ESC EUROHEART REPORT 2025

ESC
European Society of Cardiology

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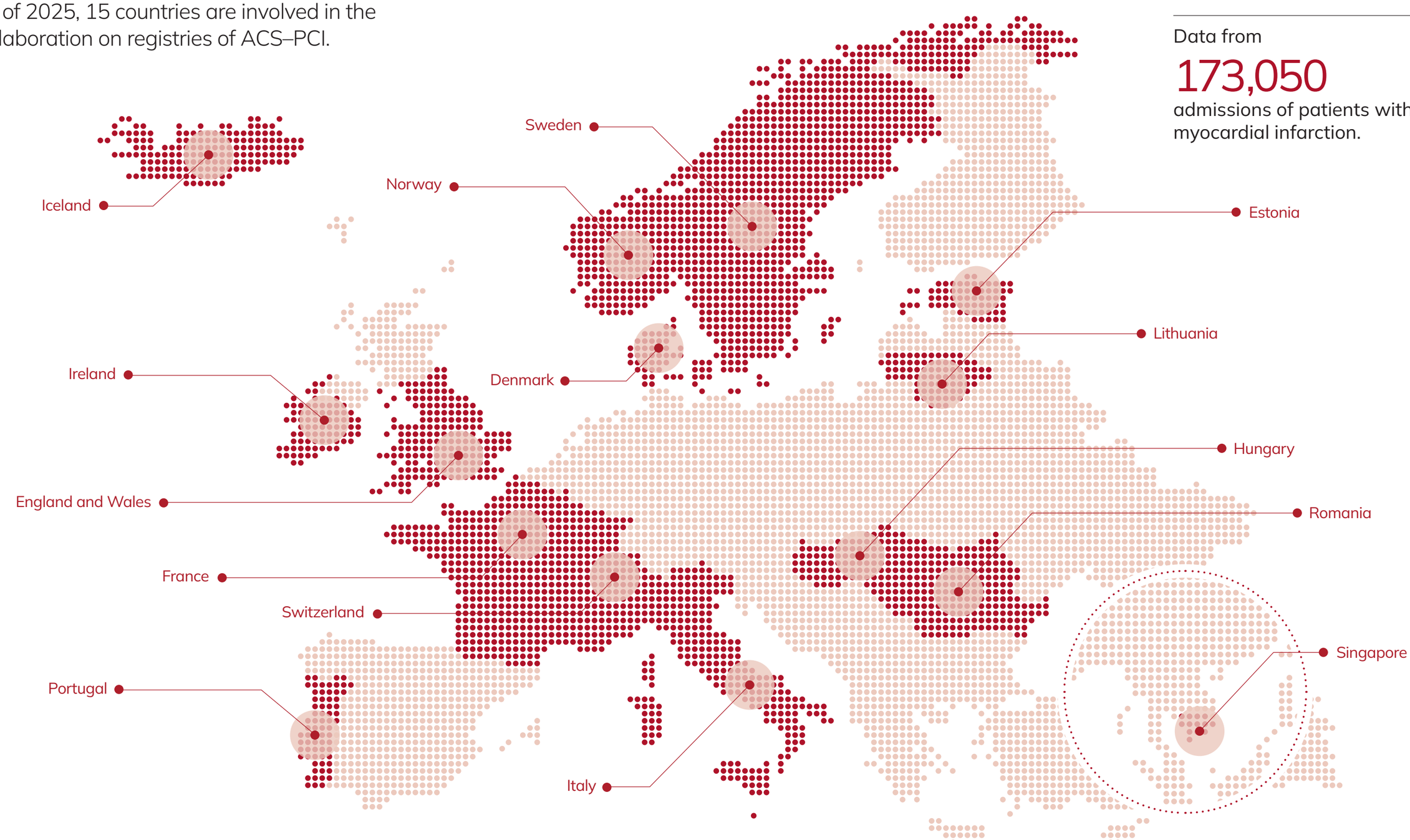
EUROHEART REPORT 2025

EuroHeart is a collaboration between national quality registries in cardiovascular care across Europe, coordinated and supported by the ESC.
As of 2025, 15 countries are involved in the collaboration on registries of ACS–PCI.



Data from

173,050

admissions of patients with myocardial infarction.

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Table of Abbreviations

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ACE inhibitors	Angiotensin-converting enzyme inhibitors
ACS	Acute coronary syndrome
ARB	Angiotensin receptor blockers
ARNI	Angiotensin receptor-neprilysin inhibitor
CABG	Coronary artery bypass graft
CKD	Chronic kidney disease
COPD	Chronic obstructive pulmonary disease
CRT	Cardiac resynchronisation treatment
ECG	Electrocardiogram
ESC	European Society of Cardiology
EU	European Union
EuroHeart	European Unified Registries On Heart Care Evaluation and Randomised Trials
GLP-1	Glucagon-like peptide 1
IT	Information technology
IQR	Interquartile range
LDL	Low-density lipoprotein
LVEF	Left ventricular ejection fraction
MI	Myocardial infarction
NSTEMI	Non-ST-elevation myocardial infarction
PCI	Percutaneous coronary intervention
PROMs	Patient Reported Outcome Measurements
QI	Quality indicator
RCT	Randomised controlled trial
R-RCT	Registry-based randomised controlled trial
SD	Standard deviation
SGLT-2	Sodium-glucose transport protein 2
STEMI	ST-elevation myocardial infarction
TAVI	Transcatheter aortic valve implantation

Introduction

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EuroHeart is a collaboration between national quality registries in cardiovascular care across Europe, coordinated and supported by the ESC.[1,2] Its aim is to improve cardiovascular care through continuous monitoring and comparison of patients, disease conditions, diagnostics, interventional and medical treatments, and outcomes for common heart conditions within and between different European countries. The initiative also seeks to utilise EuroHeart's international network of national quality registries for research studies, including prospective registry-based randomised clinical trials, safety studies of new implants and drugs, and observational studies to generate real-world evidence on the effectiveness and side effects of established treatment strategies in different patient groups.

Figure 1. EuroHeart mission and network concept

EuroHeart Mission

- Develop and maintain an international collaboration of countries with continuous online registration of high-quality, harmonised patient data at admission and over time supporting continuous improvement of care and outcomes in patients with common cardsiovascular diseases.
- Create an international infrastructure for cost-effective safety surveillance of new drugs and devices and registry-based randomised clinical trials in a representative populations across multiple geographies.

DISEASE CONDITIONS AND INTERVENTIONS INCLUDED IN THE COLLABORATION

Currently, the collaboration includes registries on patients with:

- Acute coronary syndrome (ACS) and/or percutaneous coronary intervention (PCI) – annual reports available in 2023, 2024 and 2025.
- Valvular heart disease and transcatheter aortic valve procedures – first annual report planned for 2026.

Over the next few years, the collaboration will also include registries on patients with:

- Heart failure, resynchronisation therapy (CRT), and implanted defibrillators – first annual report planned for 2027.
- Atrial fibrillation/flutter and ablation.

EUROHEART DATA STANDARDS

Registration is based on 70–100 standardised mandatory variables per disease condition. The selection and definitions of the included disease- and treatment-related variables and outcomes have been developed and published by EuroHeart, in collaboration with participating registries and other stakeholders in each disease area.[3-8] The evaluation of quality of care is based on adherence to the ESC guidelines and agreed quality indicators.

PARTICIPATING COUNTRIES

As of 2025, 15 countries are involved in the collaboration on registries of ACS–PCI, as shown in the map in Figure 2. Countries may participate either with a national registry covering the entire country, with a limited number of hospitals in a specific region, or with a selection of representative hospitals distributed across different areas of the country. The guiding principle is that participating hospitals register consecutive patients with the specific diagnosis, without any further selection criteria.

Figure 2. EuroHeart countries (as of May 2025)

EuroHeart Network 2025

1. Denmark
2. England and Wales
3. Estonia
4. France
5. Hungary
6. Iceland
7. Ireland
8. Italy
9. Lithuania
10. Norway
11. Portugal
12. Romania
13. Switzerland
14. Singapore
15. Sweden

PERFORMANCE OF REGISTRATION

Consecutive patients admitted to participating hospitals are registered in internet-based online forms or have corresponding data extracted from electronic health records, as close to the care event as possible. Care providers may use either EuroHeart's specially designed IT platform or any national system containing the same variables and providing similar reporting functionalities. Outcomes are usually obtained by linking to other national registries or, if necessary, through direct contact with patients or care providers. Currently, this approach has resulted in approximately 400,000 patients with acute myocardial infarction being recorded between 2022 and 2024, forming the basis for the evaluation of quality of care for myocardial infarction in this EuroHeart Annual Report 2025.

PROTECTION OF DATA INTEGRITY AND PRIVACY IN ACCORDANCE WITH GDPR

Each country retains full responsibility for its own registration, data, and databases. No individual-level data are transferred between countries. Each country contributes to the collaborative results by performing mutually agreed analyses of its own data and sharing aggregated results with EuroHeart.

BENEFITS FOR PARTICIPATING HOSPITALS

The EuroHeart collaboration encourages and supports countries to initiate and/or maintain national registries involving participating hospitals as part of a national quality improvement programme aligned with EuroHeart data standards. Participation enables monitoring of care processes for different patient groups and comparisons with national performance metrics and European

EUROHEART REPORT 2025

Introduction

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benchmarks, guidelines, and quality indicators. Participating hospitals are also invited to join and contribute to research and development projects, including registry-based randomised trials (R-RCTs), evaluating the effectiveness and safety of both new and established treatments. In doing so, EuroHeart contributes to reducing care disparities within and between participating countries and generates new knowledge on established and emerging treatment strategies.

> The EuroHeart collaboration is currently planning and preparing its first collaborative R-RCT, with participation from all countries able to adapt their registry environment to a clinical trial setting.

PLANNING OF REGISTRY-BASED RANDOMISED CLINICAL TRIALS

Over the last decade, R-RCTs have emerged as a cost-effective complement and alternative to conventional RCTs for providing evidence on many unanswered questions in cardiovascular care, raised by clinical investigators, healthcare authorities, or the industry. Embedding a trial in a prospective national registry allows the recruitment and randomisation of unselected consecutive patients as part of routine care, utilising the registry as the main component of the case-record form, and obtaining outcome information by linking with other national healthcare registries.

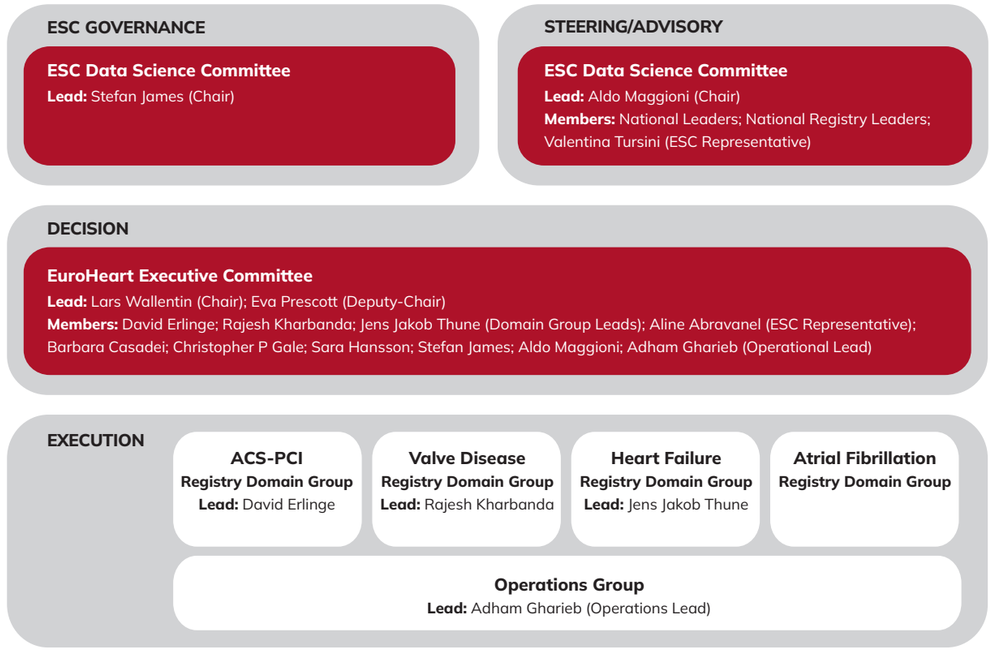
The EuroHeart collaboration is currently planning and preparing its first collaborative R-RCT, with participation from all countries able to adapt their registry environment to a clinical trial setting. To support this, EuroHeart is developing an infrastructure, including a dedicated study application for randomisation and an eCRF that accepts data both by direct entry and via transfer from national registries and other data sources, allowing participation of countries and centres with differing local infrastructures.

EUROHEART GOVERNANCE 2025

EuroHeart began in 2019 as a pilot project at the suggestion of Prof Barbara Casadei (Oxford, UK), then President of the European Society of Cardiology (ESC). The project's initial development from 2019 to 2024 was led by Prof Lars Wallentin (Uppsala, Sweden) and Prof Barbara Casadei as co-chairs, along with Prof Christopher P. Gale (Leeds, UK), Prof Aldo Maggioni (Milan, Italy), and Prof Stefan James (Uppsala, Sweden).

As of 2025, the project has transitioned into a permanent activity organised under the ESC Data Science Committee. The current central organisation of EuroHeart is outlined in Figure 3. The ESC closely collaborates with the National Registry Leaders, who are members of the National Leaders Committee. The National Leaders have full responsibility for all activities in their respective national registries and participate in different collaborative EuroHeart activities. EuroHeart is one of several data-related initiatives overseen and coordinated by the ESC Data Science Committee.

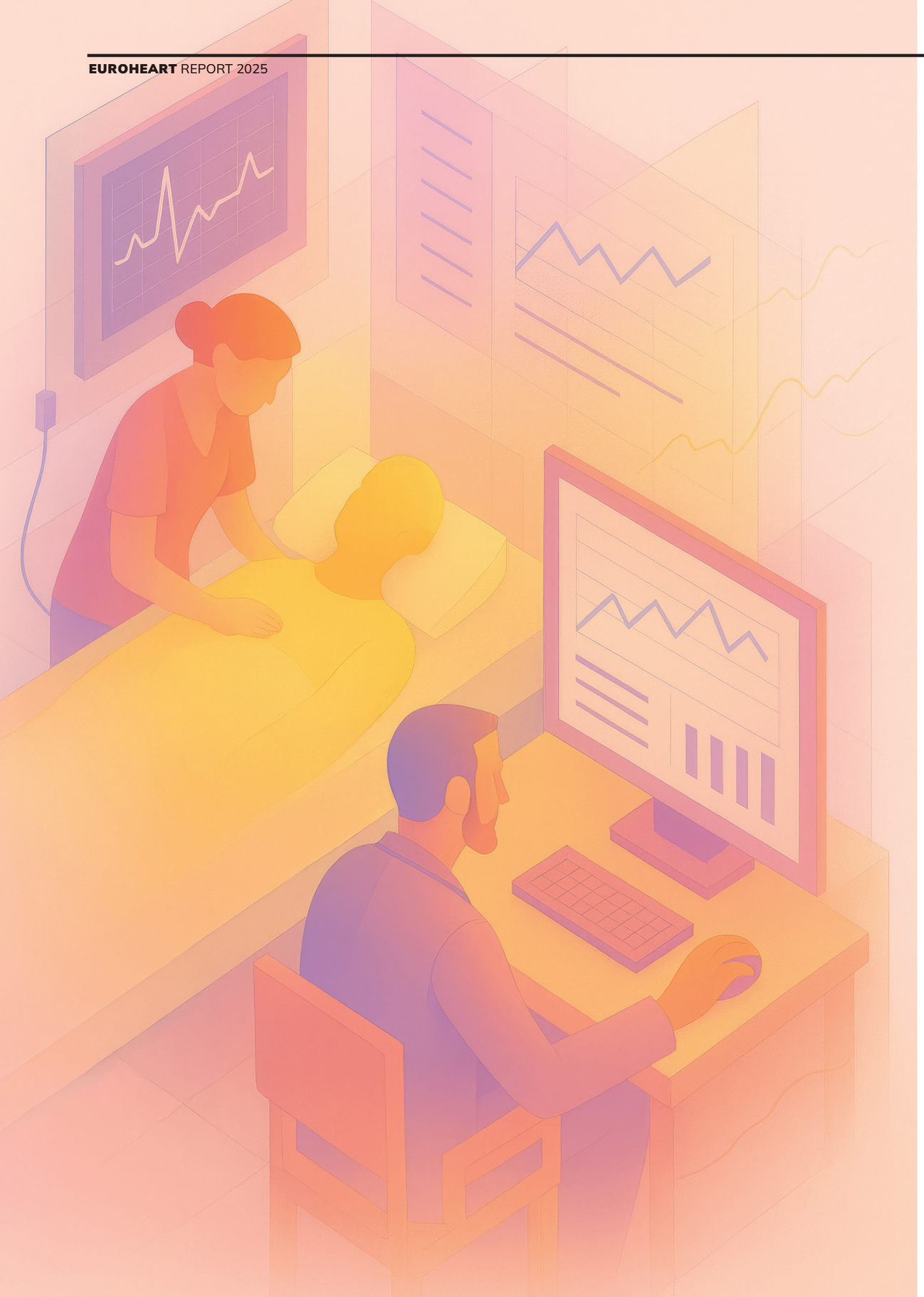
Figure 3. EuroHeart governance in 2025



FOCUS AREAS FOR EUROHEART IN 2025 AND ONWARDS

From 2025, the development of EuroHeart will focus on the following activities:

1. Expand and support the network of registries and participating countries.
2. Enhance the use of quality-of-care data and its national and international reporting.
3. Improve national registry coverage, completeness, and data quality.
4. Extend registration to new disease domains, including heart failure.
5. Encourage the use of the EuroHeart IT platform
6. Promote integration of registration with electronic health records.
7. Develop coordinated federated individual-level analyses in national databases, allowing statistical analyses of individual data without transferring data between countries.
8. Generate new real-world evidence through research and publications.
9. Identify areas and prepare for registry-based randomised trials.
10. Explore the possibility of accrediting countries and hospitals via EuroHeart.



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Outline of the EuroHeart Annual Report 2025

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This EuroHeart Annual Report 2025 presents data on 173,050 admissions of patients with myocardial infarction from the thirteen countries providing data for 2024. The report also includes serial data for the years 2022–2024 for countries that contributed data across these years. The results provide detailed information on national registry cohorts of patients with ST-elevation (STEMI) and non-ST-elevation myocardial infarction (NSTEMI), including their characteristics, treatments with percutaneous coronary interventions (PCI), medications, and in-hospital outcomes.

The aggregated information has been stratified into 86 different subsets based on diagnosis, age group, sex, and diabetes, thereby beginning to provide an atlas of the current standards of care for the treatment of ACS and PCI in Europe. The transparent presentation of similarities and differences in the data from the various national cohorts is intended to foster a culture focused on quality improvement in patient care, as well as on coverage and completeness of registration.

OBJECTIVES

The objectives of the current report were, in relation to country, diagnosis (STEMI, NSTEMI), sex, diabetes, and age groups, to describe:

1. Patient and disease characteristics
2. In-hospital interventional treatments
3. Pharmaceutical treatments at discharge
4. In-hospital outcomes
5. Adherence to ESC quality indicators for acute myocardial infarction
6. Changes in cohorts and treatments over time

Figure 4. EuroHeart data on ACS–PCI, 2022–2024

EuroHeart ACS-PCI
Aggregated data 2022-2024

Year	Countries	STEMI	NSTEMI	All MI
2022	6	38,594	67,528	106,122
2023	7	44,601	73,329	117,930
2024	**13**	**63,763**	**109,287**	**173,050**
2022-24		146,958	250,144	397,102

Summary of the results

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SUMMARISING CONCLUSIONS FROM THE EUROHEART ANNUAL REPORT 2025

- The EuroHeart collaboration provides internationally standardised data and allows continuous monitoring and comparison of quality of care within and between participating hospitals and countries, now covering around half of Europe.
- The results from 2022–2024 document the generally high standards of care and adherence to ESC guidelines in patients with ACS in the participating countries.
- The detailed statistical report highlights several areas for improvement concerning quality of care and registration that may be implemented and continuously monitored.
- The planned transition of EuroHeart to federated data analyses will improve understanding of differences in treatments and outcomes and identify new areas of research and development.
- The EuroHeart network continuously provides very large numbers of patients suitable for inclusion in R-RCTs.

AREAS OF IMPROVEMENT BASED ON THE EUROHEART ANNUAL REPORT 2025

- Improve the utility of EuroHeart aggregated data through an online interactive tool.
- Enhance coverage of patients and completeness of data from several countries.
- Emphasise the importance of primary and secondary prevention, focusing on non-smoking in younger age groups and on the identification and treatment of hypertension, myocardial and renal dysfunction in the elderly, and in patients with diabetes.
- Monitor and further reduce delays to reperfusion in STEMI across most countries.
- Investigate the optimal timing of invasive treatment in NSTEMI.
- Optimise lipid-lowering treatment by emphasising the utility of routine LDL cholesterol measurements and adherence to guideline-recommended treatment targets.
- Improve routine investigation of left ventricular ejection fraction (LVEF) and expand the utilisation of ACE inhibitors/ARBs in NSTEMI.
- Increase the utilisation of SGLT2 inhibitors and/or GLP-1 receptor agonists in patients with emerging indications.

Outline of the EuroHeart Annual Report 2025

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OBSERVATIONS ON **PATIENTS WITH STEMI**

1. Variability in cardiovascular risk factors, e.g., smoking, hypertension, diabetes, and chronic kidney disease (CKD), across countries.
2. Almost all patients (95%) receive reperfusion treatment across country cohorts.
3. The vast majority (87%) are treated with PCI using arterial access during their hospital stay.
4. Delay times to reperfusion treatment could be improved in many countries.
5. The use of dual antiplatelet therapy is very high across countries, but the choice of $P2Y_{12}$ inhibitor is variable.
6. Lipid-lowering with statins is very high, but the use of other lipid-lowering treatments is variable.
7. The use of beta-blockers is high and stable over the years.
8. Heart failure treatment with ACE inhibitors/ARBs is similar across countries, but SGLT2 inhibition is variable.
9. Medical treatment of diabetes varies between country cohorts.
10. Lengths of hospital stay vary between countries.

In summary

In all countries, patients with STEMI receive reperfusion treatment, and the vast majority undergo a PCI procedure, receive dual antiplatelet therapy, beta-blockers, and a statin during hospital stay. Areas for improvement include reducing delay times and optimising secondary prevention treatments in most countries.

OBSERVATIONS ON **PATIENTS WITH NSTEMI**

1. Variability in cardiovascular risk factors, e.g., smoking, hypertension, and diabetes, between country cohorts.
2. High rates of prior heart failure and CKD in some countries.
3. Large differences in PCI during hospital stay between country cohorts.
4. Large differences in time to coronary angiography between country cohorts.
5. Differences in platelet inhibitor treatments between country cohorts.
6. Differences in the intensity of lipid-lowering treatment between country cohorts.
7. Variability in beta-blocker and heart failure treatments between country cohorts.
8. Variability in diabetes treatments between country cohorts.

In summary

Patients with NSTEMI are heterogeneous, often older and with more cardiovascular risk factors and comorbidities, contributing to differences in invasive and medical treatments. Further research on optimal treatment in this patient group is urgently needed.

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Fact boxes on different patient categories

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OBSERVATIONS ON THE **INFLUENCE OF AGE**

1. Median age is lower in STEMI than in NSTEMI.
2. Differences in age between country cohorts remain stable over the years.
3. Younger patients have higher rates of current smoking.
4. Older patients have more hypertension, diabetes, prior coronary heart disease, heart failure, and chronic kidney disease (CKD).
5. Older patients have more atrial fibrillation and are more frequently on oral anticoagulation.
6. There is less use of invasive procedures and treatments at advanced age (>80 years).
7. There is modest attrition in the use of some medical treatments in the elderly.
8. In-hospital and 30-day mortality are strongly related to age.

In summary

Risk factors and disease profiles differ by age. In-hospital and 30-day mortality remain high in older patients.

OBSERVATIONS ON **SEX DIFFERENCES**

1. Median age in women is higher than in men for both STEMI and NSTEMI.
2. Current smoking is less common in women.
3. Hypertension is more common in women.
4. Prior myocardial infarction and prior PCI are more common in men.
5. Standards of care are generally high and similar in women and men.
6. PCI treatment during hospital stay is slightly less common in women.
7. Platelet inhibitor treatment is slightly less common in women.
8. 30-day mortality is higher in women than in men.

In summary

Differences between the sexes in patient characteristics, treatments, and outcomes are largely explained by age differences between women and men with MI.

OBSERVATIONS ON **PATIENTS WITH DIABETES**

1. The prevalence of diabetes increases with age and is present in approximately 23% (13–34%) of patients with STEMI and NSTEMI.
2. Age is 1–2 years higher in patients with diabetes.
3. Current smoking is less common in patients with diabetes.
4. Hypertension, prior MI, prior heart failure, and chronic kidney disease (CKD) are more common in patients with diabetes.
5. Standards of care are generally high and similar in patients with and without diabetes.
6. Coronary angiography and PCI treatment during hospital stay are similar in patients with diabetes.
7. Secondary prevention medications at discharge are similar in patients with diabetes.
8. There are large differences in oral antidiabetic medications treatment between countries, e.g., metformin (20–85%), SGLT2 inhibitors (41–78%), and GLP-1 receptor agonists (0–31%).
9. 30-day mortality is higher in patients with diabetes than in those without.

In summary

Standards of care are generally high and similar in patients with and without diabetes. There are large differences in antidiabetic medications between countries. The higher 30-day mortality in patients with diabetes may be partly explained by older age and a greater burden of comorbidities.

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National leaders

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England and Wales

Prof Chris Gale
England & Wales

The Myocardial Ischaemia National Audit Project (MINAP) serves as a powerful, high-resolution data resource that is highly relevant for quality improvement and cardiovascular research across Europe. MINAP is fundamentally an audit tool designed to drive improvements in clinical care. It collects data on the patient journey for admissions with acute coronary syndrome across hospitals in England and Wales. By providing hospitals with benchmarking data against national standards and targets, MINAP enables direct comparison of performance. This feedback mechanism has been a key driver for sustained improvements in quality of care for acute coronary syndrome in the United Kingdom.

Prof Mamas Mamas
England & Wales

The EuroHeart Initiative is critical in allowing for comparison in heart attack services across Europe and their invasive management. it helps our society to identify how our practice aligns with the rest of Europe and importantly where there are areas for improvement. The EH initiative will be critical in helping us to refine our own data collection within our national registry to strengthen our pan-European collaboration and to help define national quality metrics of the future.

