines on cardiovascular disease prevention in clinical practice: Developed by the Task Force for cardiovascular disease prevention in clinical practice with representatives of the European Society of Cardiology and 12 medical societies. European Journal of Preventive Cardiology, 30(14), 1473–1567. https://doi.org/10.1093/eurjpc/zwad124

CH. 5.2. MedizinOnline.com. (n.d.). CVD Prevention: The Importance of Early Detection and Lifestyle Changes. https://medizinonline.com/en/cvd-prevention/

CH. 5.3. HUG (Hôpitaux Universitaires de Genève). (2024, May 17). High cholesterol: Swiss cardiology leads new international recommendations. https://www.hug.ch/en/medias/press-release/high-cholesterol-swiss-cardiology-leads-new-international-recommendations

CH. 5.4. Kaur, H., Singh, S., Singh, A., & Singh, A. (2022). Artificial intelligence in healthcare: A review. Journal of Medical Systems, 46(12), 89. https://doi.org/10.1007/s10916-022-01878-x

CH. 5.5. MedizinOnline. (2024, May 17). Add-on to statin therapy recommended in patients at high cardiovascular risk. MedizinOnline. https://medizinonline.com/en/add-on-to-statin-therapy-recommended-in-patients-at-high-cardiovascular-risk/

CH. 5.6. Al-Kuraishy, H. M., et al.; (2022). The pleiotropic effects of statins: A review. Journal of Cardiovascular Disease Research, 13(1), 1–10. https://doi.org/10.31031/jcdr.2022.13.00751

CH. 5.7. Swissmedic. (2024, March 1). Public Summary SwissPAR Leqvio. Swissmedic. https://www.swissmedic.ch/swissmedic/en/home/about-us/publications/public-summary-swiss-par/public-summary-swiss-par-leqvio.html

# UNITED KINGDOM

UK. [1.2.] NHS England. (2025). Quality Outcomes Framework for 2025/26.

UK. [1.3.] National Institute for Cardiovascular Outcomes Research (NICOR). National Cardiac Audit Programme. Myocardial Ischaemia National Audit Project (MINAP). Last accessed online (12.11.2025): https://www.nicor.org.uk/national-cardiac-audit-programme/heart-attack-audit-minap?cn-reloaded=1

UK. [1.5.] NHS England Digital (2025). National Audit of Cardiac Rehabilitation (NACR). Last accessed online (12.11.2025): https://digital.nhs.uk/data-and-information/clinical-audits-and-registries/national-audit-of-cardiac-rehabilitation#what-does-it-measure

UK. [2.2.] Department of Health and Social Care. (July 2025). Fit for the Future: The 10 Year Health Plan for England. Pg 86-91.

UK. [2.8.] National Institute for Health and Care Excellence (NICE). (2023). Cardiovascular disease: risk assessment and reduction, including lipid modification (NICE Guideline 238). Last accessed online (12.11.2025): https://www.nice.org.uk/guidance/ng238

UK. [2.10.] NHS England. CVDPREVENT. Last accessed online (12.11.2025): https://www.england.nhs.uk/ourwork/clinical-policy/cvd/cvdprevent/

UK. [3.6.] NHS England. (2024). Lipid optimisation pathway: secondary prevention in primary care and the community. Last accessed online (12.11.2025): https://www.england.nhs.uk/long-read/lipid-optimisation-pathway-secondary-prevention-in-primary-care-and-the-community/

UK. [5.5.] National Institute for Health and Care Excellence (NICE). (2016). Alirocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia (Technology appraisal guidance 393).

UK. [5.6.] National Institute for Health and Care Excellence (NICE). (2016). Evolocumab for treating primary hypercholesterolaemia and mixed dyslipidaemia (Technology appraisal guidance 394).

UK. [5.7.] National Institute for Health and Care Excellence (NICE). (2021). Inclisiran for treating primary hypercholesterolaemia or mixed dyslipidaemia (Technology appraisal guidance 733).

UK. [6.1.] British Heart Foundation. (June 2025). Heart and Circulatory Disease Statistics 2025. Table 1.15. Last access online (2.12.2025): Heart & Circulatory Disease Statistics 2025

UK. [6.2.] NHS England Digital. (2025). Hospital Accident and Emergency Activity, 2024-25; ECDS National Report Tables. Last access online (2.12.3035): AE2425_ECDS_National_Data_Tables.xlsx

UK. [6.3.] Wang et al. The Prevalence of 30-day readmission after acute myocardial infarction: A systematic review and meta-analysis.

UK. [6.4.] Office for Health Improvements & Disparities. CVDPREVENT Data Explorer (CVDP012CHOL). Last accessed online (2.12.2025): https://data.cvdprevent.nhs.uk/data-explorer?period=26&level=1&area=1&indicator=54

UK. [6.5.] Ray, Kausik K. et al. (2023). Treatment gaps in the implementation of LDL cholesterol control among high- and very high-risk patients in Europe between 2020 and 2021: the multinational observational SANTORINI study. Figure 3. Last accessed online (2.12.2025): https://www.thelancet.com/journals/lanepe/article/PIIS2666-7762(23)00043-1/fulltext