Estonia

Dr Alar Irs
Estonia

Estonia has contributed to the ACS domain from the very start of the Euroheart project. We have learned a lot during this project and are ready to expand to other domains. The real-time feedback Euroheart has added to our earlier national myocardial infarction registry has given a very different vibe to our clinical quality improvement efforts in the participating centers. We are open to detailed international and inter-center comparisons, acknowledging the differences in the reported cohort and looking forward to the first joint studies.

France

Dr Grégoire Rangé
France

The France PCI registry was already well-structured and had 10 years of experience when it joined the EuroHeart initiative.

By offering a common data standard, the EH initiative enabled France PCI to harmonize its dataset and make it interoperable with European data, fostering greater collaborative potential and comparative insights. By integrating EH-defined quality indicators and promoting regular outcome measurement, the EuroHeart project has contributed to raising awareness and transparency around clinical performance across centers in France. Participating centers have been able to identify practice variations, benchmark against European standards, and implement targeted quality improvement strategies. EH will also facilitate international research opportunities, enabling France PCI to contribute to and benefit from large-scale observational or RRCT studies.

Prof Bernard Iung
France

The participation of France to EuroHeart in the ACS PCI domain started in 2024 with the France-PCI registry which contributed for more than 25,000 admissions. The participation of France to EuroHeart is a recognition of the commitment of the work of investigators, which is key for data quality. This is also a recognition of the quality of French registries, which is helpful for advocacy with healthcare authorities and for seeking fundings to ensure the continuation of registries. Besides evaluation of practices to improve quality of care, inclusion of national registries in EuroHeart registries contribute to high-quality clinical research based on large contemporary data.

Hungary

Prof Jánosi András
Hungary

The Hungarian Myocardial Infarction Registry (HUMIR) was among the first to join the EuroHeart program, taking these aspects into account, and is the first national registry to have data for the entire country, as data provision has been mandatory in Hungary since 2014 by law. The uniform data structure of the Euroheart program enables the collection of data related to infarction care to be comparable on an international scale, allowing us to monitor the quality parameters of patient care.

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National leaders

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Iceland

Dr Ingibjörg Jóna Guðmundsdóttir
Iceland

In Iceland, we have been collecting data for many years as participants in the SWEDEHEART registry. Our data for PCI was already quite complete and accurate but the Euroheart collaboration made us more focused in other aspects, such as discharge medications and inpatient workup. We believe it is helpful to compare countries of different sizes, geographical location, economy and other factors helping us to better understand the unique challenges and benefits within each country.

Ireland

Dr Peter Kearney
Ireland

Ireland has maintained a STEMI quality registry since 2012, currently managed by the National Office for Clinical Audit, which publishes the Irish Heart Attack Audit. However, other key cardiovascular domains — such as Heart Failure, Valve Disease, Prevention and Rehabilitation —currently lack national registries. EuroHeart provides a unique opportunity for Ireland to engage in international benchmarking and quality improvement through large-scale, standardized data collection across Europe. This year marks our first contribution to the EuroHeart annual report, with data submitted from a single region, and our goal is to expand participation nationwide. Furthermore, we have secured agreement with the National Department of Health to adopt the EuroHeart registry platform as the foundation for the Irish National Cardiovascular Registry and we are now actively working to implement this national programme. Adopting the EuroHeart platform will enable full compliance with standardized datasets and ready participation in randomized registry-controlled trials. Our team has developed a SNOMED dictionary for the ACS/PCI dataset and is extending this to the TAVI dataset, thus facilitating interoperability and data transfer between electronic patient records and EuroHeart.

Italy

Prof Aldo Maggioni
Italy

In Italy, there has been a tradition of conducting observational studies for over 30 years, mainly in the field of acute coronary syndromes and heart failure. The aim is to evaluate, within a hospital cardiology community of the National Health Service (NHS), the clinical characteristics of patients, their treatments, adherence to guidelines, and related outcomes. This has provided an opportunity for extensive discussion on best clinical practices and the obstacles to applying them in practice. Participation in the EuroHeart project takes our observational projects a step further, creating a culture of improving the quality of care by evaluating daily activities through simple but highly relevant quality indicators. In Italy, 49 NHS cardiology centers have agreed to participate in this innovative project by collecting clinical information on patients with ACS starting in November 2024. A desirable collaboration with national health institutions will make this participation even more consistent with public health aspects and will allow for more complete information about the consecutivity and representativeness of the data collected.

Norway

Prof Kaare Harald Bøna
Norway

The Norwegian Myocardial Infarction (MI) Register was established In 2012 and consist of a web-based data entry form with about 90 variables and 14 quality indicators. Hospitals are required by law to register all patients treated for acute MI, and the national coverage is higher than 90 %. Norway has separate registers for PCI, TAVI, heart failure, arrhythmias, and CABG. Benchmarking the quality and outcome of care for the different patient cohorts in the EuroHeart program to provide valid comparisons across countries are ambitious goals, and will be challenging, and we look forward to participate in this important endeavor.

EUROHEART REPORT 2025

National leaders

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Portugal

Dr Daniel Caldeira
Portugal

In Portugal, the continuous registry on Acute Coronary Syndromes – Registo Nacional de Síndromes Coronárias Agudas – has been active since 2002 (https://doi.org/10.1016/j.repc.2017.07.016). Supported by the Portuguese Society of Cardiology and hosted by the CARE-PT (Cardiovascular Research in Portugal) relies on the systematic submission of individual patient data from multiple centers that collectively represent the national landscape of acute coronary syndrome management. Participation in the EuroHeart project has initiated a comprehensive modernization effort aimed at integrating secondary healthcare data and establishing linkages with national databases, thereby enabling the collection of more detailed and extensive clinical information. This approach intends to strengthen the capacity to monitor and enhance the quality of care while creating a scalable framework for future expansion to other cardiovascular and related conditions, fostering a sustainable model of continuous quality improvement at the national level, supporting the strategic role of high-quality registry data in improving both the processes and outcomes of cardiovascular care.

Singapore

Dr Jonathan Yap Jiunn Liang
Singapore

Singapore has initially contributed to the STEMI PCI aspect of Euroheart initiative. There are currently plans underway to extend to other domains and centres. Being part of this initiative helps us benchmark our care internationally; not only identifying areas where we have done well but also importantly aspects where we can strive to improve care for our patients.

Sweden

Prof Joakim Alfredsson
Sweden

The Swedish Web-system for Enhancement and Development of Evidence-based care in Heart disease Evaluated According to Recommended Therapies, also known as the SWEDEHEART registry, is a collaboration between several heart disease quality registries including SWEDEHEART-ACS, SWEDEHEART-PCI, SWEDEHEART-cardiac rehabilitation, The Swedish heart failure registry (SwedeHF), The Swedish Cardiac surgery registry, The Swedish Transcatheter Cardiac Intervention Registry (SWENTRY) and The Swedish cardiogenetic registry. All Swedish hospitals with cardiac care or cardiac interventions contribute with data. The SWEDEHEART ACS and PCI registries have been collecting high quality clinical data for the purpose of feedback and benchmarking for about 30 years. With the EuroHeart initiative we will further extend our work with quality improvement, to include comparisons with other European countries. The necessary data variable harmonisation has improved our data collection and will be instrumental for future registry-based randomised clinical trials. Participating in EuroHeart will strengthen our collaborations with other countries and improve European heart health.

Switzerland

Prof Lorenz Räber
Switzerland

The SwissCaRe quality registry for Coronary Angiography and PCI is coordinated by the Swiss Society of Cardiology and its Working Group Interventional Cardiology. Participation is recommended to all members, although participation is not mandated by the authorities. Its primary objective is to capture consecutive real-world data.

We are proud to have established a national registry within just two years and to now contribute to EuroHeart, with the overarching goal of improving the quality of care for patients with acute myocardial infarction.

Country cohorts, completeness and quality of data

07

This annual report for 2025 presents aggregated data on patients with myocardial infarction included in the collaborating National Registries during 2022, 2023, and 2024. The results provide an overview of the care delivered to patients with myocardial infarction across the majority of countries within the EuroHeart network, including England and Wales, Estonia, France, Hungary, Iceland, Ireland, Italy, Norway, Portugal, Romania, Singapore, Sweden, and Switzerland. All countries have provided data for 2024, with many also contributing data for the previous two years. The report highlights various aspects of patient characteristics and clinical care across these countries during the period from January to December 2024.

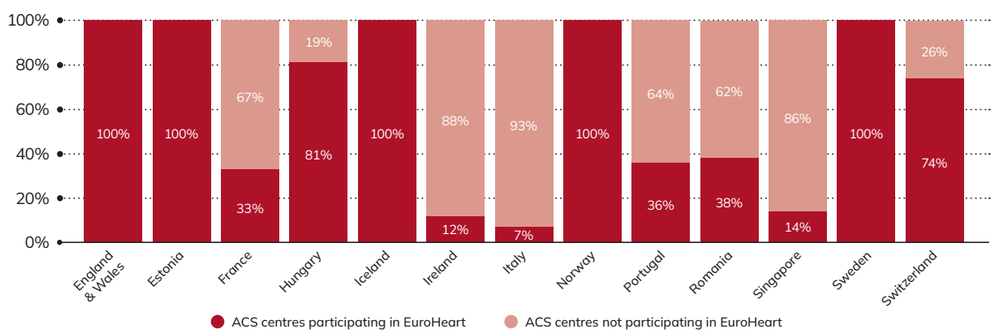
The participating National Registries submitted de-identified, aggregated data in accordance with EuroHeart data standards for ACS and PCI. These data were categorised a priori to ensure de-identification, by diagnosis (STEMI/NSTEMI), sex, age groups, and diabetes status, for the purposes of analysis and reporting. Information on patient characteristics/comorbidities, diagnostics, in-hospital management, discharge management, and outcomes was collected alongside metrics based on the ESC quality indicators for acute myocardial infarction.

The submissions have been completed with full coverage in some countries, while in others they represent only a proportion of myocardial infarction hospitalisations (Figure 5). Coverage information is provided at the patient, ward/department, hospital, and country levels (Appendix Table 1). Data were provided for each calendar year for all countries except England and Wales, which report data for financial years (e.g., April 2023 – March 2024). In this case, data were considered from the year in which the financial year ended (i.e., April 2023 – March 2024 forms part of the 2024 cohort).

Implementing the EuroHeart data standards in each country requires substantial effort. Some EuroHeart countries have fully adopted the standards, whereas others are still transitioning their case record forms to align with EuroHeart. Consequently, certain variables were not available in time for inclusion in the 2025 annual report. In addition, some data items may not be collected in certain countries due to local practices. Where countries could not provide specific data items, these are indicated as unavailable in the report.

Following the submission of de-identified, aggregated data from each country, the EuroHeart Data Science Group conducted internal checks prior to analysis. Once analysed, the data were returned to each country's submission lead and National Leaders for review. This iterative process of review, verification, and revision continued until consensus was reached between the National Leaders and EuroHeart.

Figure 5. National coverage of ACS dataset

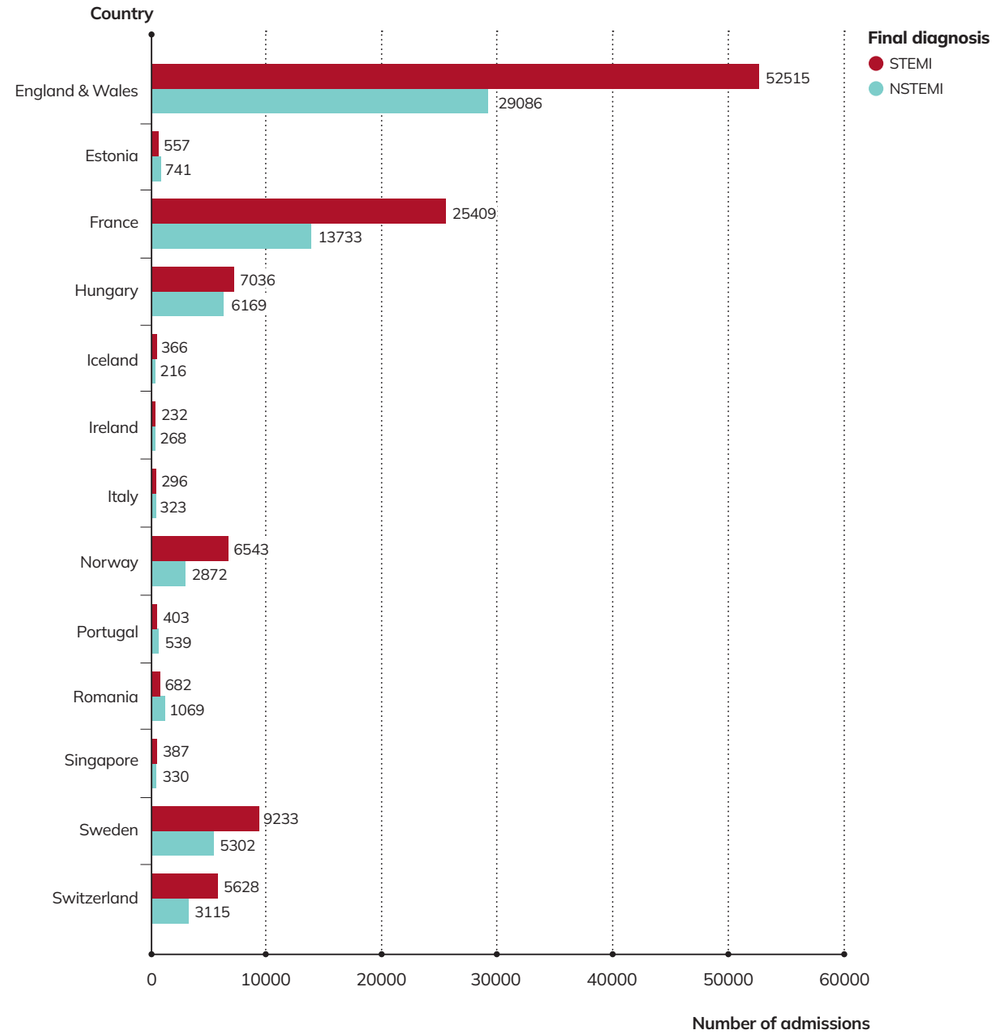


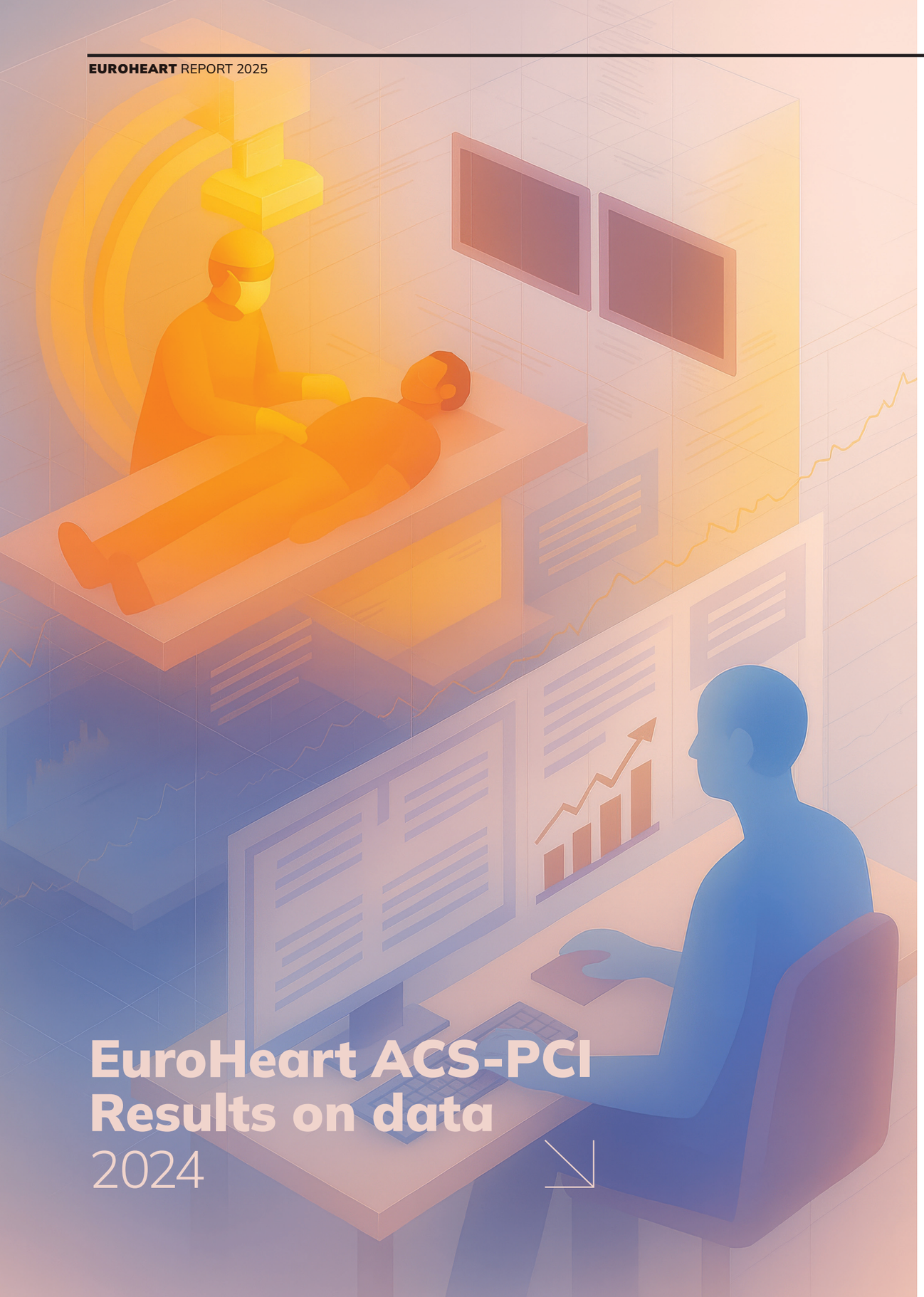
Overall numbers and admissions for myocardial infarction

08

In total, the EuroHeart countries reported 173,050 admissions for myocardial infarction (Figure 6). Approximately 63% of the reported cases were NSTEMI, while the remaining patients had STEMI. However, this distribution may not accurately reflect the true proportions, as some countries did not collect or report data for all myocardial infarction cases in their country.

Figure 6. Number of admissions with STEMI or NSTEMI by country





EuroHeart ACS-PCI Results on data 2024

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Baseline characteristics and comorbidities

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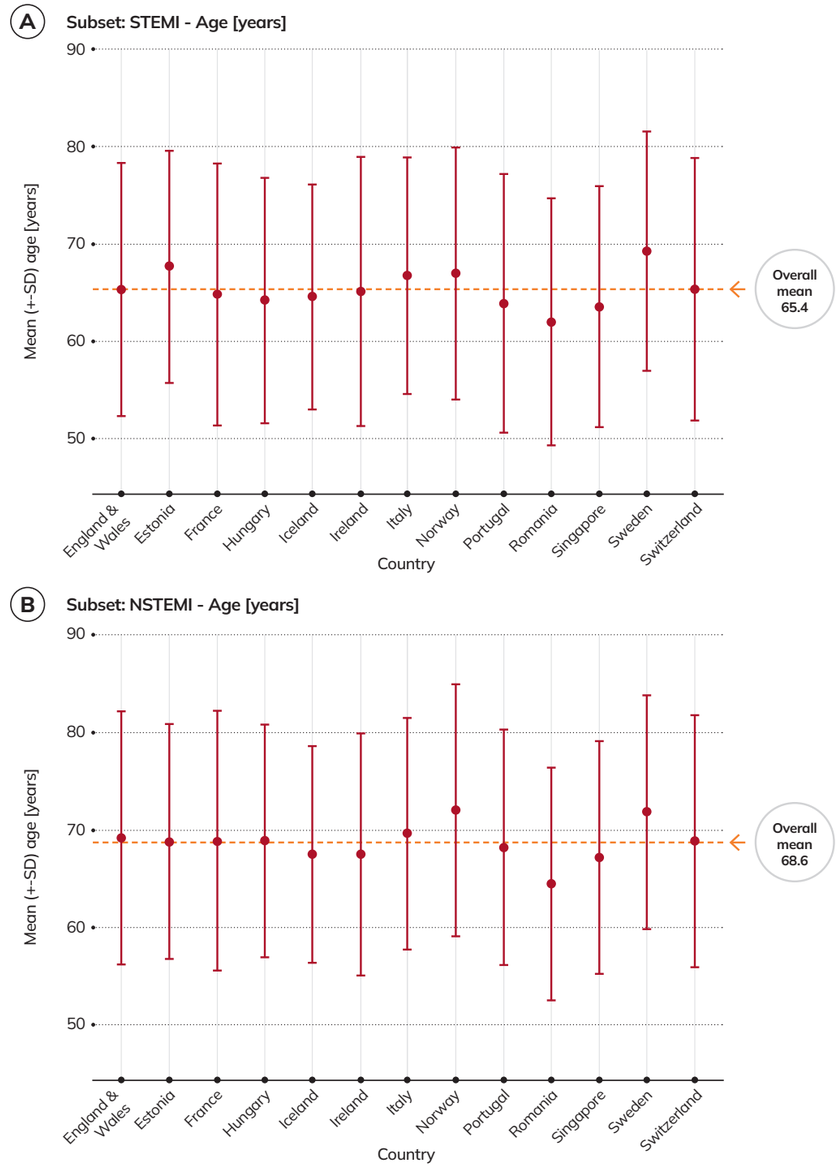
Baseline characteristics and comorbidities of the included patients are presented separately by country and for those with STEMI and NSTEMI, and are further stratified by sex, age, and diabetes status.

Figure 7. Age. Patients with (A) STEMI tend to be younger than those with (B) NSTEMI. (Overall mean = mean of country means)



Baseline characteristics and comorbidities

09

Figure 8. Age over time. Age in both (A) STEMI and (B) NSTEMI seem consistent over time.

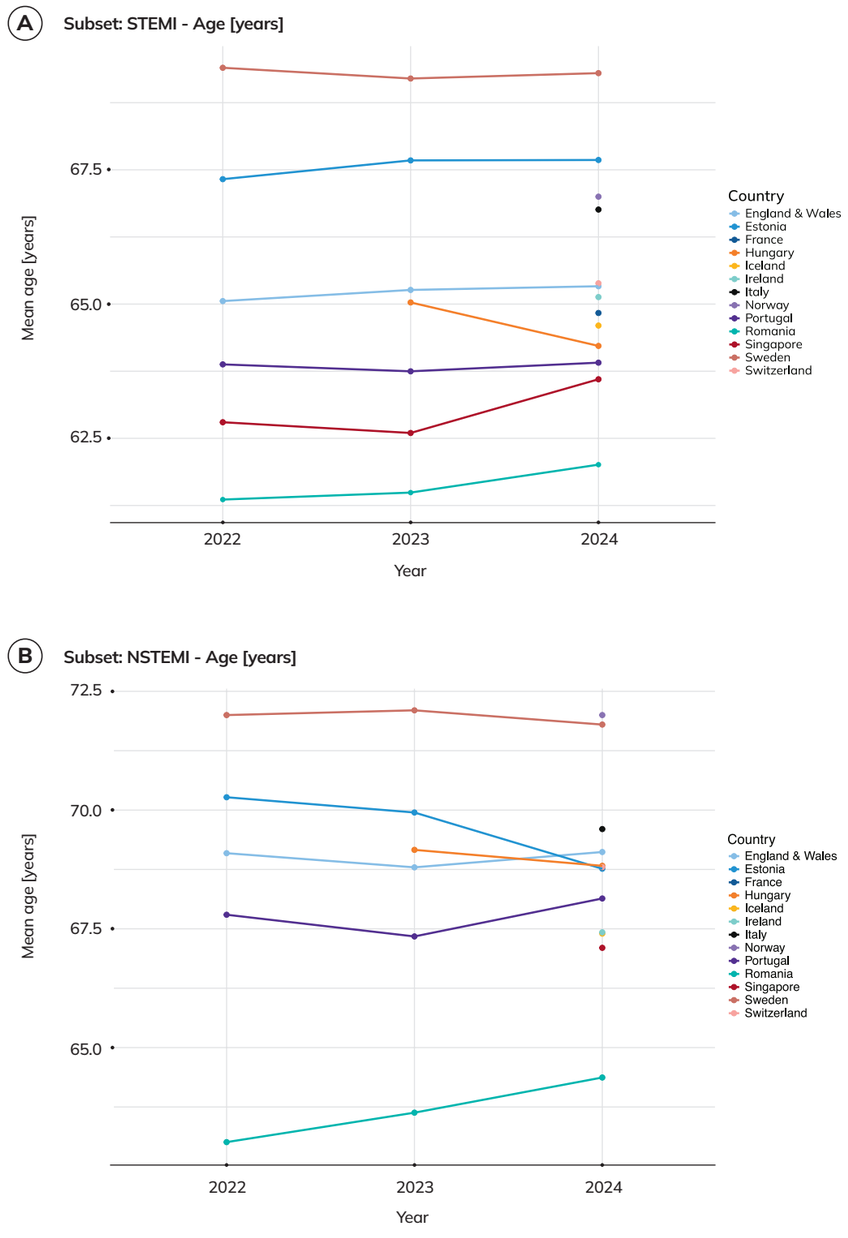
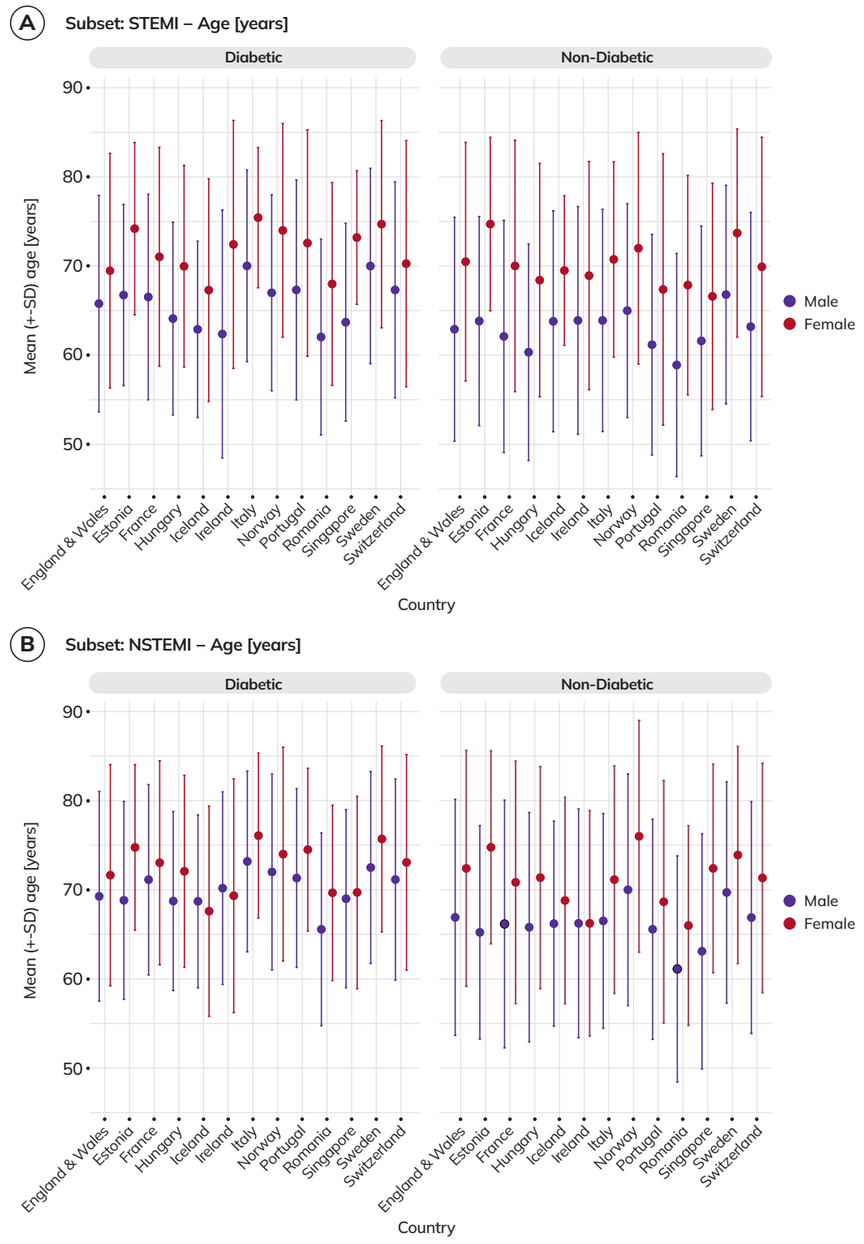


Figure 9. Age. Female and diabetic patients are generally older than male and non-diabetic patients, regardless of whether they have (A) STEMI or (B) NSTEMI



Baseline characteristics and comorbidities

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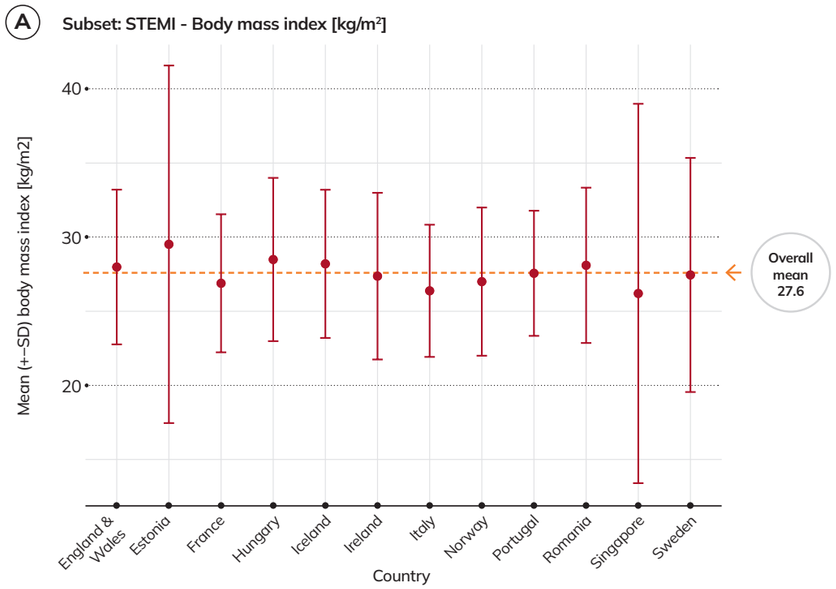
Figure 10. Body mass index. The mean BMI in patients with myocardial infarction was approximately 27.5 kg/m². Overall, BMI levels were similar among patients with (A) STEMI and (B) NSTEMI.



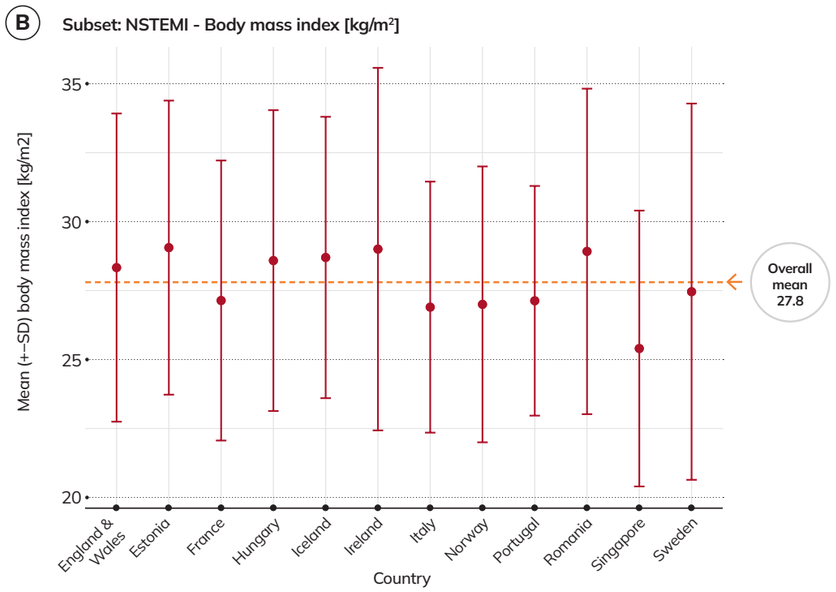
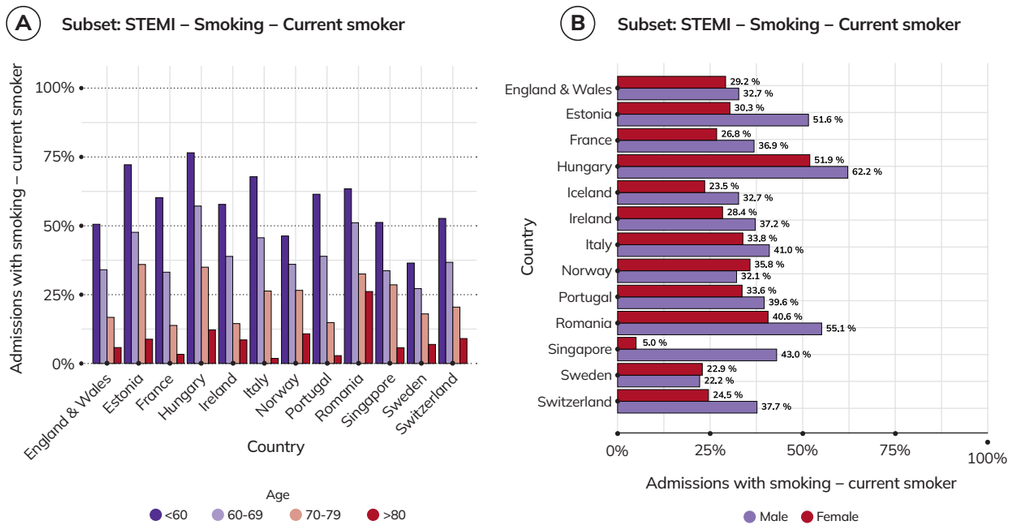
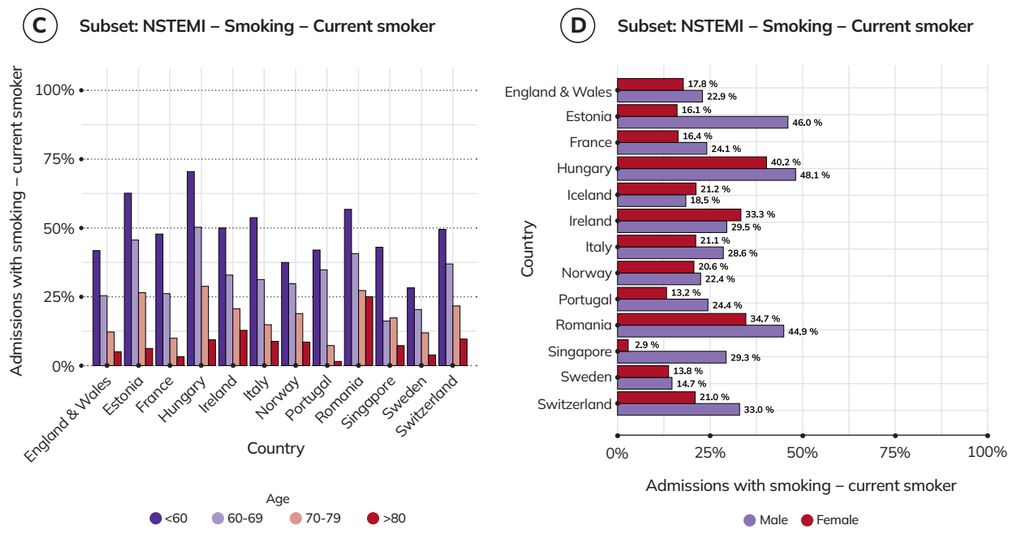


Figure 11. Smoking. A higher proportion of (A, B) STEMI patients were current smokers compared to (C, D) NSTEMI patients. When stratifying by age and sex, younger and male patients were more often current smokers.





Baseline characteristics and comorbidities

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Figure 12. Hypertension. A slightly lower proportion of (A, B) STEMI patients had a history of hypertension compared to (C, D) NSTEMI patients. When stratifying by age and sex, older and female patients more often had a history of hypertension.

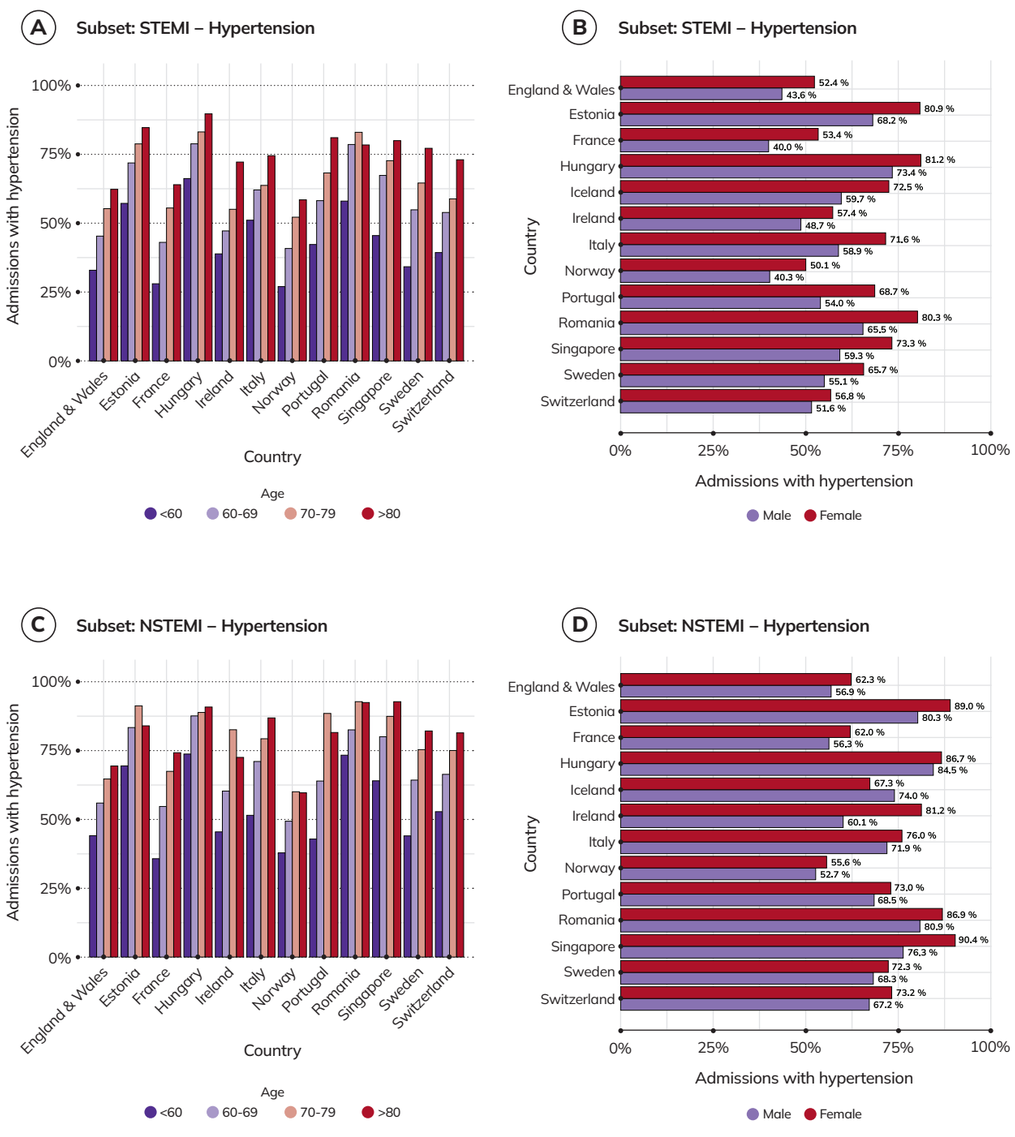
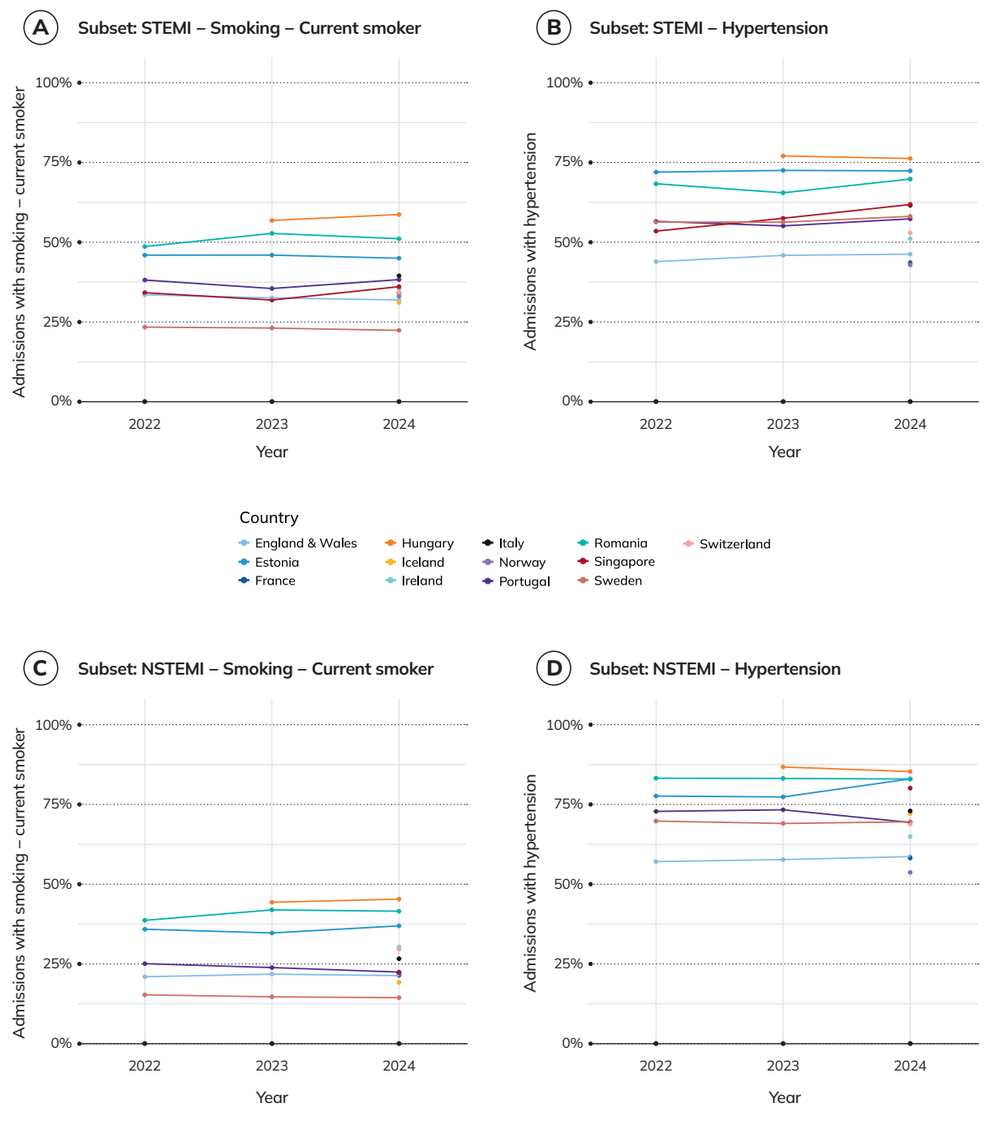


Figure 13. Smoking and hypertension over time. The prevalence of current smoking and hypertension seem stable over time in patient with (A, B) STEMI and (C, D) NSTEMI.



Baseline characteristics and comorbidities

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Figure 14. Diabetes. A lower proportion of (A, B) STEMI patients had diabetes compared to (C, D) NSTEMI patients. When stratifying by age and sex, older and female patients more often had a history of diabetes. The most common type of diabetes was type 2 diabetes.

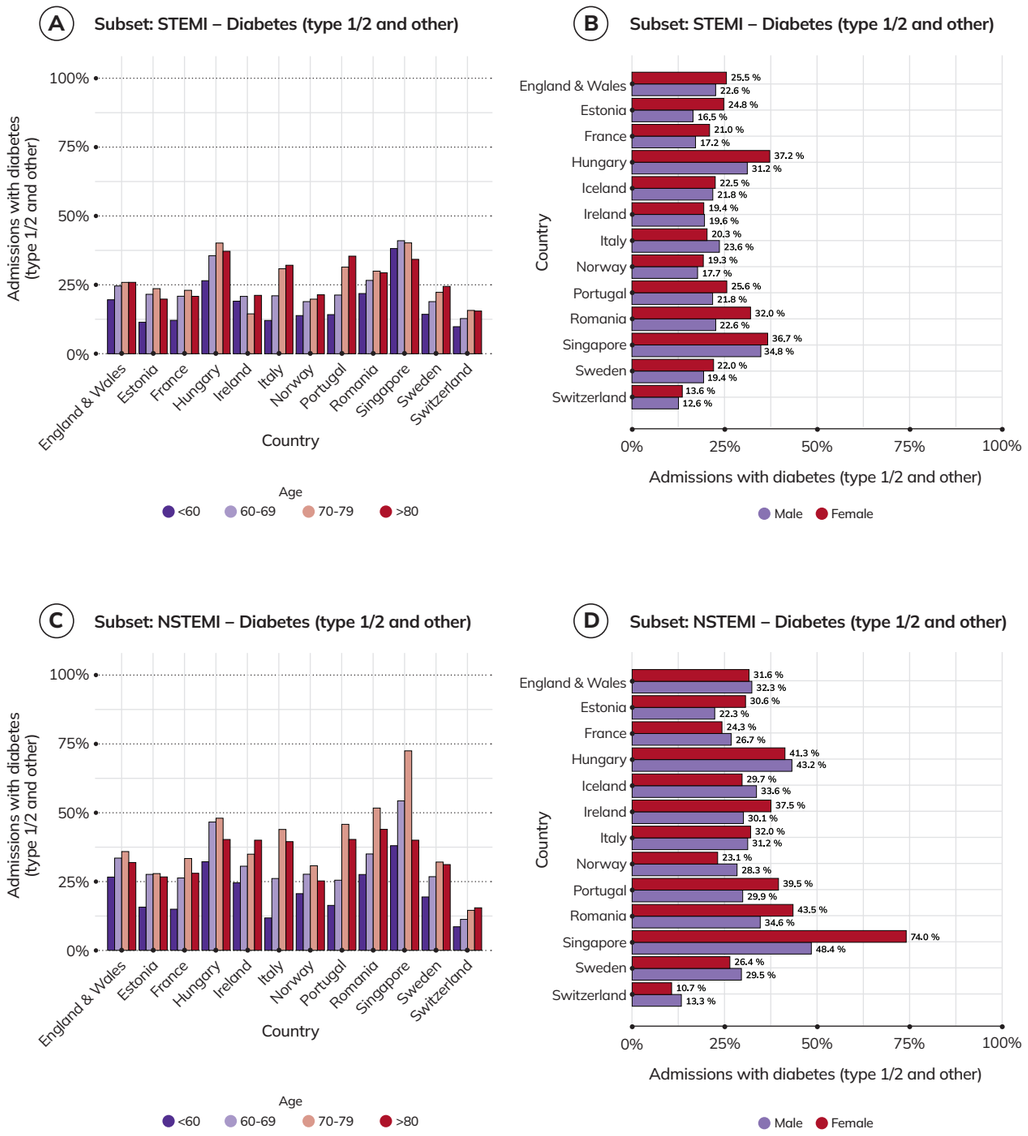

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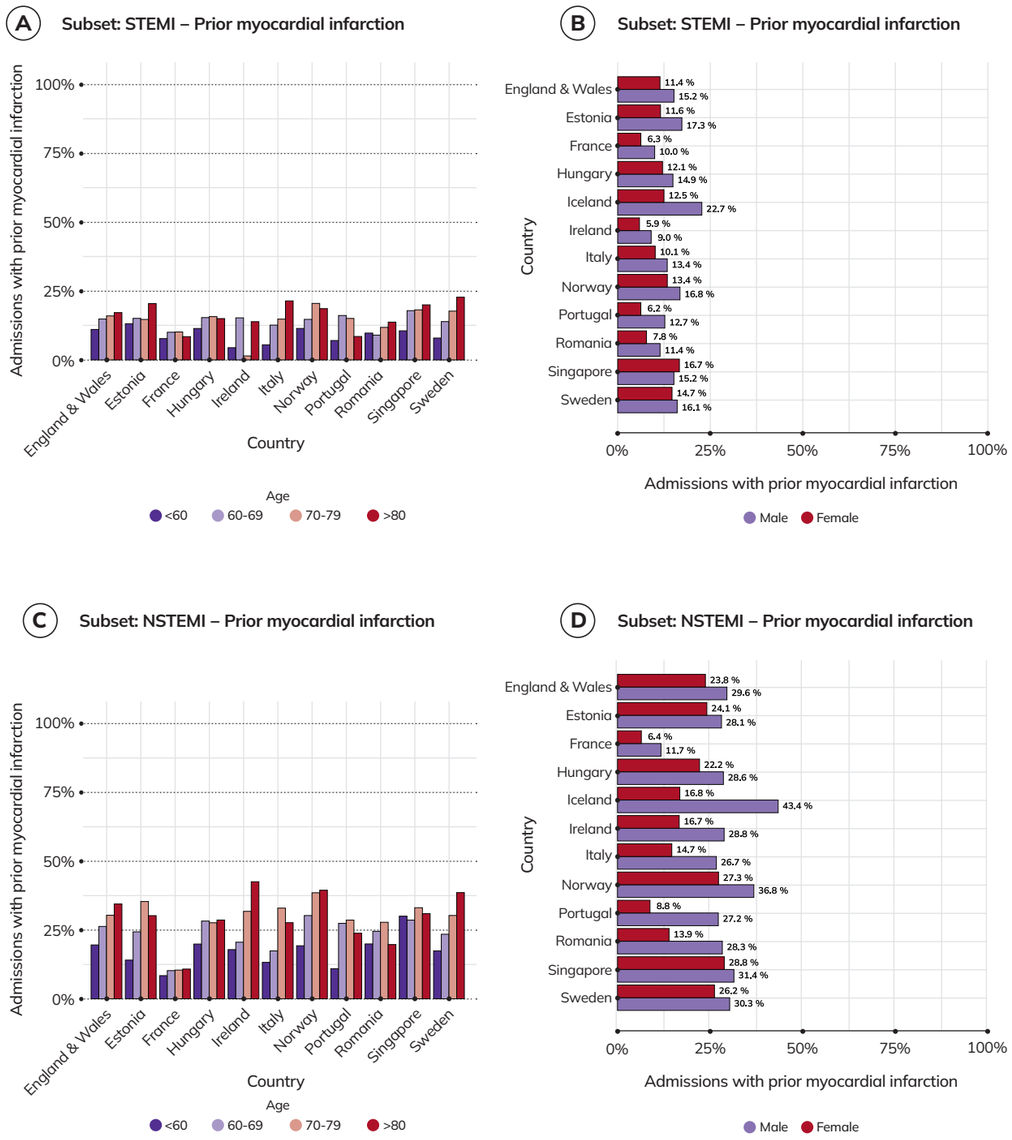
Figure 15. Prior myocardial infarction. A smaller proportion of (A, B) STEMI patients had a history of prior myocardial infarction compared to (C, D) NSTEMI patients. When stratifying by age and sex, older and male patients more often had a history of myocardial infarction.



Baseline characteristics and comorbidities

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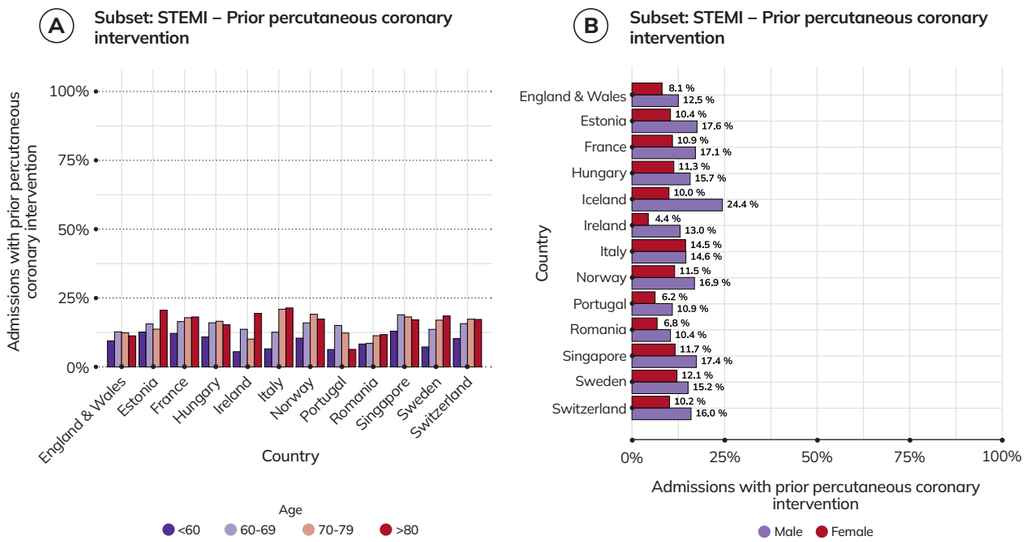
Figure 16. Prior PCI. A smaller proportion of (A, B) STEMI patients had a history of prior PCI compared to (C, D) NSTEMI patients. When stratifying by age and sex, older and male patients more often had a history of prior PCI.



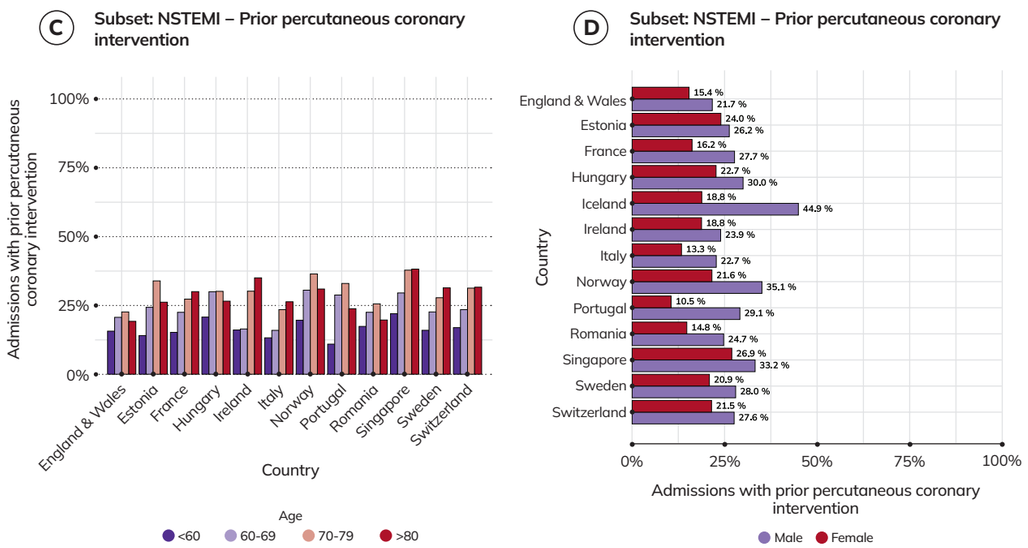
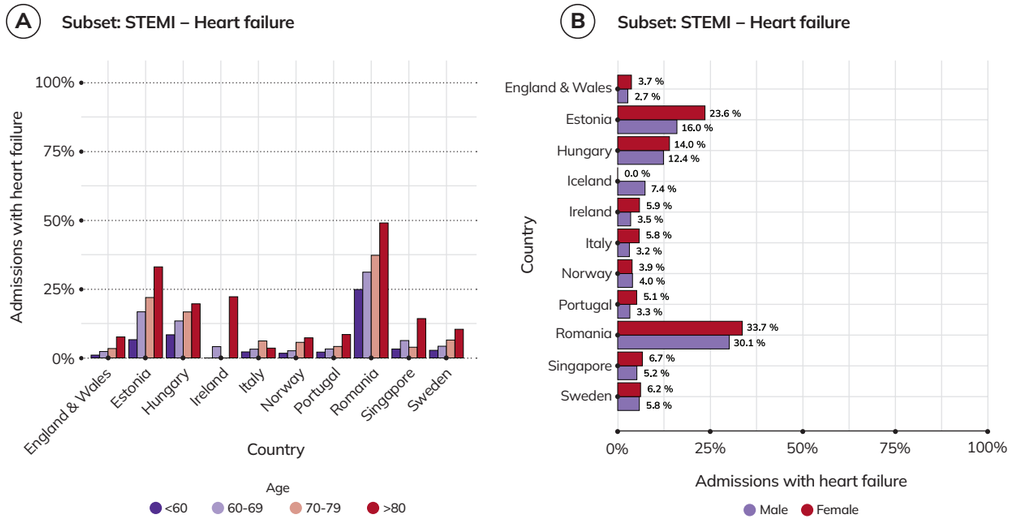
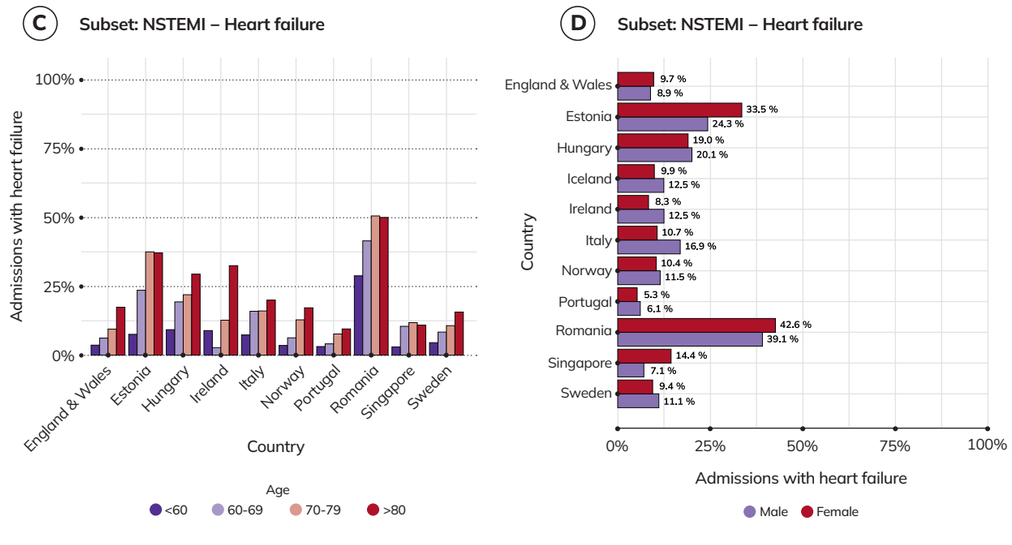


Figure 17. Heart failure. A smaller proportion of (A, B) STEMI patients had a history of heart failure compared to (C, D) NSTEMI patients. When stratifying by age, older patients more often had a history of heart failure. (Data on heart failure were unavailable for France and Switzerland).





Baseline characteristics and comorbidities

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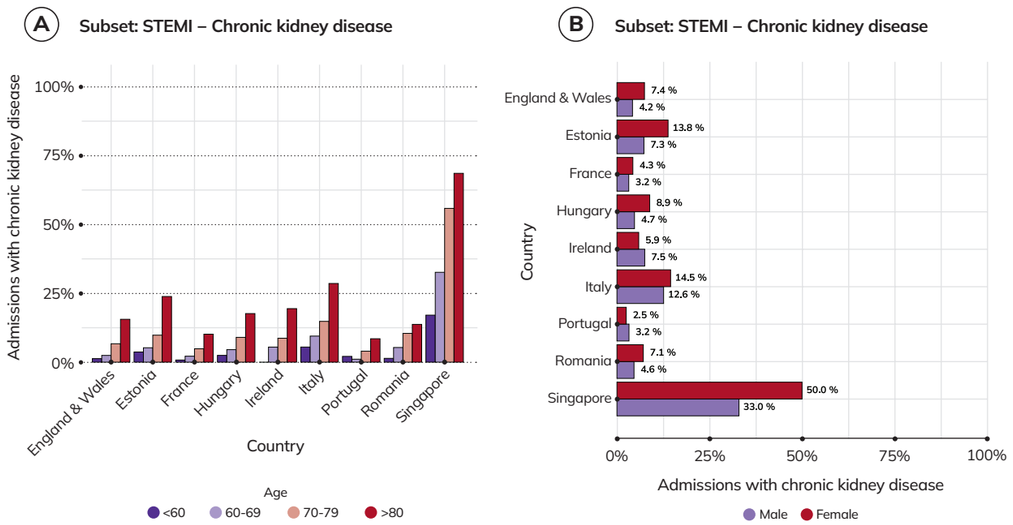
Figure 18. Chronic kidney disease. A smaller proportion of (A, B) STEMI patients had chronic kidney disease compared to (C, D) NSTEMI patients. When stratifying by age, older patients more often had chronic kidney disease. (Data on diagnosis of chronic kidney disease were unavailable for Iceland, Norway, Sweden and Switzerland).



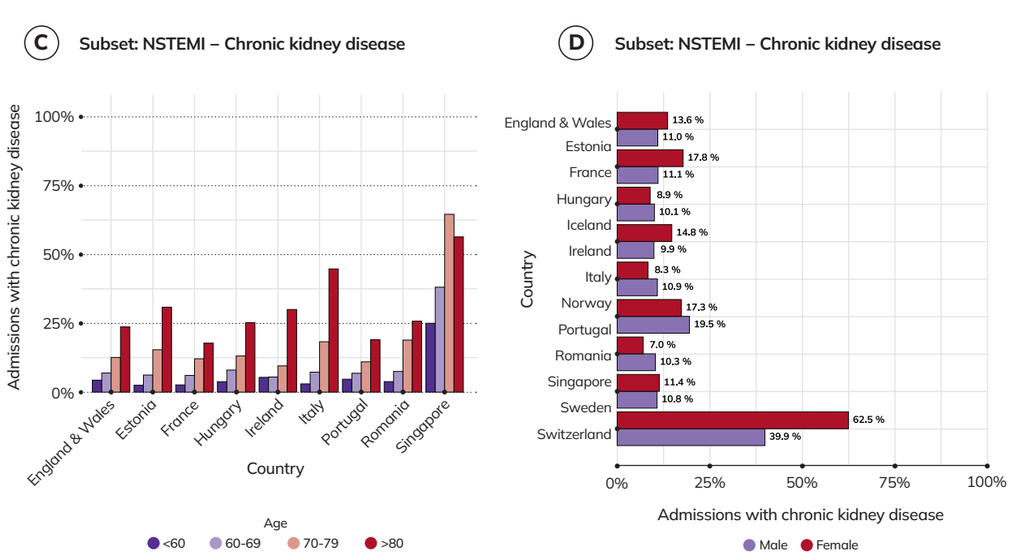
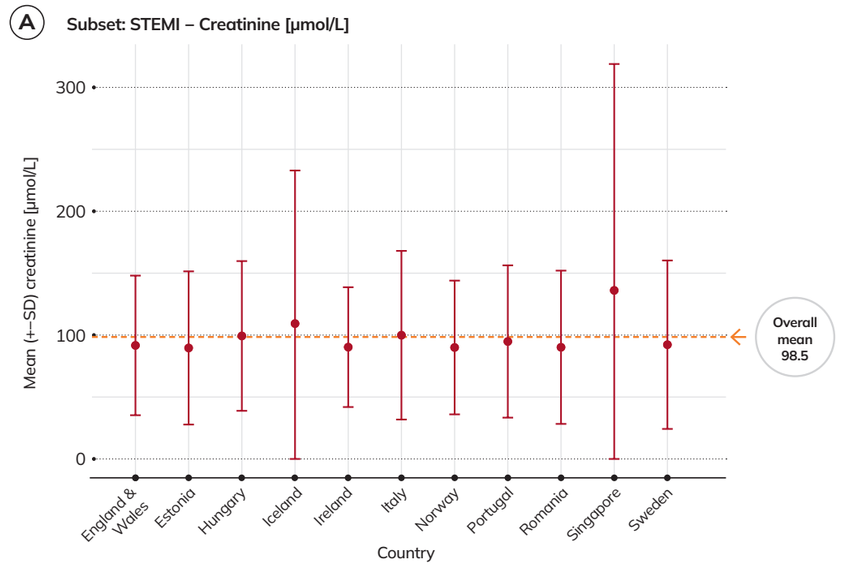
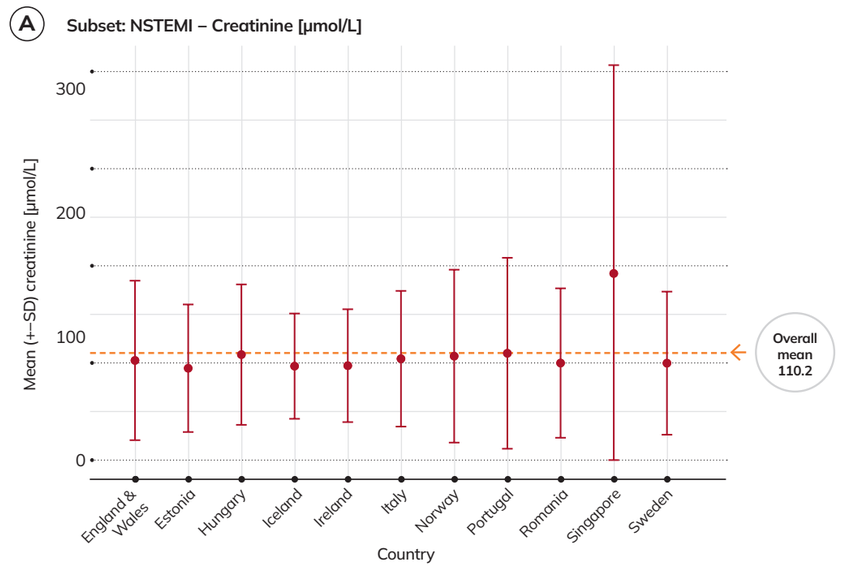


Figure 19. Creatinine. First recorded level of creatinine (µmol/L) during the hospital stay. (Data on creatinine were unavailable for France and Switzerland).





Baseline characteristics and comorbidities

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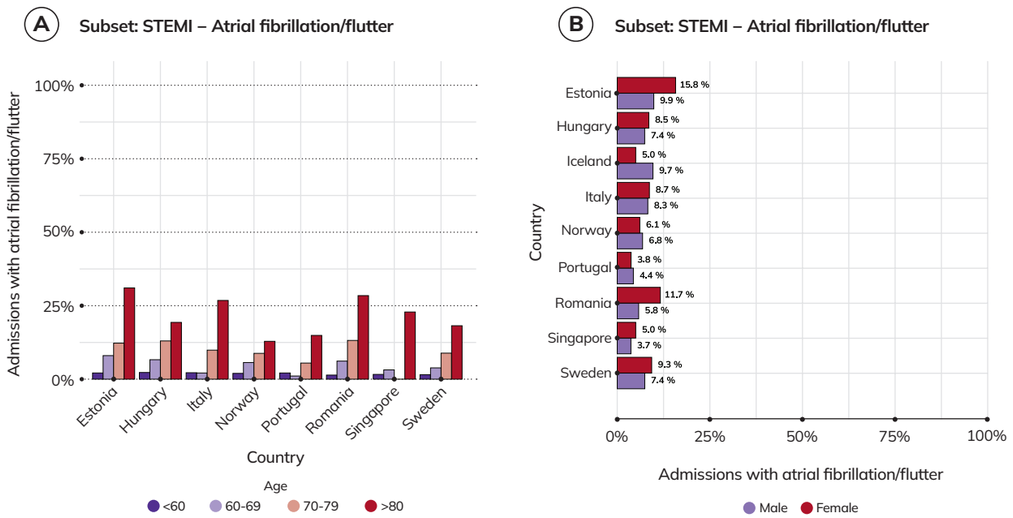
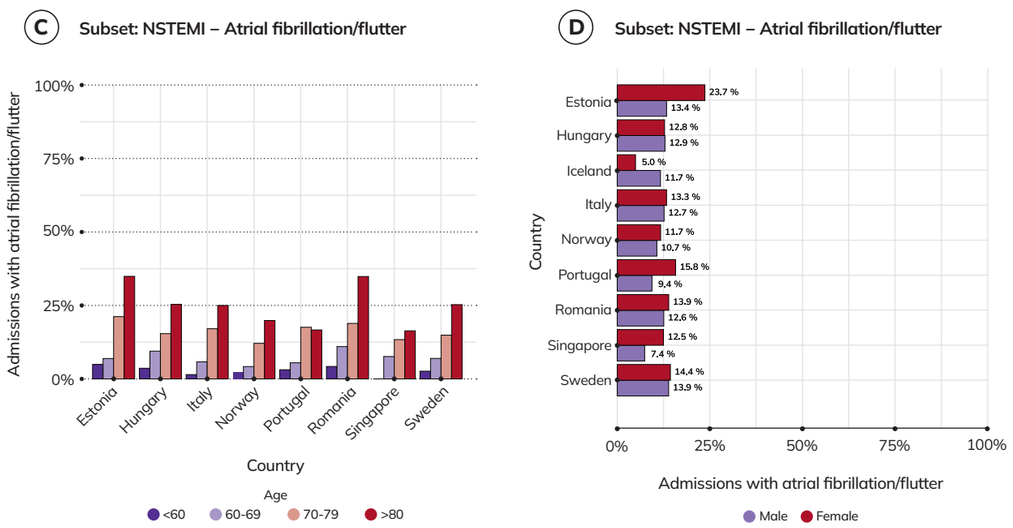
Figure 20. Atrial fibrillation. A smaller proportion of (A, B) STEMI patients had a history of atrial fibrillation/flutter compared to (C, D) NSTEMI patients. When stratifying by age, older patients more often had a history of atrial fibrillation/flutter. (Data on atrial fibrillation/flutter were unavailable for England and Wales, France, Ireland and Switzerland).





In-hospital care and discharge medication

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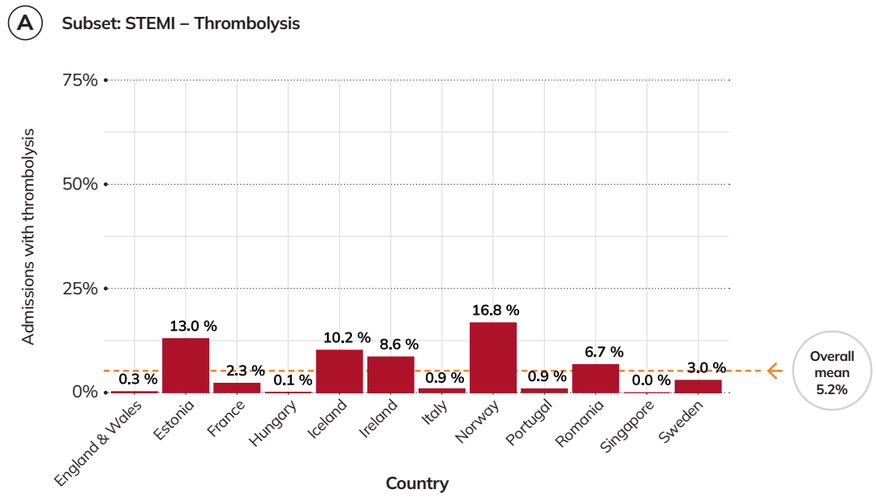
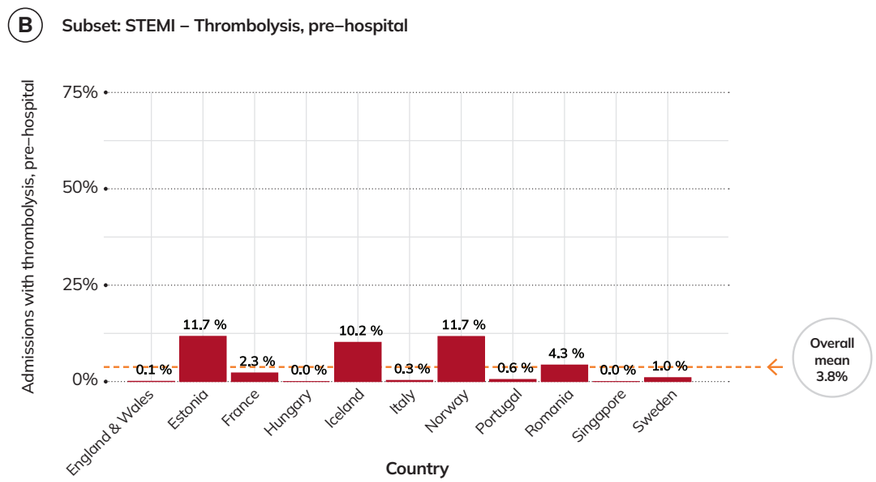
Details about in-hospital care and medication at discharge of the included patients are presented separately by country and for those with STEMI and NSTEMI, and are further stratified by sex, age, and diabetes status.

Figure 21. Thrombolysis in patients with STEMI. Thrombolysis utilisation varied between countries for patients with STEMI. (Data on thrombolysis were unavailable for Switzerland).





In-hospital care and discharge medication

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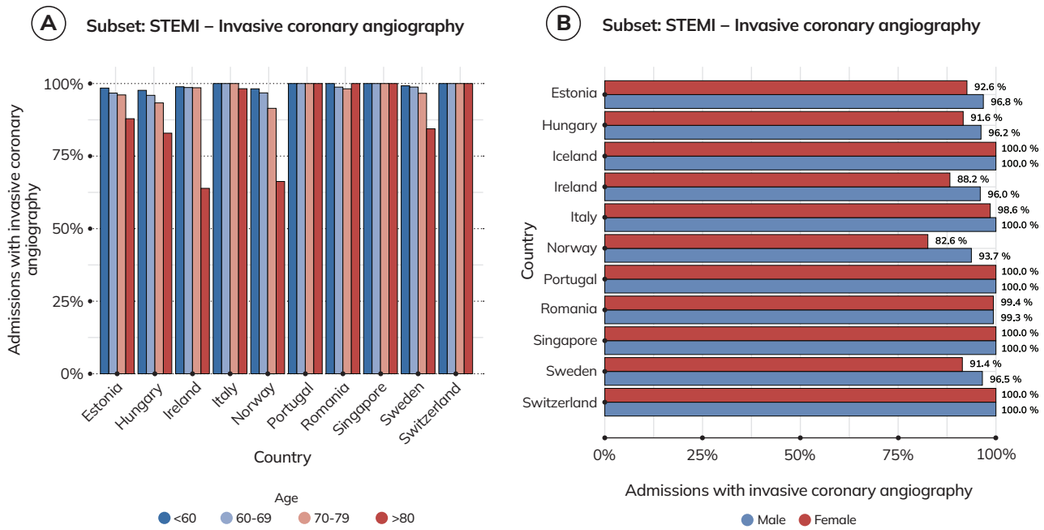
Figure 22. Coronary angiography. Most patients with (A, B) STEMI or (C, D) NSTEMI underwent in-hospital coronary angiography. Stratification by age and sex revealed that elderly patients, and to some extent females, were less likely to undergo in-hospital coronary angiography. (Data on coronary angiography were unavailable for England and Wales and France.)



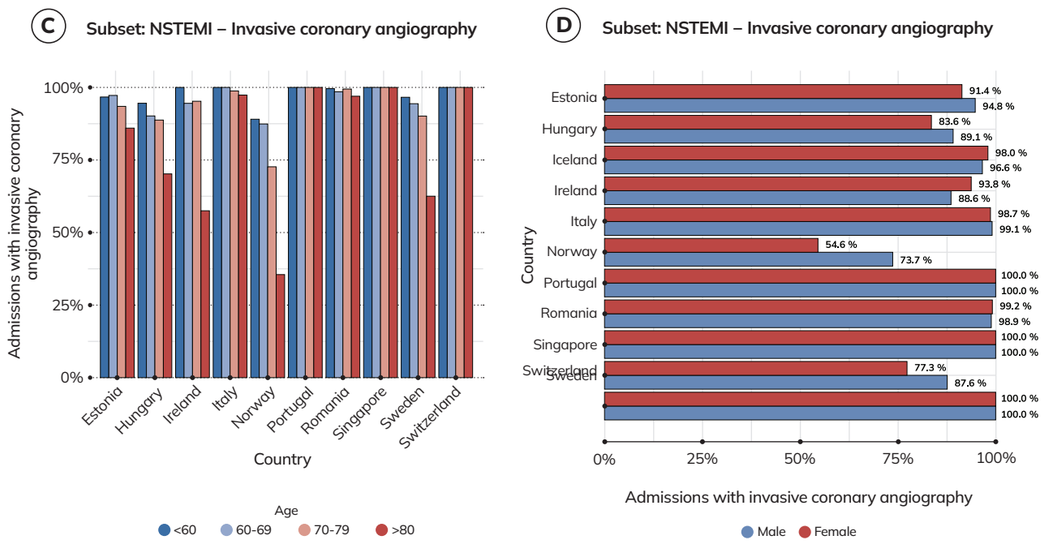
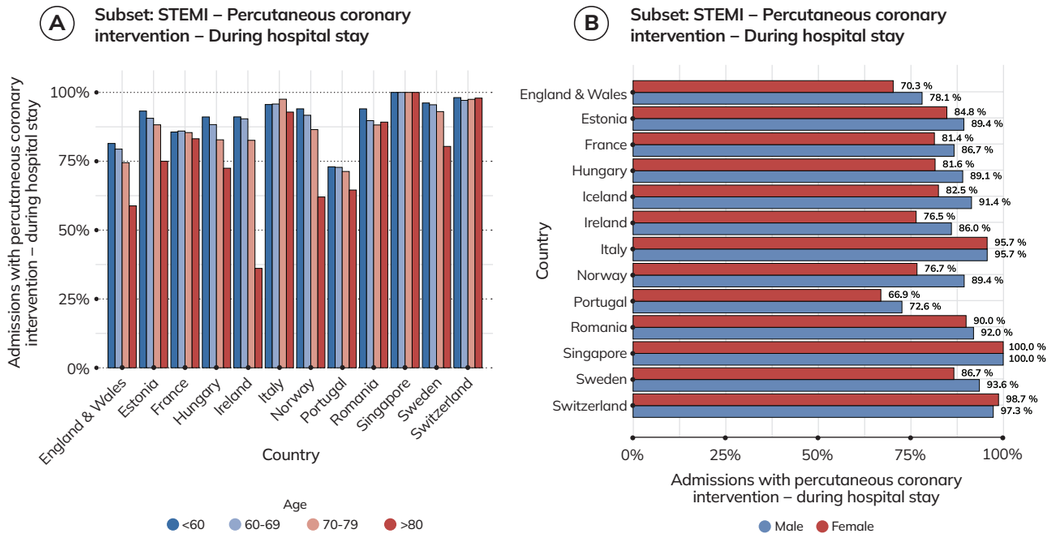
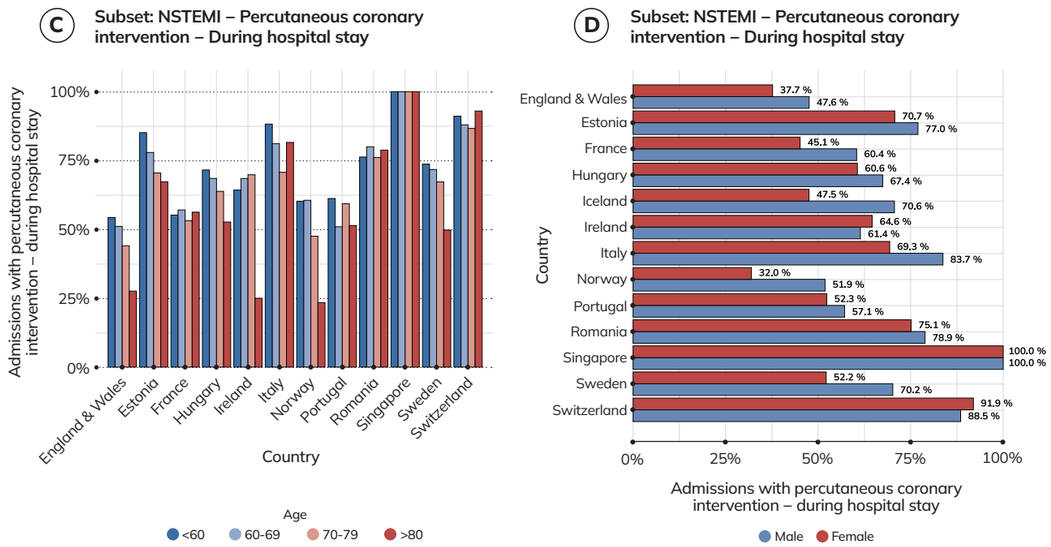


Figure 23. PCI. Most patients with (A, B) STEMI or (C, D) NSTEMI underwent in-hospital PCI. Stratification by age and sex revealed that elderly patients, and to some extent females, were less likely to undergo in-hospital PCI.





In-hospital care and discharge medication

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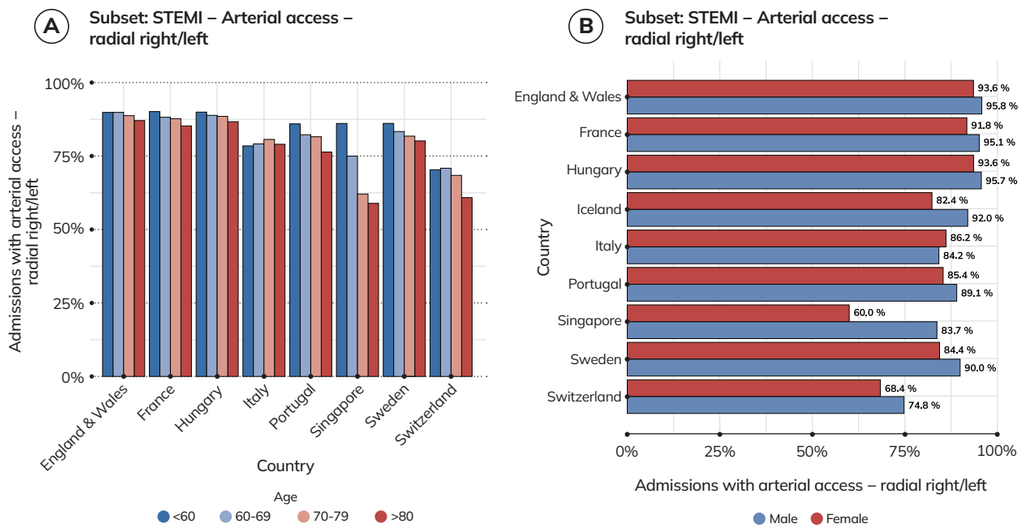
Figure 24. Arterial access during PCI. Radial access was commonly used among patients with (A, B) STEMI and (C, D) NSTEMI who underwent in-hospital PCI. When stratifying by age and sex, radial access was more commonly employed for younger patients and males. (Data on arterial access were unavailable for Estonia, Ireland, Norway and Romania).



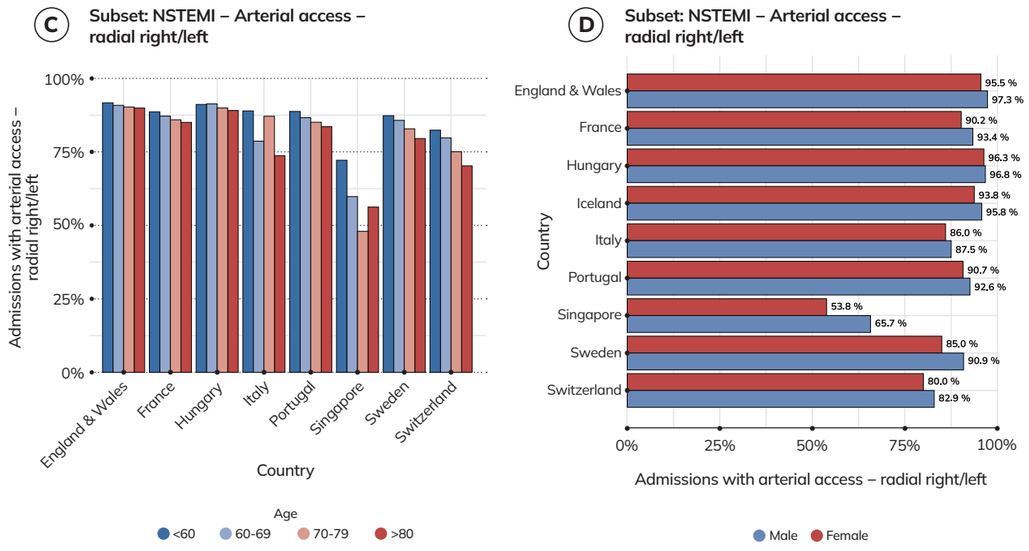
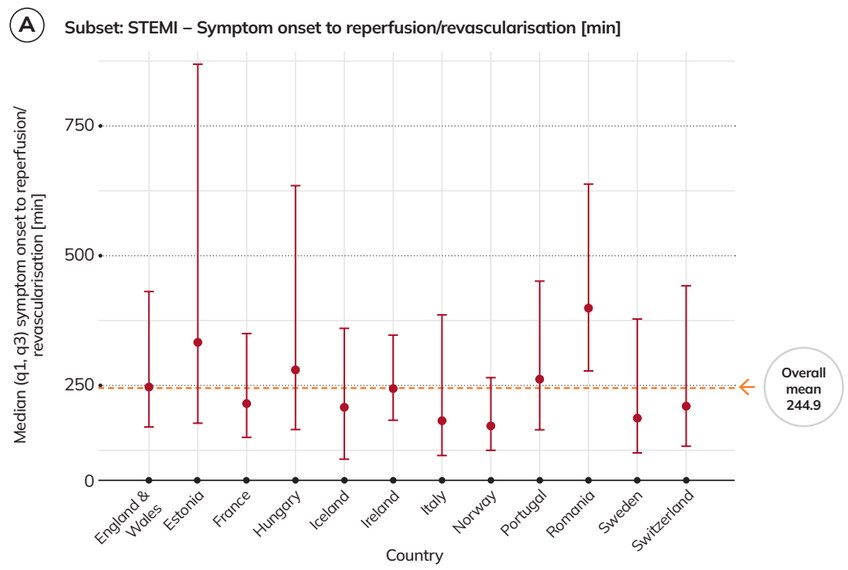
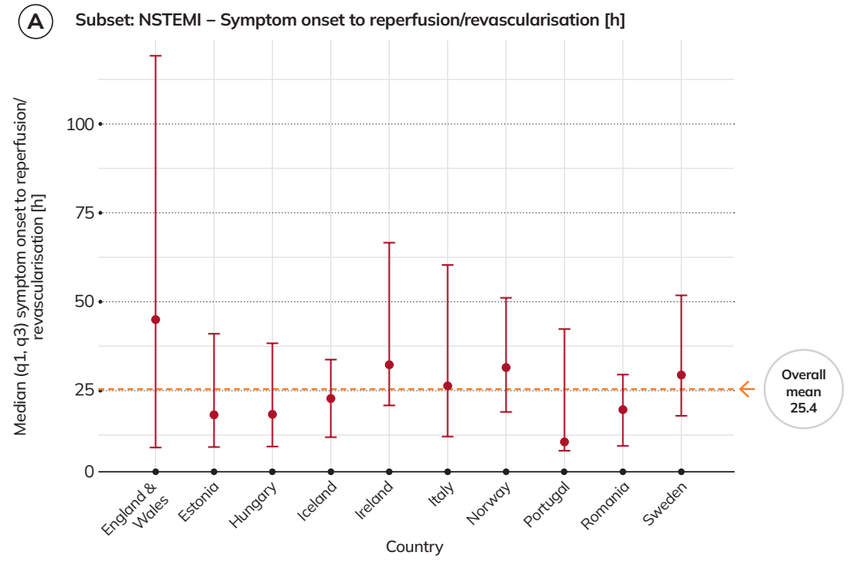


Figure 25. Symptom onset to reperfusion/revascularisation. Time (minutes for STEMI and hours for NSTEMI) from symptom onset to reperfusion/revascularisation (median with interquartile range) illustrates variations in duration between the different EuroHeart countries for patients with (A) STEMI and (B) NSTEMI. (Data on symptom onset to reperfusion/revascularisation were unavailable for Singapore, and unavailable for patients with NSTEMI for France).





In-hospital care and discharge medication

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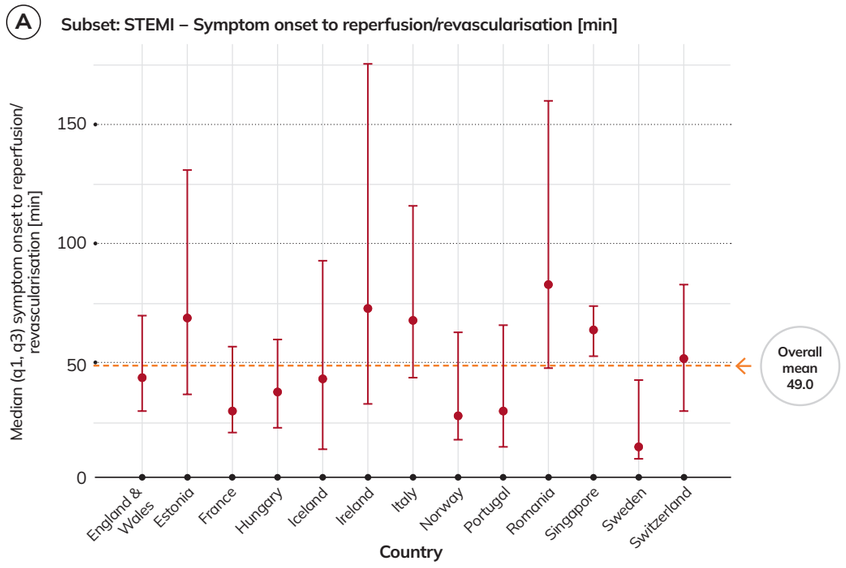
Figure 26. Hospital arrival to reperfusion/revascularisation. Time (minutes for STEMI and hours for NSTEMI) from symptom onset (STEMI) or hospital arrival (NSTEMI) to reperfusion/revascularisation (median with interquartile range) illustrates variations in duration between the different EuroHeart countries for patients with (A) STEMI and (B) NSTEMI. (Data on symptom hospital arrival to reperfusion/revascularisation were unavailable for patients with NSTEMI for France, Singapore and Switzerland).



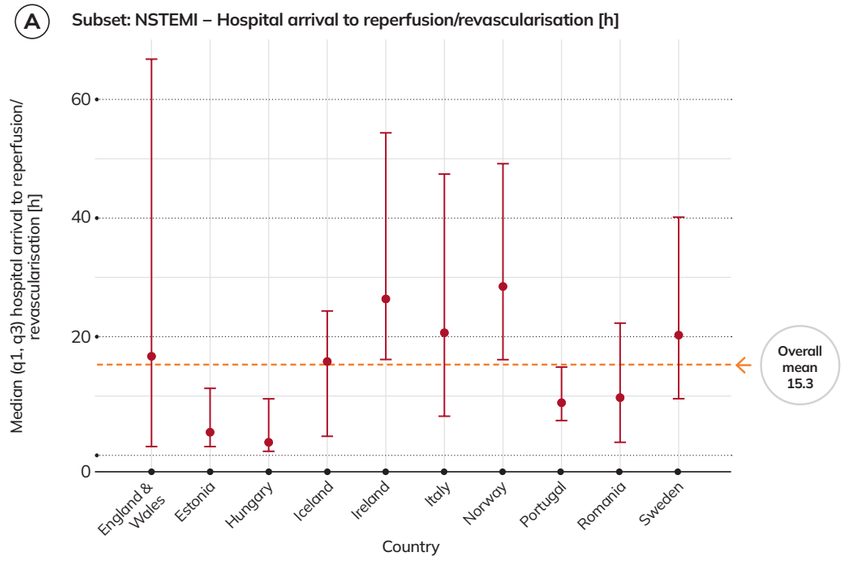
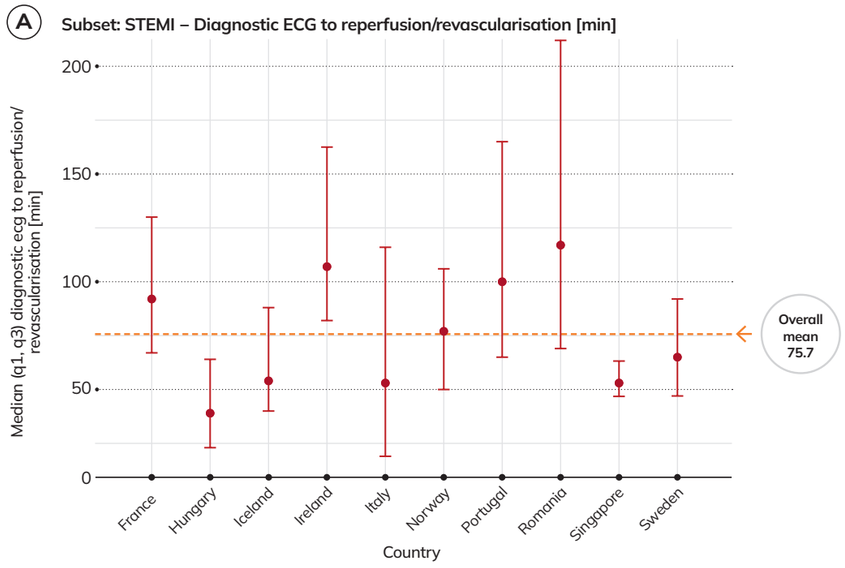
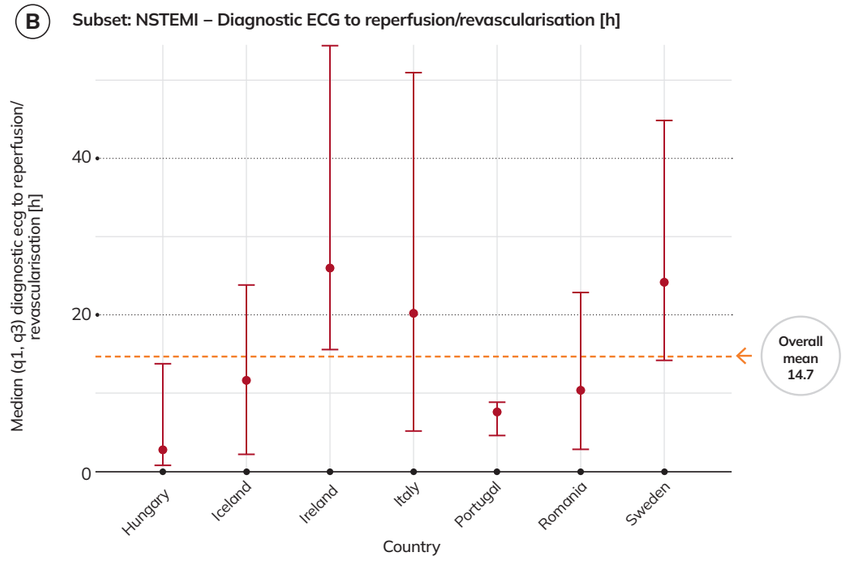


Figure 27. Diagnostic ECG to reperfusion/revascularisation. Time (minutes for STEMI and hours for NSTEMI) from diagnostic ECG (median with interquartile range) illustrates variations in duration between the different EuroHeart countries for patients with (A) STEMI and (B) NSTEMI. (Data on diagnostic ECG to reperfusion/ revascularisation were unavailable for England and Wales, Estonia, Switzerland, and unavailable for patients with NSTEMI for France, Hungary, Iceland, Norway and Singapore).





In-hospital care and discharge medication

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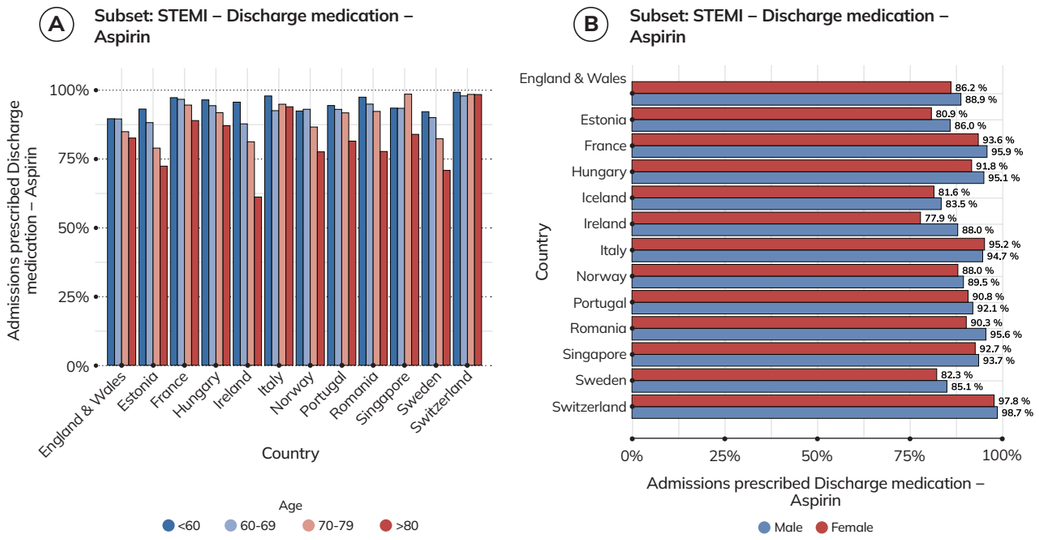
Figure 28. Discharge medication – Aspirin. Most patients with (A, B) STEMI and (C, D) NSTEMI received aspirin at discharge. When stratifying by age and sex, older patients and females were less likely to receive aspirin at discharge.



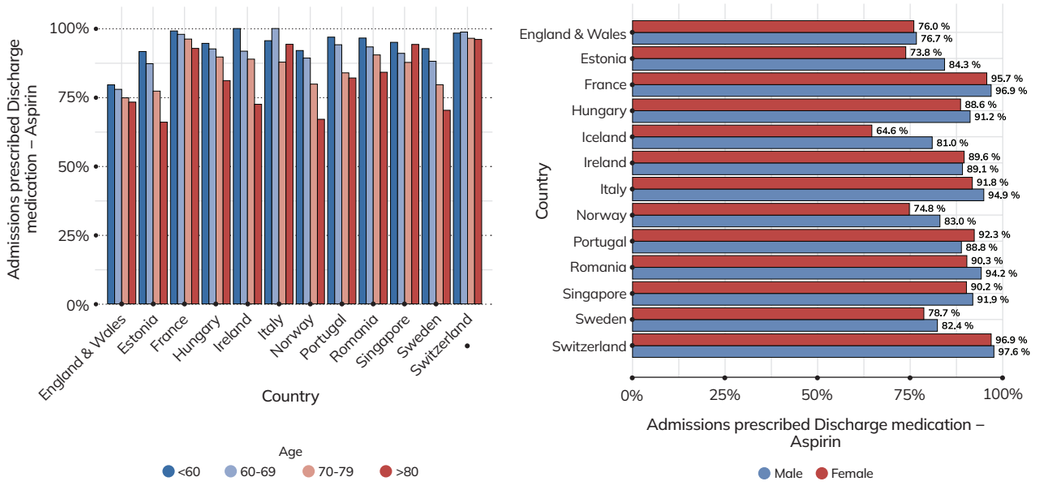
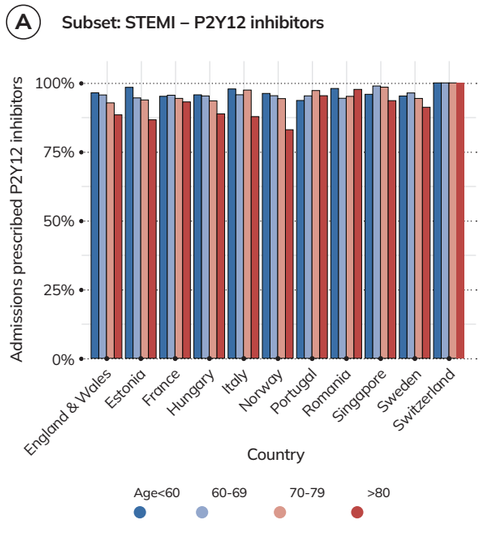
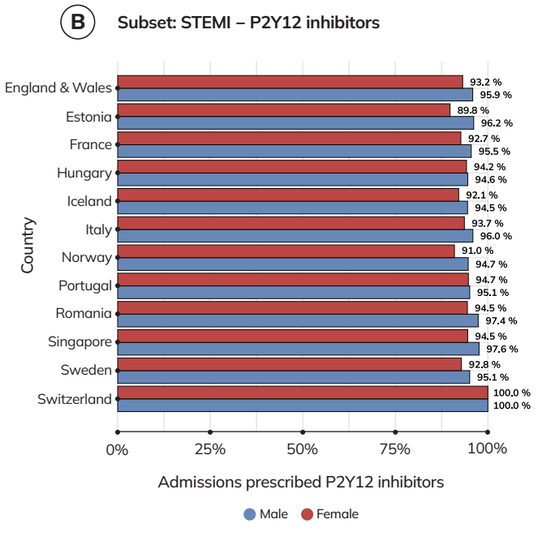
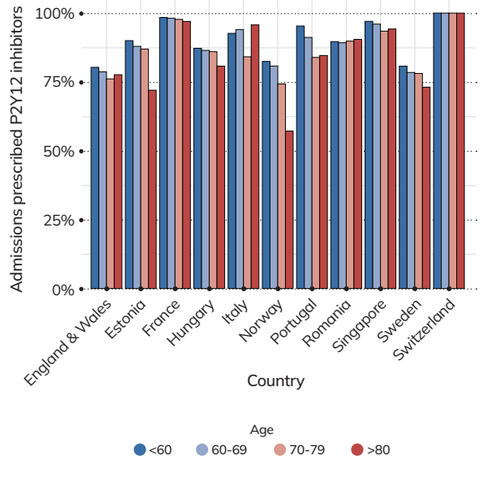
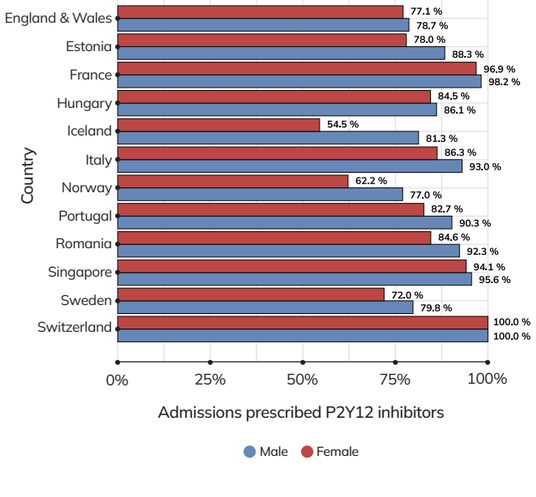


Figure 29. Discharge medication – P2Y12 inhibitors. Most patients with (A, B) STEMI and (C, D) NSTEMI received a $P2Y_{12}$ inhibitor at discharge. When stratifying by age and sex, older patients and females were less likely to receive a $P2Y_{12}$ inhibitor. (Data on $P2Y_{12}$ inhibitors were unavailable for Ireland).









In-hospital care and discharge medication

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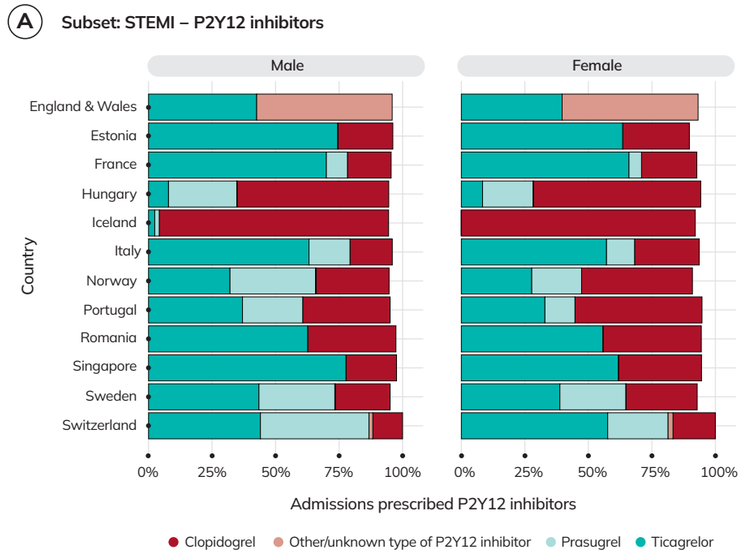
Figure 30. Discharge medication – Type of $P2Y_{12}$ inhibitor. Ticagrelor was the most commonly used $P2Y_{12}$ inhibitor among EuroHeart countries, particularly in patients with STEMI, followed by clopidogrel. Data on $P2Y_{12}$ inhibitors were unavailable for Ireland. (Data on $P2Y_{12}$ inhibitor type, other than ticagrelor, were unavailable for England and Wales).



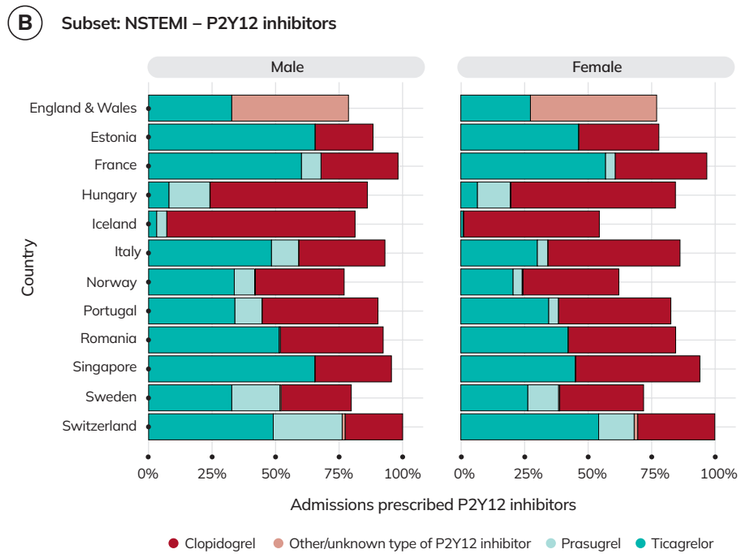
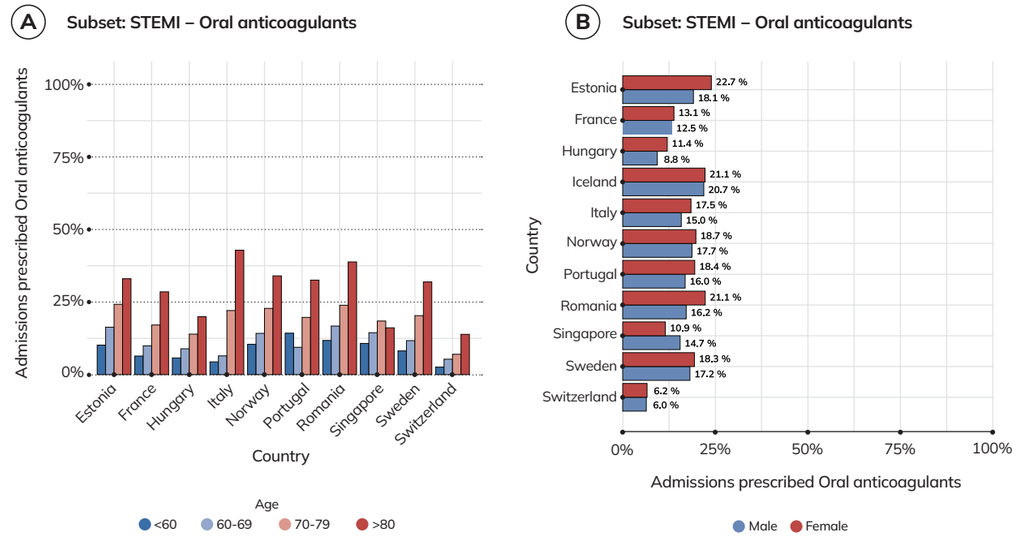
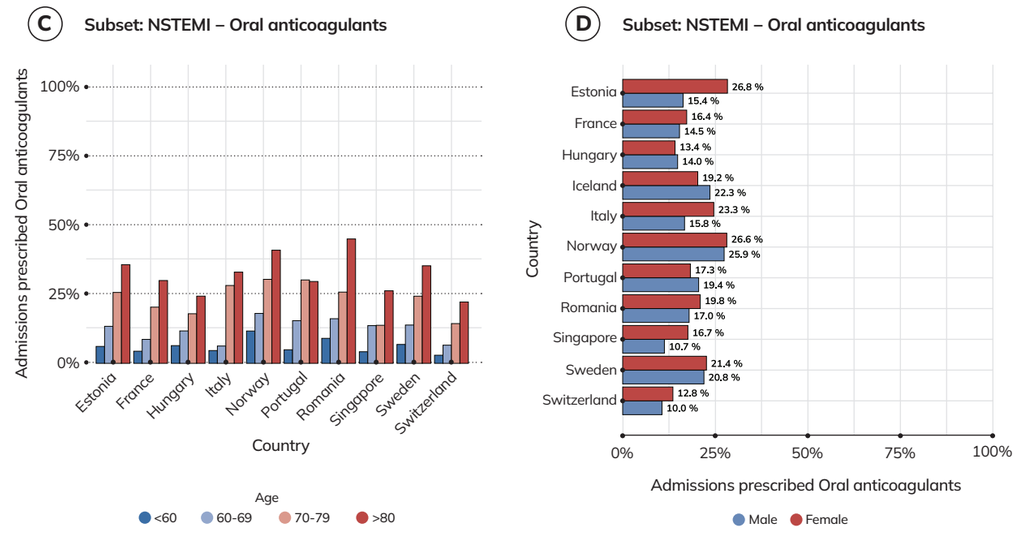


Figure 31. Discharge medication – Oral anticoagulants. An oral anticoagulant was prescribed to a proportion of patients with (A, B) STEMI and (C, D) NSTEMI. Stratification by age and sex showed that younger patients and males were less likely to receive this medication. The indication for treatment with oral anticoagulation was not available. (Data on oral anticoagulants were unavailable for England and Wales and Ireland).





In-hospital care and discharge medication

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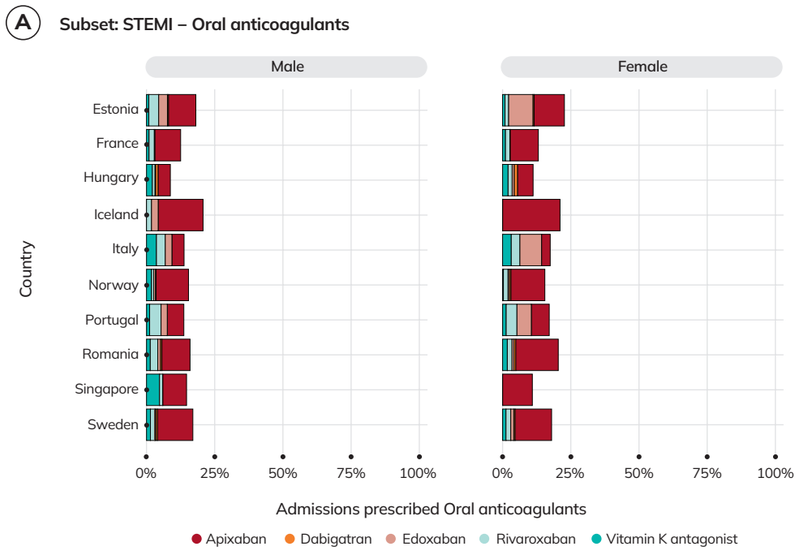
Figure 32. Discharge medication – Type of oral anticoagulants. Apixaban was the most commonly used oral anticoagulant, followed by rivaroxaban, warfarin, edoxaban and dabigatran. The indication for treatment with oral anticoagulation was not available. (Data on type of oral anticoagulants were unavailable for England and Wales, Ireland and Switzerland).



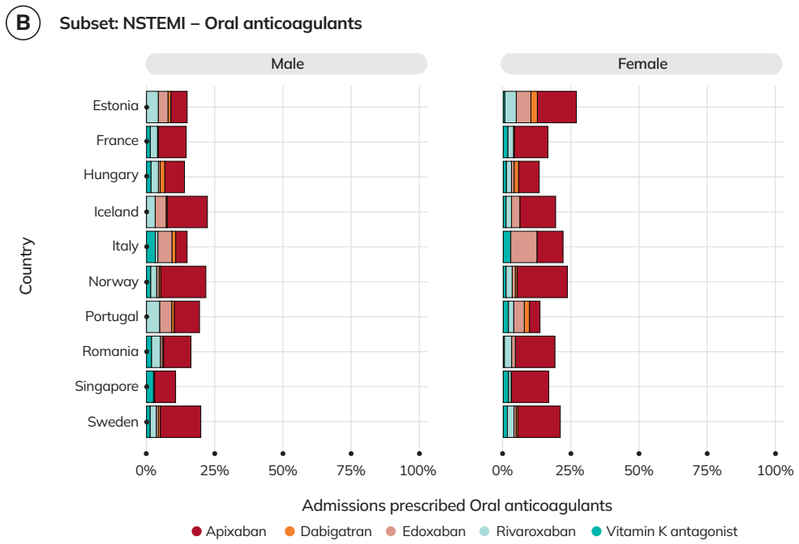
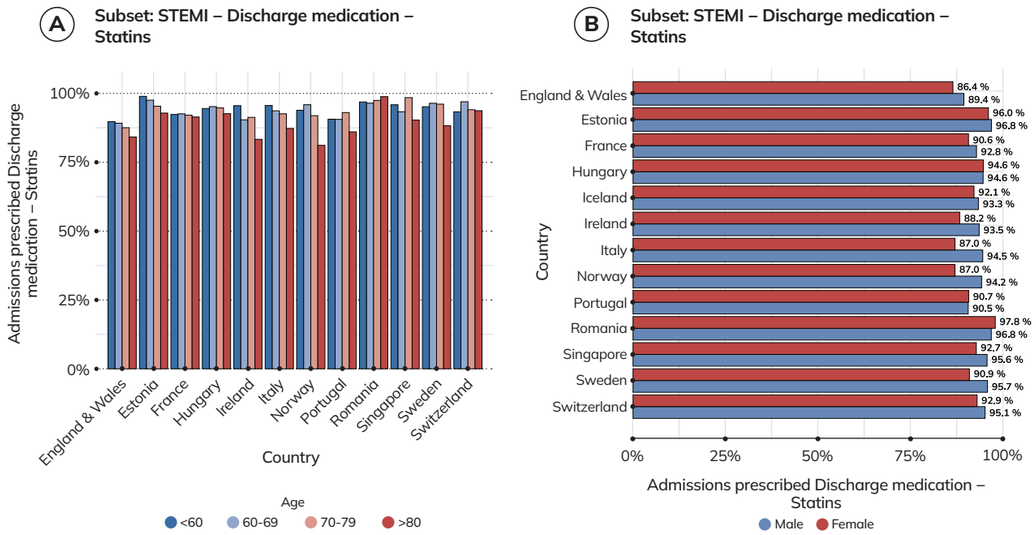
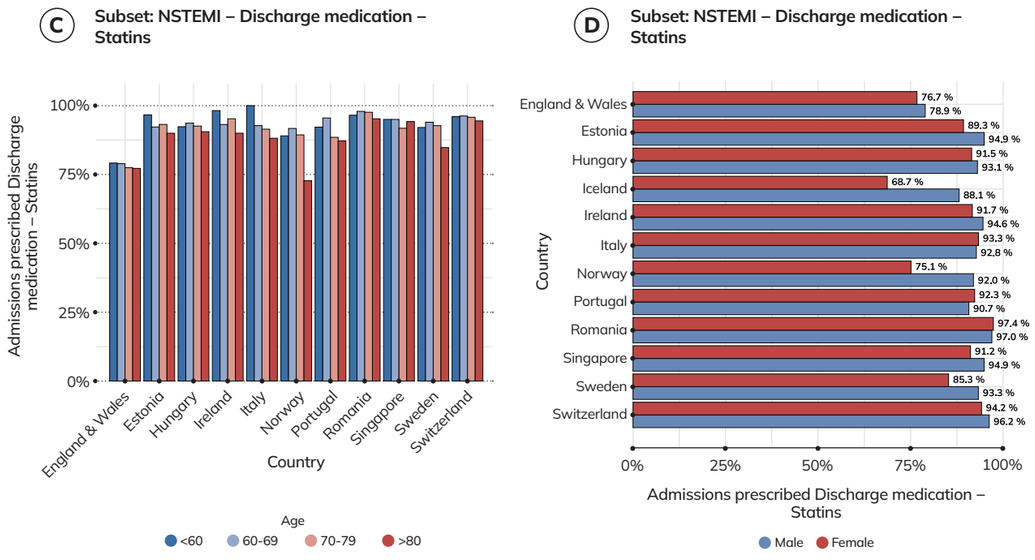


Figure 33. Discharge medication – Statins. Statins were prescribed to most patients with (A, B) STEMI and (C, D) NSTEMI. When stratifying by age, older patients were to some extent less likely to receive statins at discharge. (Data on statins were unavailable for patients with NSTEMI for France).





In-hospital care and discharge medication

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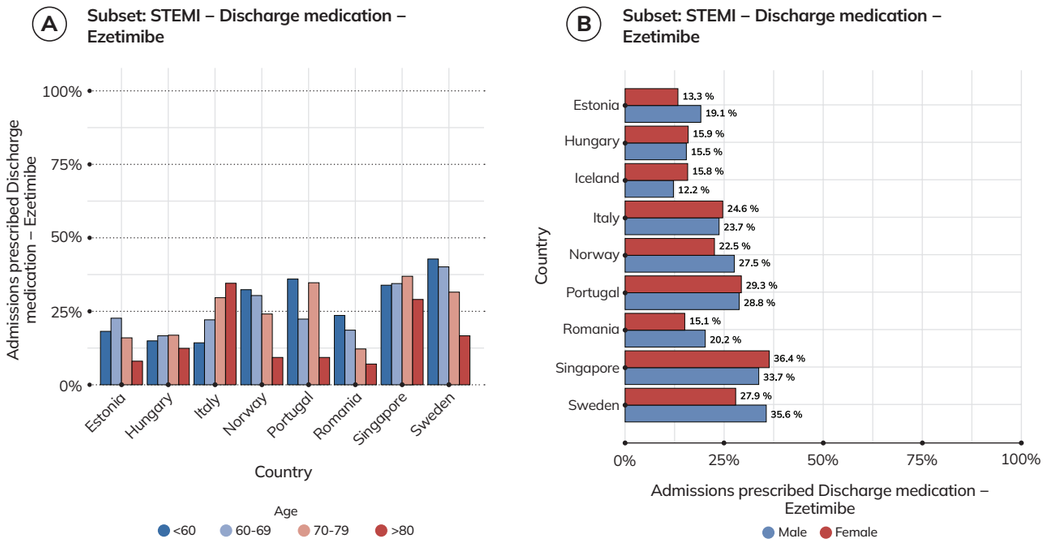
Figure 34. Discharge medication – Ezetimibe. Ezetimibe was prescribed to variable proportions of patients with (A, B) STEMI and (C, D) NSTEMI. When stratifying by age and sex, older patients were less likely to receive ezetimibe at discharge. (Data on ezetimibe were unavailable for England and Wales, Ireland, France and Switzerland).



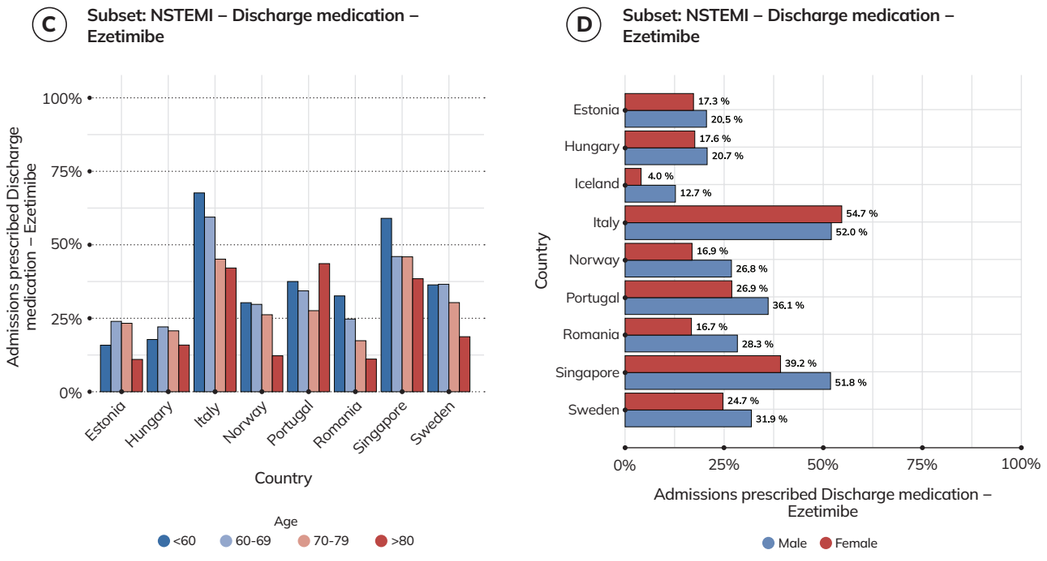
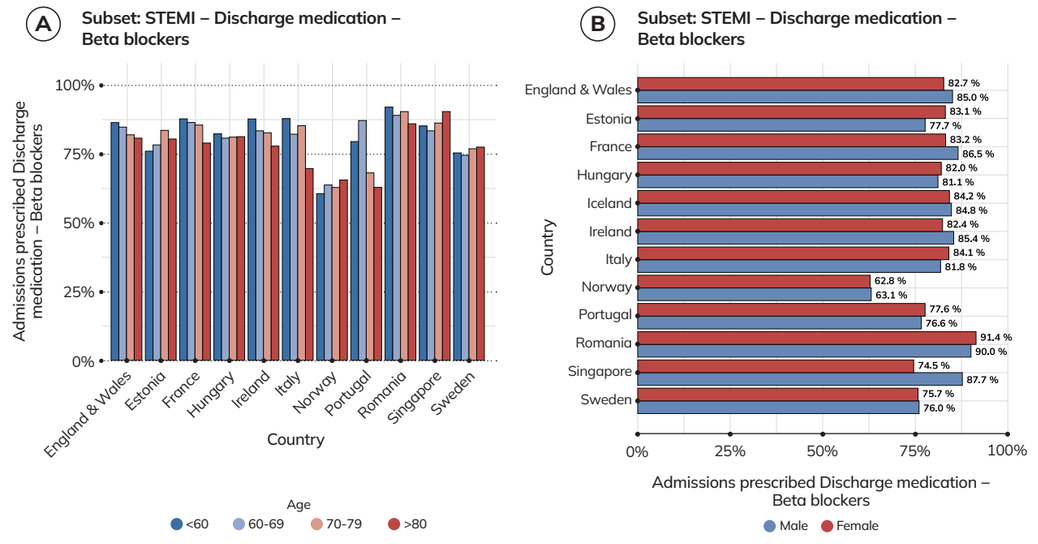
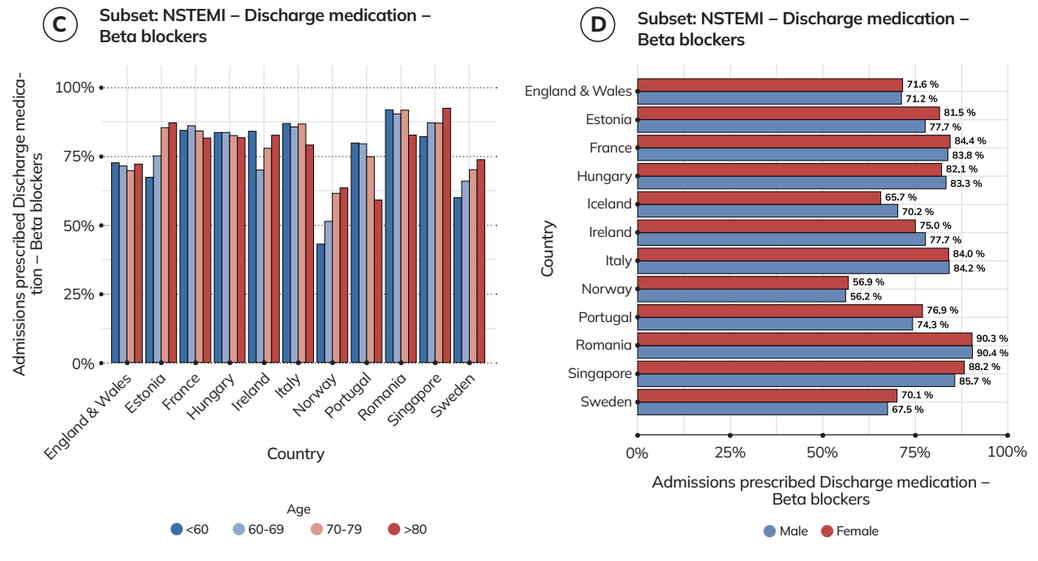


Figure 35. Discharge medication – Beta blockers. Beta blockers were prescribed to most patients with (A, B) STEMI and (C, D) NSTEMI. (Data on beta blockers were unavailable for Switzerland).





In-hospital care and discharge medication

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Figure 36. Discharge medication – ACE inhibitors/ARB. ACE inhibitors/ARBs were prescribed to the majority of patients with (A, B) STEMI and (C, D) NSTEMI. (Data on ACE inhibitors/ARBs were unavailable for Switzerland).

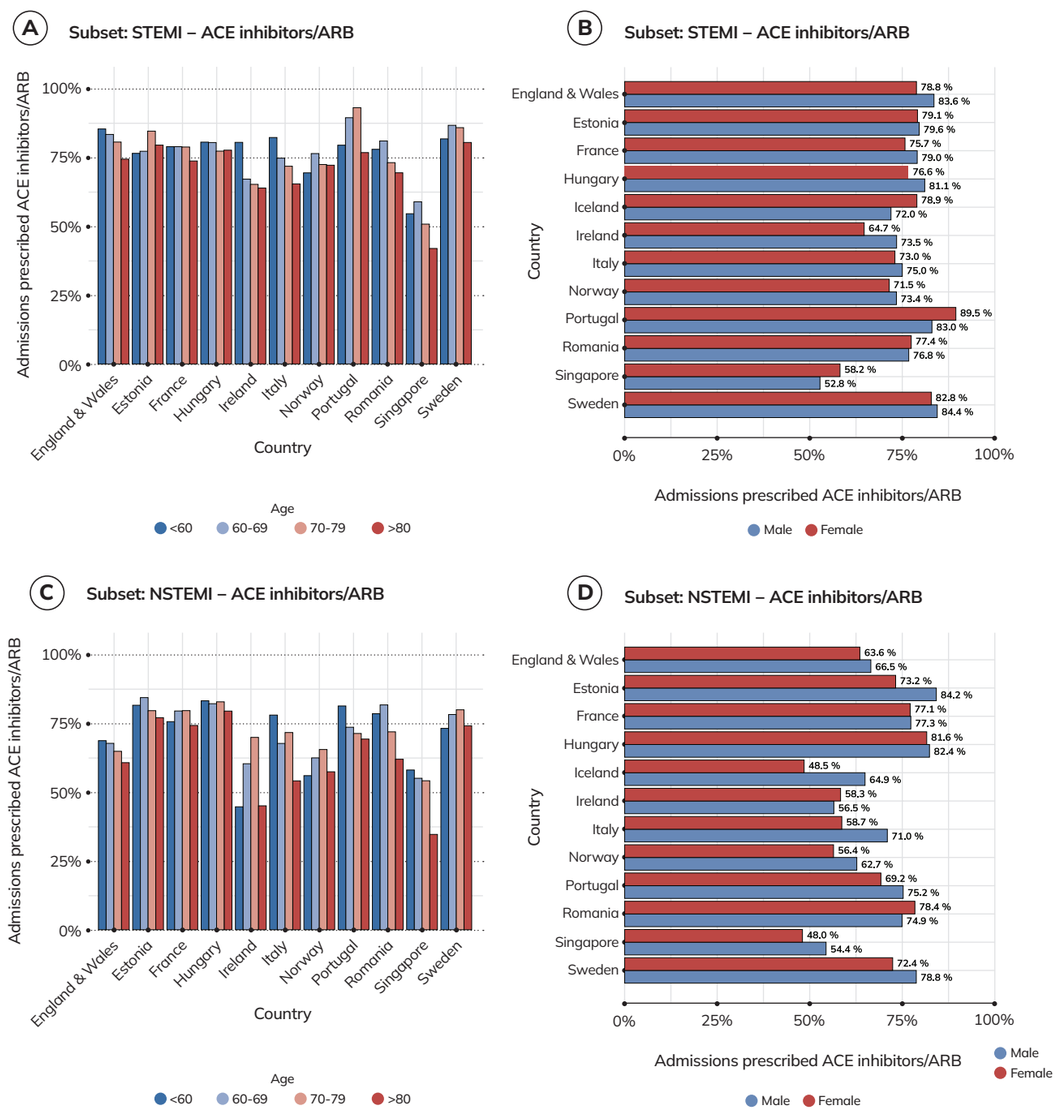
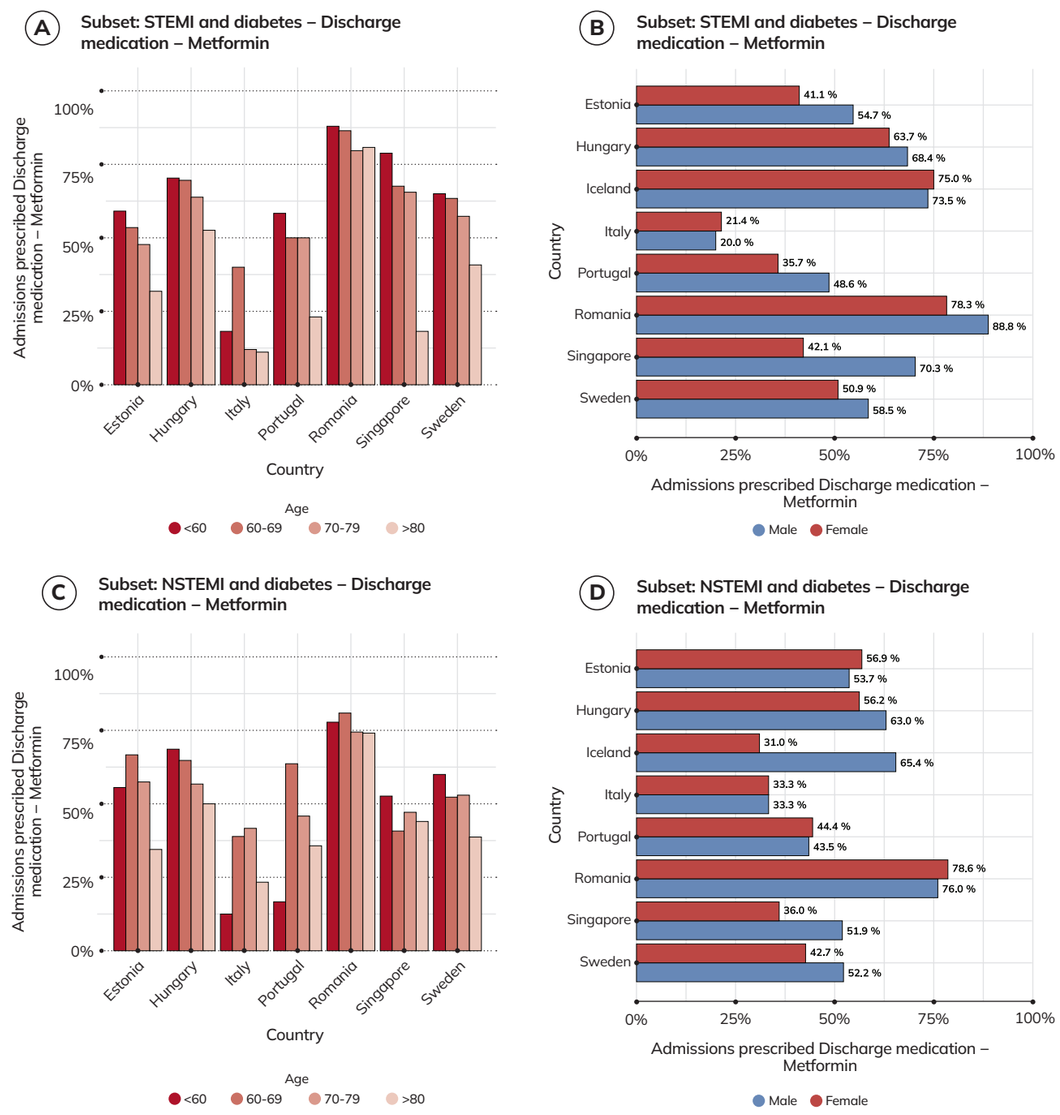


Figure 37. Discharge medication – Metformin among diabetic patients Among diabetic, approximately half of the patients with (A, B) STEMI and (C, D) NSTEMI received metformin at discharge. When stratifying by age and sex, older patients and females were less likely to receive metformin. (Data on metformin were unavailable for England and Wales, France, Ireland, Norway and Switzerland).



In-hospital care and discharge medication

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Figure 38. Discharge medication – SGLT2 inhibitors among diabetic patients. Among diabetic patients, approximately one-third with (A, B) STEMI and (C, D) NSTEMI received an SGLT2 inhibitor at discharge. (Data on SGLT2 inhibitors were unavailable for England and Wales, France, Ireland, Norway and Switzerland).

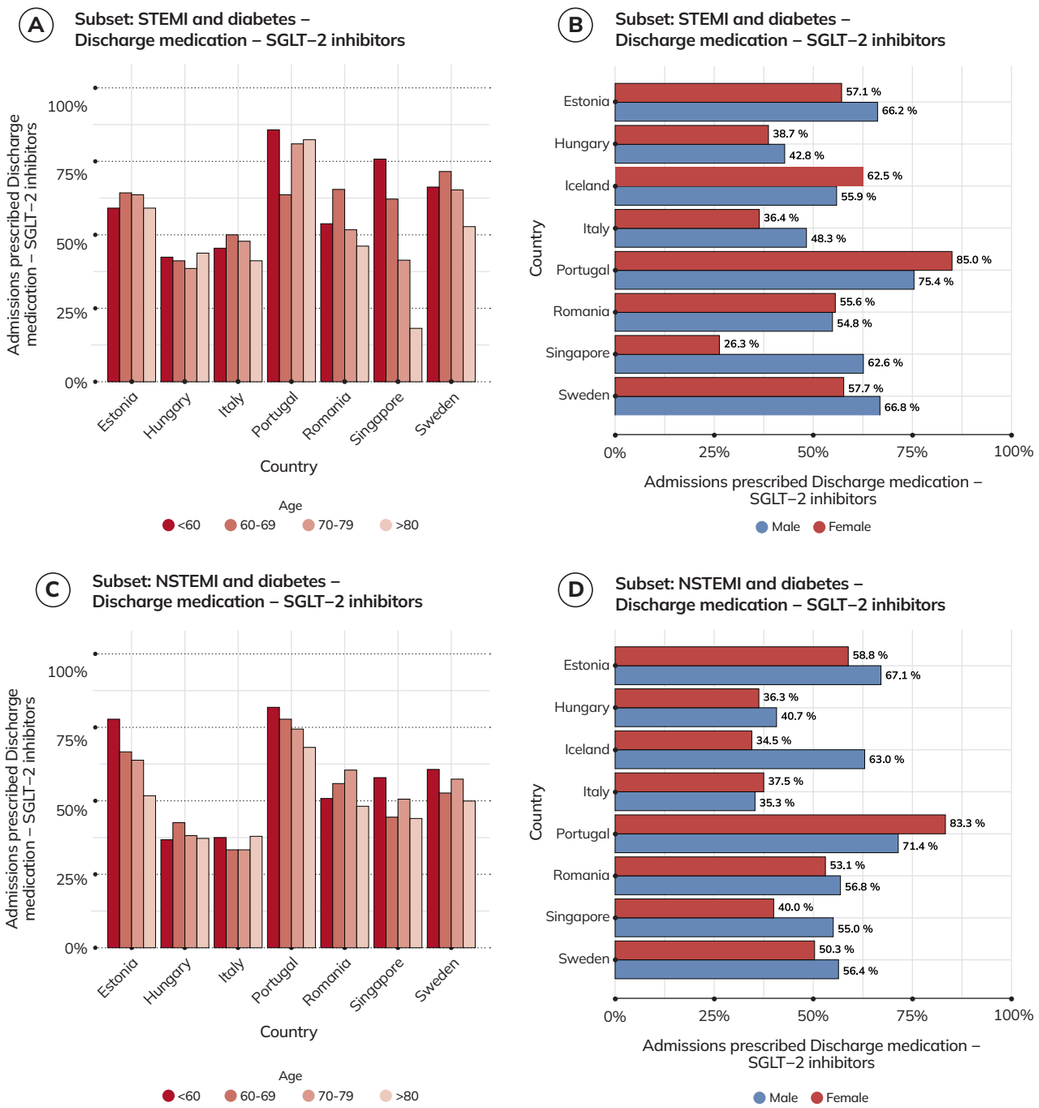
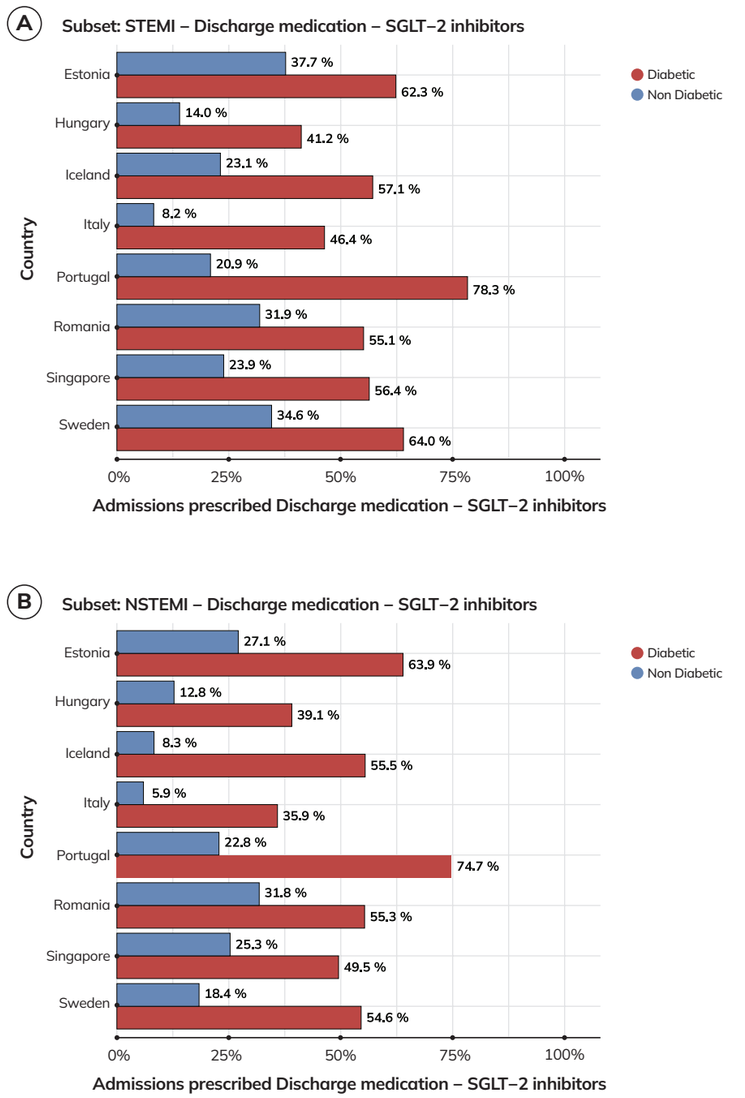


Figure 39. Discharge medication – SGLT2 inhibitors among diabetic/non-diabetic patients. Among diabetic patients, approximately one-third with (A, B) STEMI and (C, D) NSTEMI received an SGLT2 inhibitor at discharge. Among non-diabetic patients, this proportion was lower. However, there were variations between countries in the prescription of SGLT2 inhibitors at discharge among patients with and without diabetes. (Data on SGLT2 inhibitors were unavailable for England and Wales, France, Ireland, Norway and Switzerland).



In-hospital care and discharge medication

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Figure 40. Discharge medication – SGLT2 inhibitors over the years in diabetic or non-diabetic patients. The prescription of an SGLT2 inhibitor at discharge was increasing over the years in both patients with (A) STEMI and (B) NSTEMI. (Data on SGLT2 inhibitors were unavailable for England and Wales, France, Ireland, Norway and Switzerland).

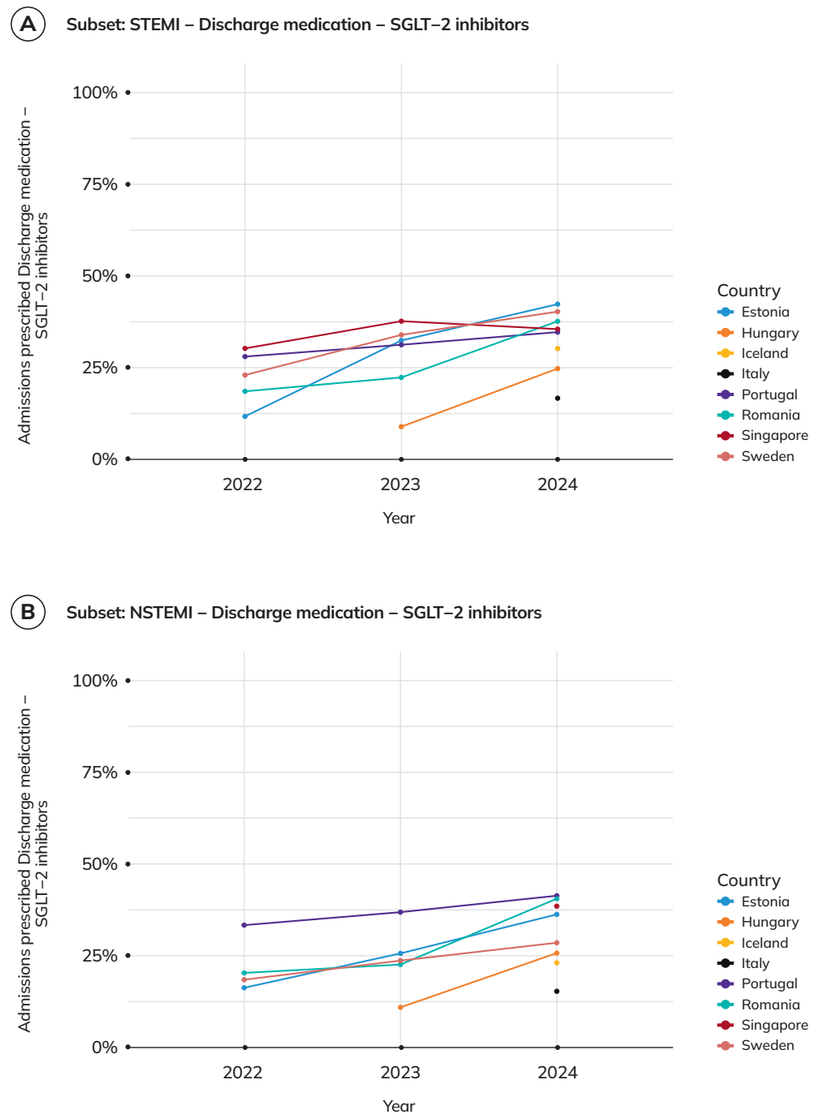
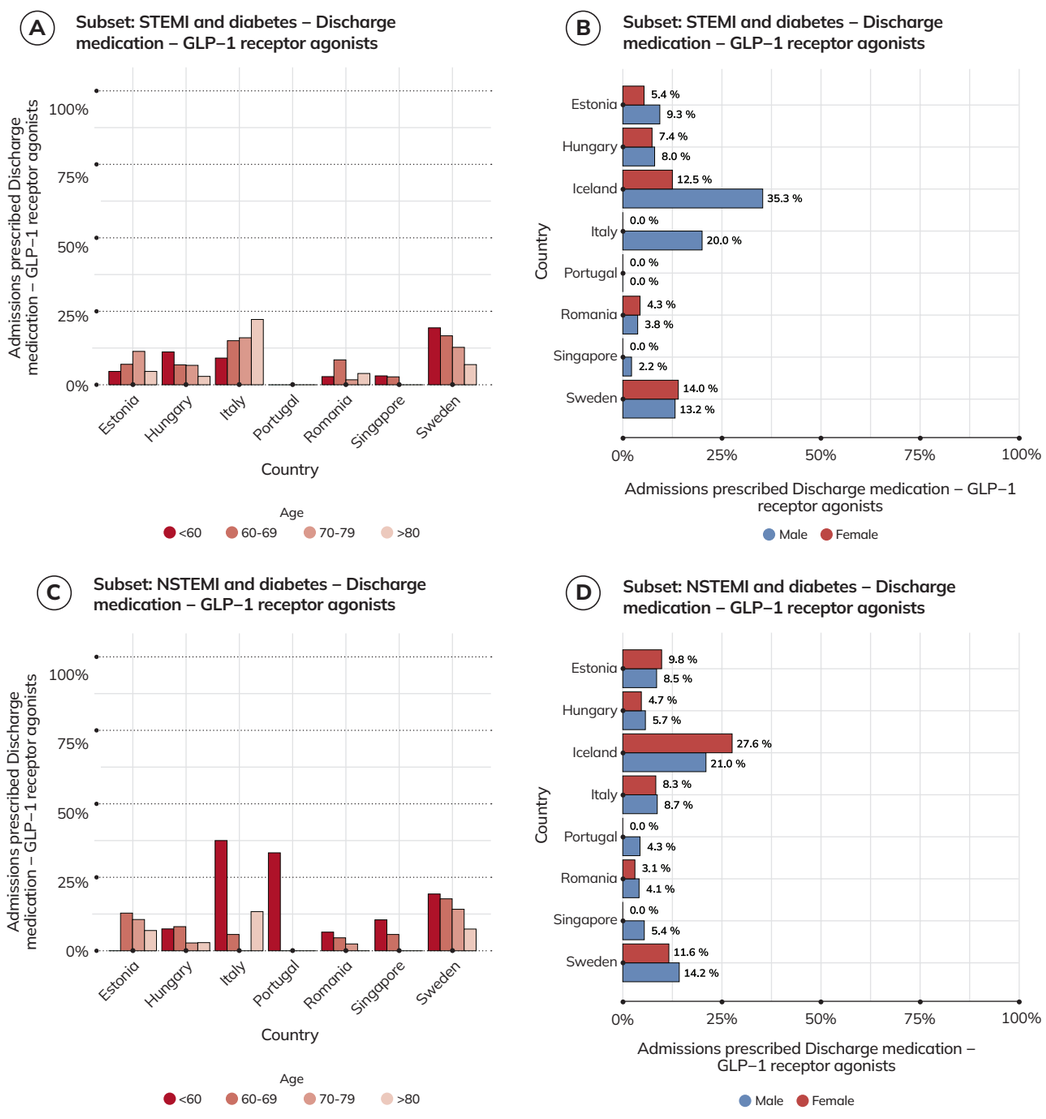


Figure 41. Discharge medication – GLP-1 receptor agonists among diabetic patients. Among diabetic patients, less than one in tenth with (A, B) STEMI and (C, D) NSTEMI received a GLP-1 receptor agonist at discharge. (Data on GLP-1 receptor agonists were unavailable for England and Wales, France, Ireland, Norway and Switzerland).



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Length of stay and in-hospital mortality

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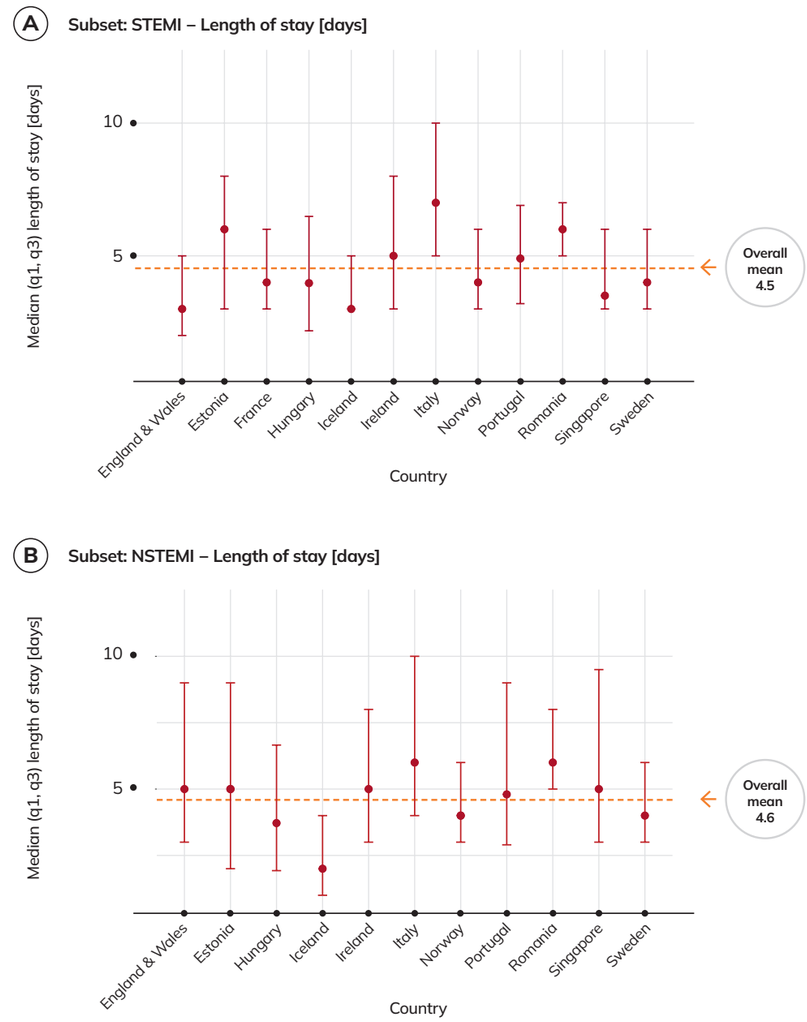
Details about length of stay and in-hospital mortality among the included patients are presented separately by country and for those with STEMI and NSTEMI, and are further stratified by sex, age, and diabetes status.

Figure 42. Length of hospital stay. The median length of hospital stay (days) for patient with STEMI and NSTEMI are presented. (Data on length of stay were unavailable for Switzerland, and unavailable for patients with NSTEMI for France).



Length of stay and in-hospital mortality

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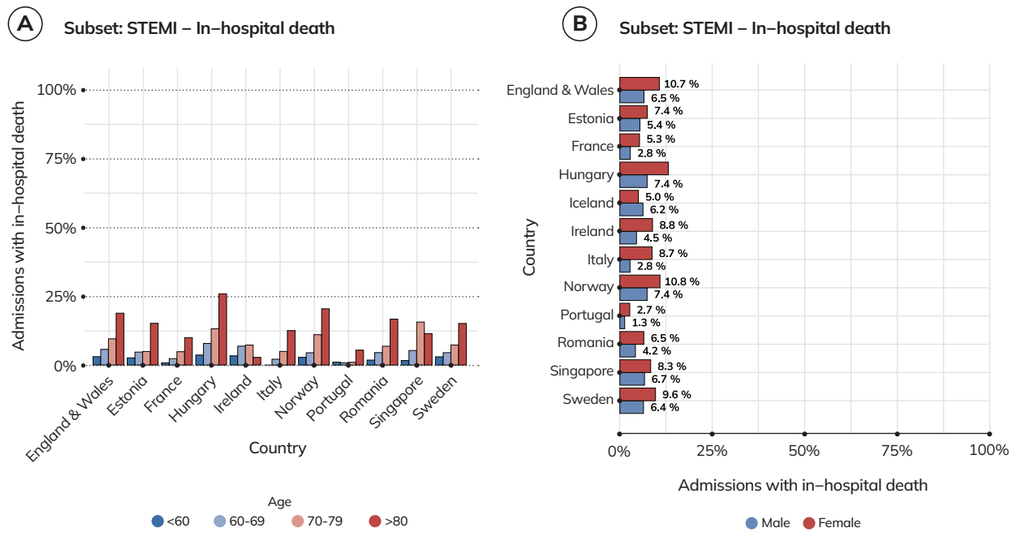
Figure 43. In-hospital death. A higher proportion of (A, B) STEMI patients died during their in-hospital stay compared to (C, D) NSTEMI patients. When stratified by age and sex, older patients and females were more likely to die. (Data on in-hospital death were unavailable for Switzerland and stratified by age for Iceland).



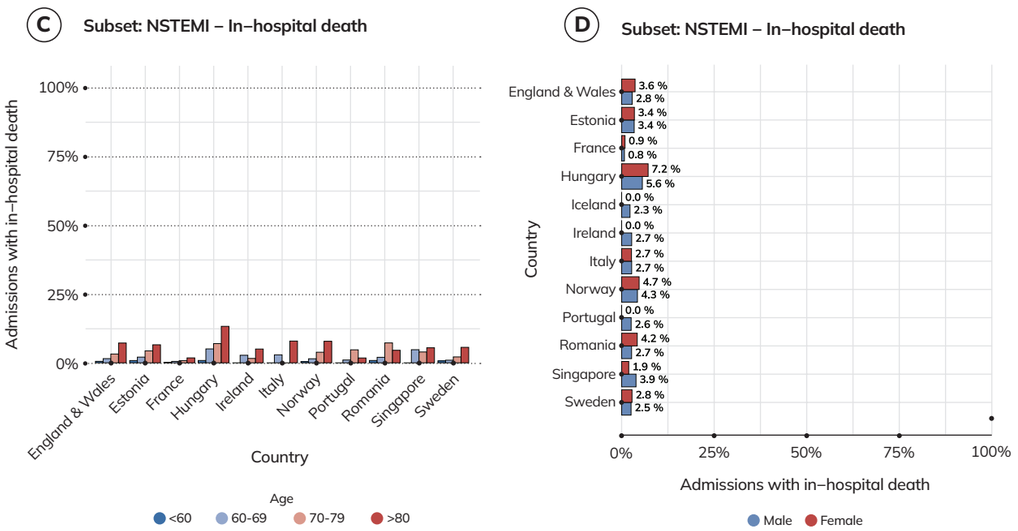
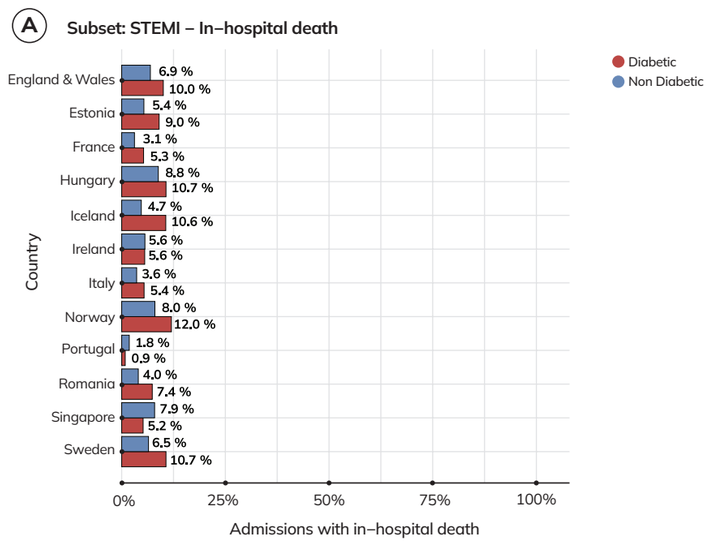
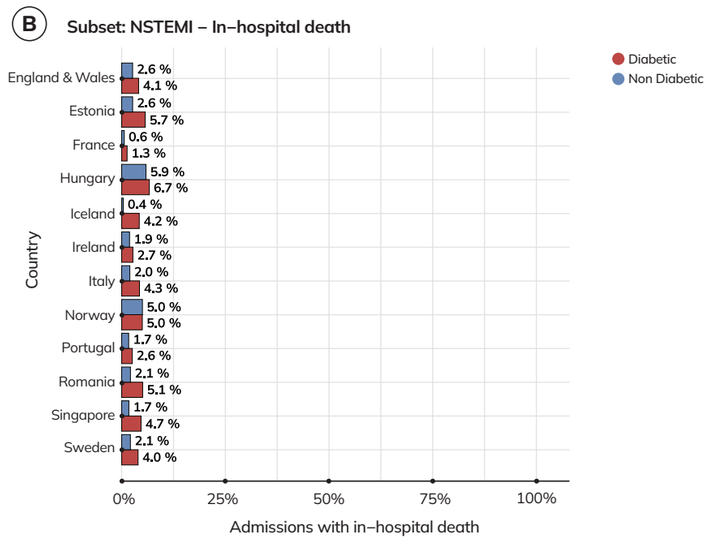


Figure 44. In-hospital death and diabetes. A higher proportion of (A, B) STEMI patients died during their in-hospital stay compared to (C, D) NSTEMI patients. When stratified by diabetes, those with diabetes were more likely to die. (Data on in-hospital death were unavailable for Switzerland).





Quality indicators

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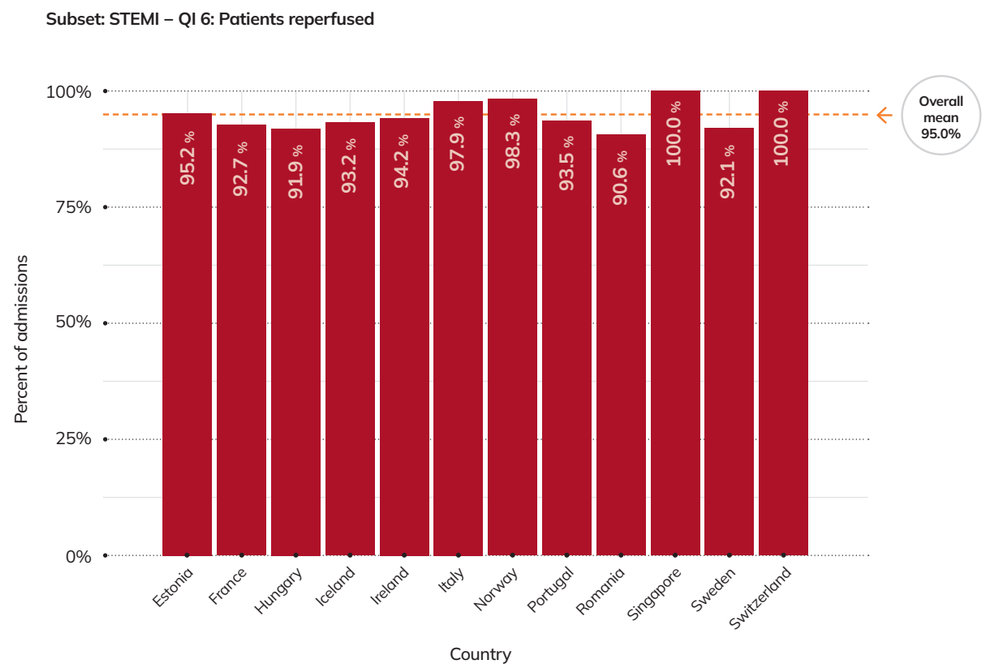
Performance metrics based on ESC quality indicators for acute myocardial infarction are presented separately by country and for patients with STEMI and NSTEMI. Some quality indicators could not be calculated due to the limitations of the available data in each EuroHeart country. Therefore, the quality indicators that could be calculated are presented in the table below.

Table 1. Quality indicators reported in the EuroHeart Annual Report

Quality indicator	Numerator	Denominator
QI 6: Patients with STEMI reperfused among those eligible (onset of symptoms to diagnosis <12 hours)	Number of eligible patients with STEMI <12 hours undergoing reperfusion	Number of patients with STEMI eligible for reperfusion and without contraindications
QI 7: Patients with STEMI who receive timely reperfusion with PCI (wire crossing) within 90 minutes from initial diagnosis	Number of patients with STEMI undergoing timely reperfusion with primary PCI or fibrinolysis	All patients with STEMI eligible for reperfusion
QI 8: Patients with NSTEMI who receive invasive coronary angiography within 24 hours of their diagnosis	Number of NSTEMI patients who receive invasive coronary angiography within 24 hours of their diagnosis	All NSTEMI patients without contraindications
QI 9: Use of radial access in case of invasive strategy for patients with STEMI and NSTEMI	Number of patients who receive invasive coronary angiography via radial access	Number of patients who receive invasive coronary angiography without overriding procedural considerations against the use of radial access
QI 11: Patients with STEMI or NSTEMI who have an assessment of their left ventricular ejection fraction (LVEF) before discharge	Number of patients who have their LVEF measured before hospital discharge	Number of patients with a diagnosis of myocardial infarction.
QI 12: Patients with STEMI or NSTEMI who have their LDL cholesterol measured during hospitalisation	Number of patients who have their LDL cholesterol measured during hospitalisation	Total number of patients with a diagnosis of myocardial infarction.
QI 15: Patients with STEMI or NSTEMI discharged on statins	Number of patients who receive statin therapy at the time of hospital discharge	Number of patients alive at the time of hospital discharge
QI 16: Patients with LVEF <40% who are discharged on ACE inhibitor/ARB	Number of patients with a LVEF <40% prescribed ACE inhibitor/ARB at the time of hospital discharge	Number of patients with LVEF <40% and alive at the time of hospital discharge who are eligible for ACE inhibitor/ARB
QI 17: Patients with LVEF <40% who are discharged on beta blockers	Number of patients with LVEF <40% prescribed beta blocker at the time of hospital discharge	Number of patients with LVEF <40%, and alive at the time of hospital discharge who are eligible for beta blocker
QI 17: Patients with LVEF <40% who are discharged on beta blockers	Number of patients with LVEF <40% prescribed beta blocker at the time of hospital discharge	Number of patients with LVEF <40%, and alive at the time of hospital discharge who are eligible for beta blocker

Figure 45. Quality indicator 6 – Patients with STEMI reperfused among those eligible. The majority of eligible patients with STEMI were reperfused during hospital stay. (Data on quality indicator 6 were unavailable for England and Wales).



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Quality indicators

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Figure 46. Quality indicator 7 – Patients with STEMI who receive timely reperfusion with PCI (wire crossing) within 90 minutes from initial diagnosis. A large variation in timely reperfusion within 90 minutes among patients with STEMI was observed between the different EuroHeart countries. (Data on quality indicator 7 were unavailable for England and Wales and Estonia).

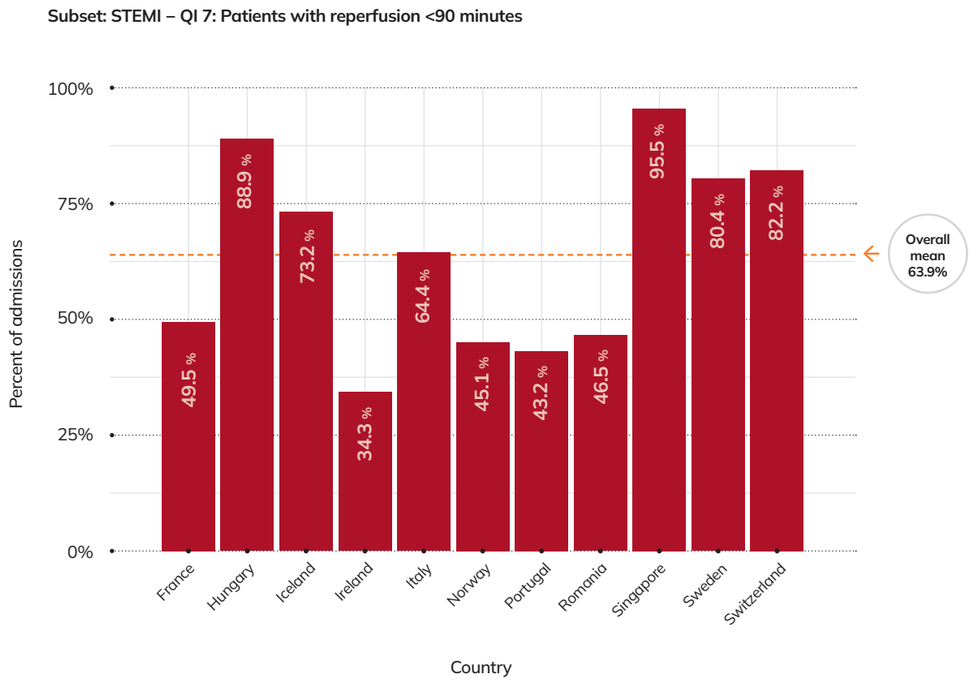
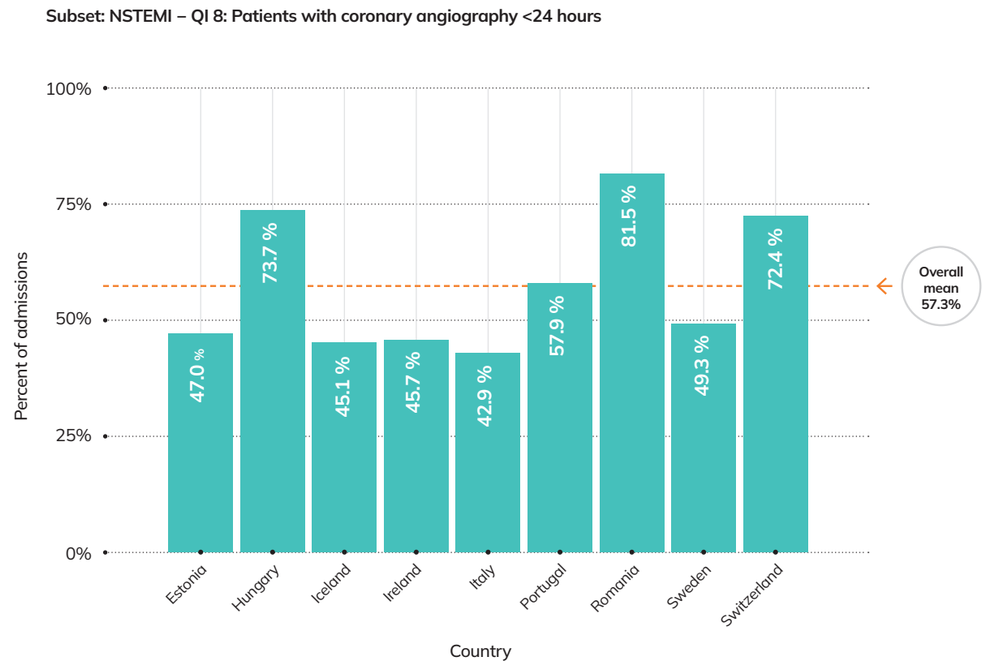


Figure 47. Quality indicator 8 – Patients with NSTEMI who receive invasive coronary angiography within 24 hours of their diagnosis. A large variation in early invasive strategy among patients with NSTEMI was observed between the different EuroHeart countries. (Data on quality indicator 8 were unavailable for England and Wales, France, Norway and Singapore).



Quality indicators

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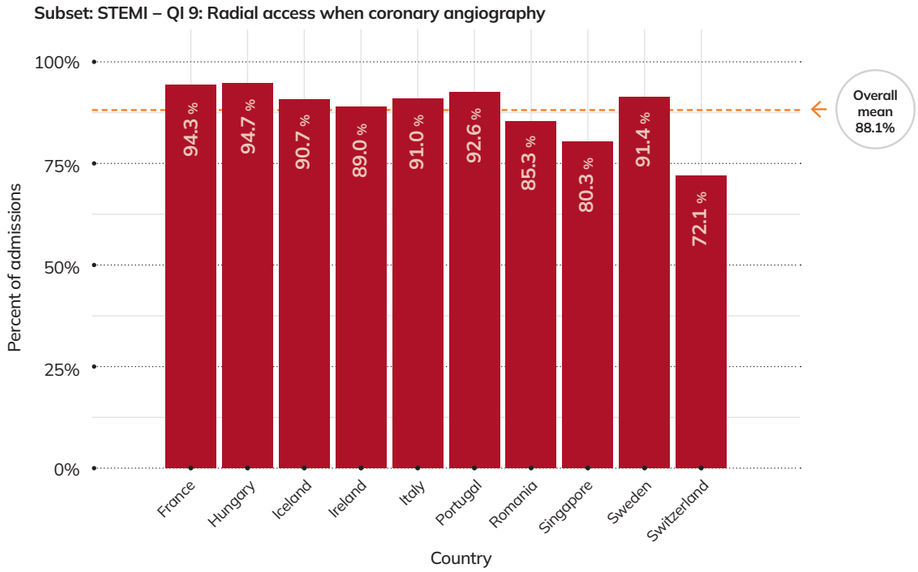
Figure 48. Quality indicator 9 – Use of radial access in case of invasive strategy for patients with STEMI and NSTEMI. Radial access was often used in invasive strategies in most EuroHeart countries. (Data on quality indicator 9 were unavailable for England and Wales, Estonia and Norway).



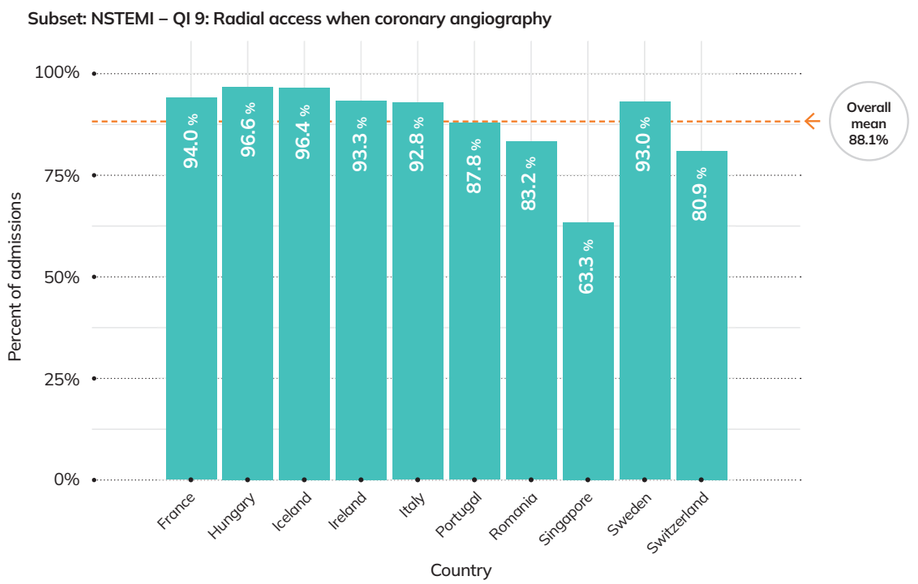
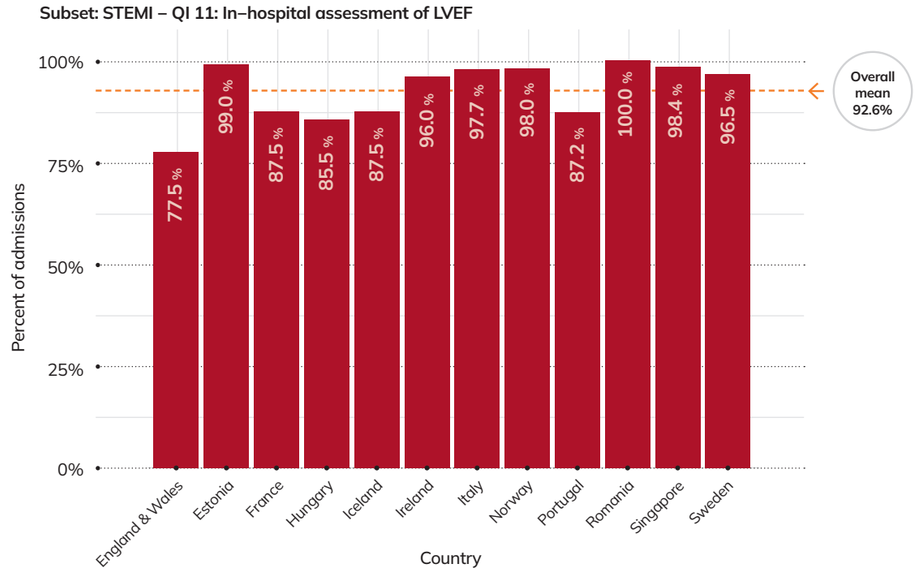
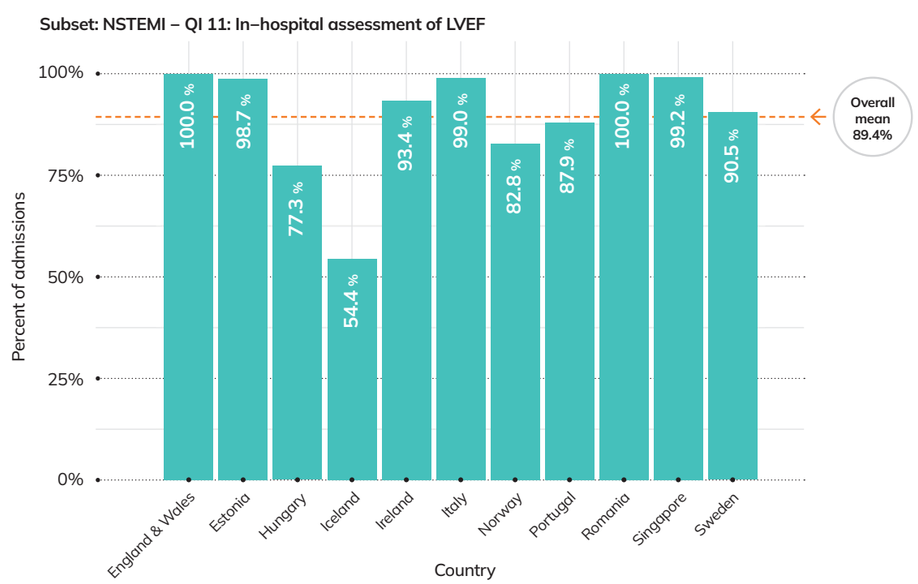


Figure 49. Quality indicator 11 – Patients with STEMI or NSTEMI who have an assessment of their left ventricular ejection fraction (LVEF) before discharge. Many patients across the EuroHeart countries had an assessment of their LVEF before discharge. (Data on quality indicator 11 were unavailable for Switzerland).





Quality indicators

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Figure 50. Quality indicator 12 – Patients with STEMI or NSTEMI who have their LDL cholesterol measured during hospitalisation. Many patients across the EuroHeart countries had their LDL cholesterol measured during hospitalisation. (Data on quality indicator 12 were unavailable for England and Wales and Switzerland).

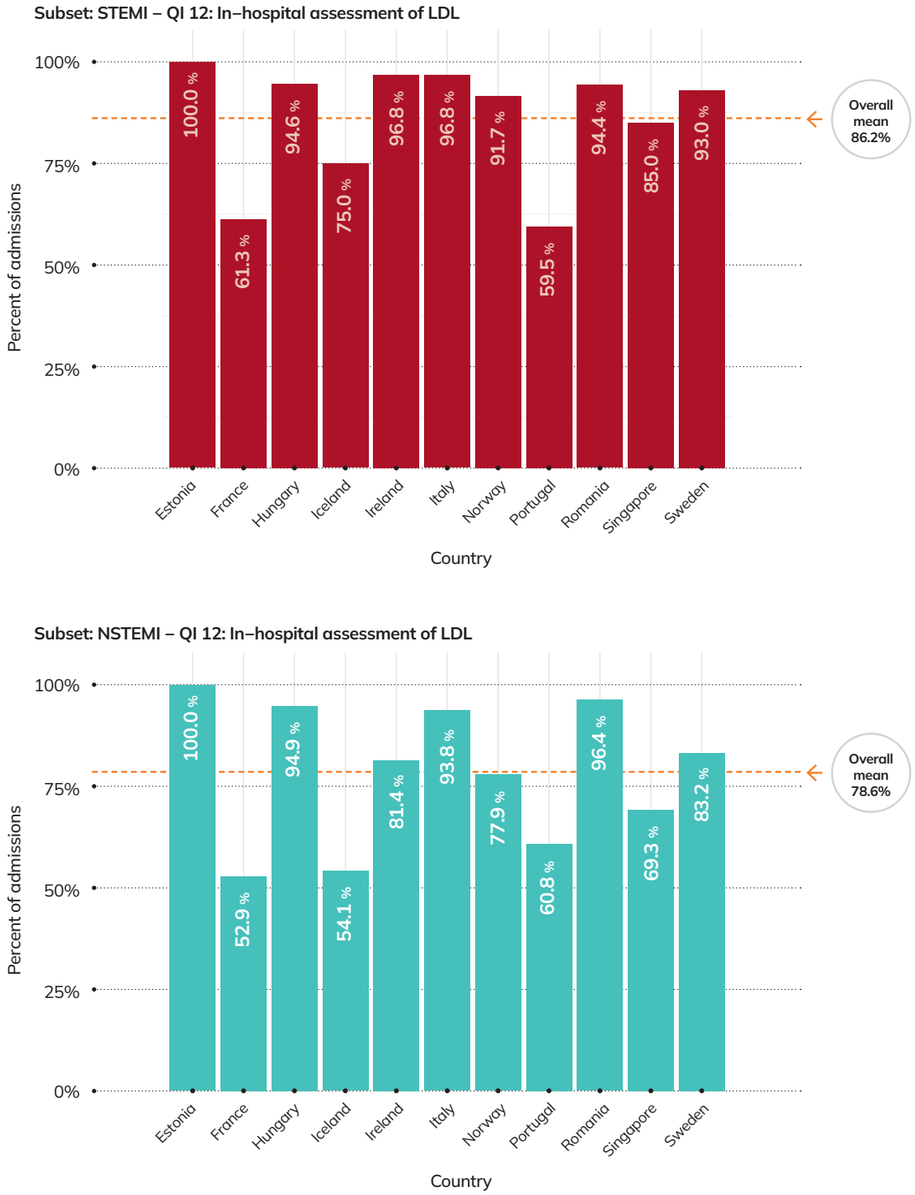
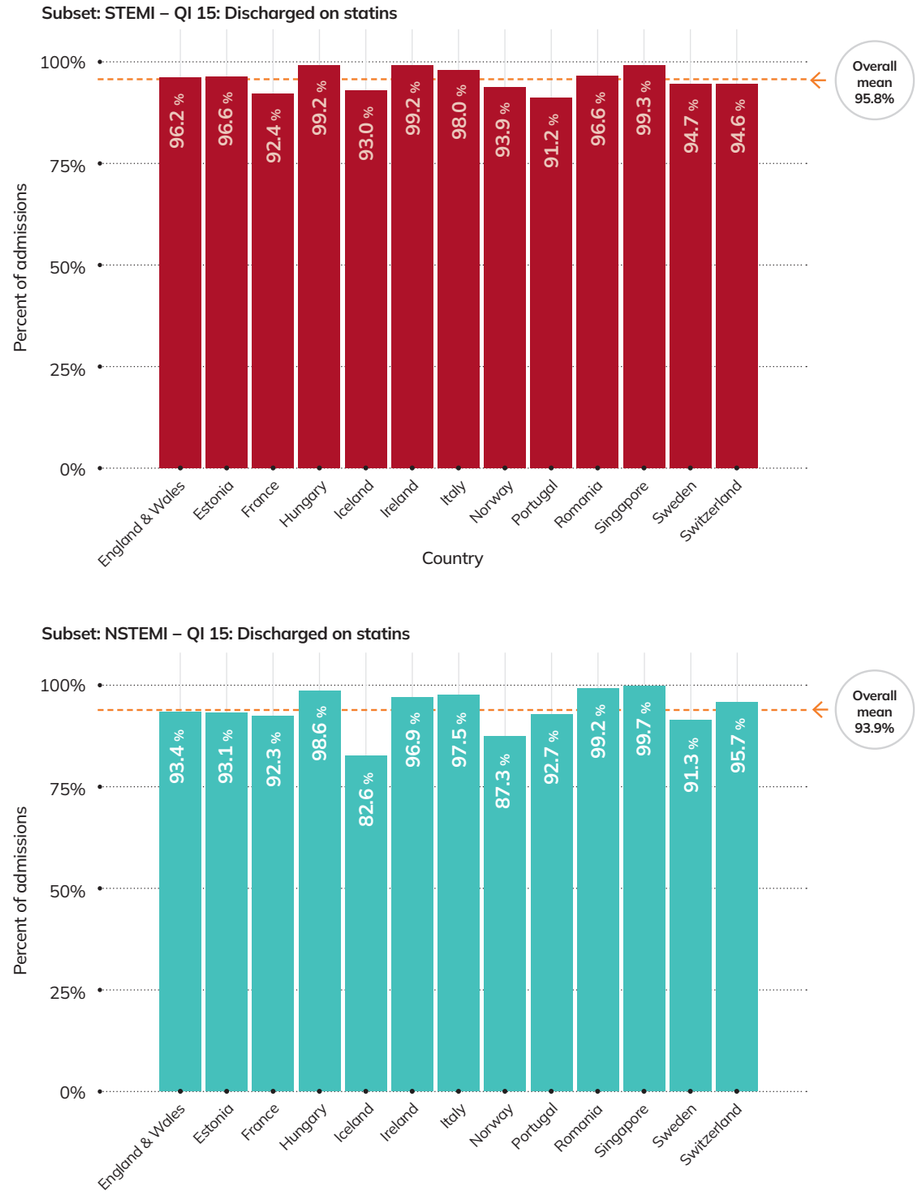


Figure 51. Quality indicator 15 – Patients with STEMI or NSTEMI discharged on statins. The majority of patients with STEMI or NSTEMI were discharged on statins.



Quality indicators

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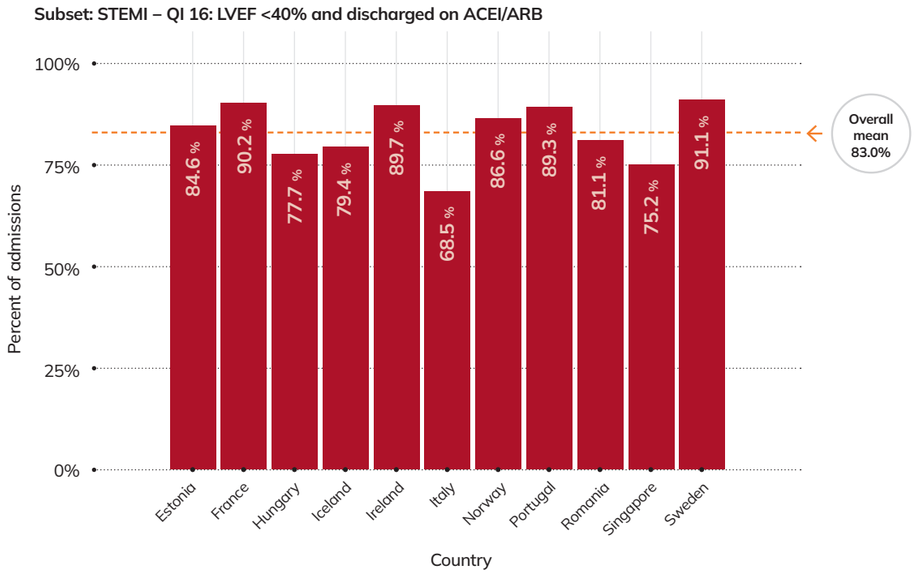
Figure 52. Quality indicator 16 – Patients with LVEF <40% who are discharged on ACE inhibitor/ARB. Many patients with STEMI or NSTEMI and LVEF <40% were discharge on an ACE inhibitor or ARB. (Data on quality indicator 16 were unavailable for England and Wales and Switzerland).



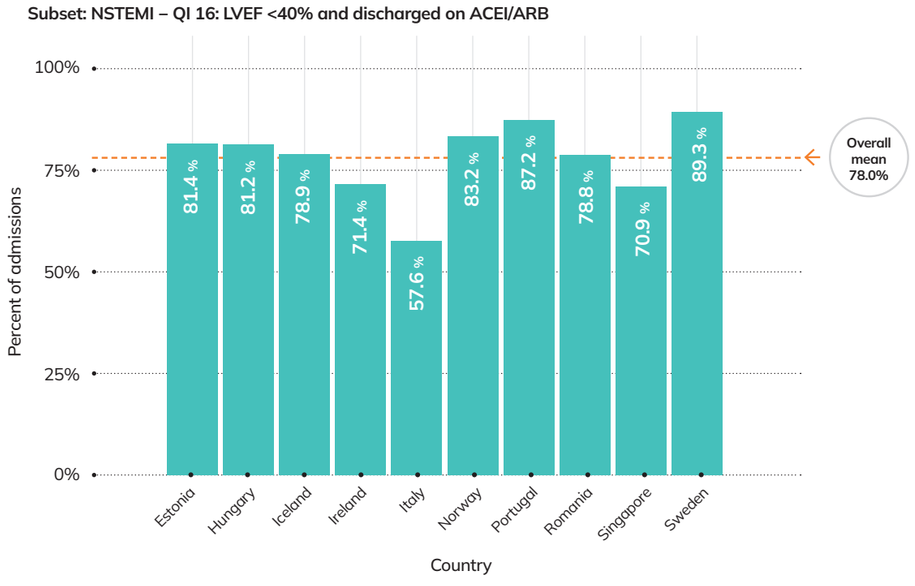
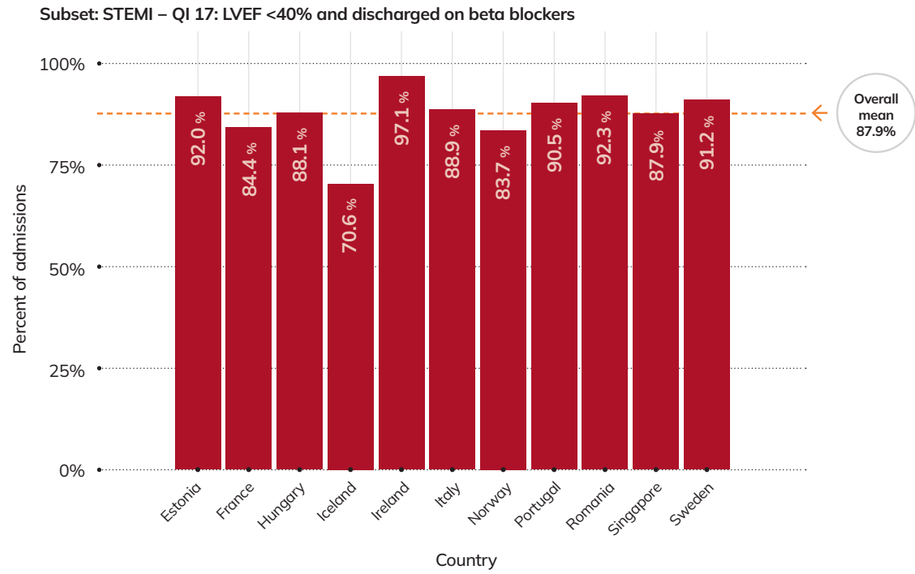
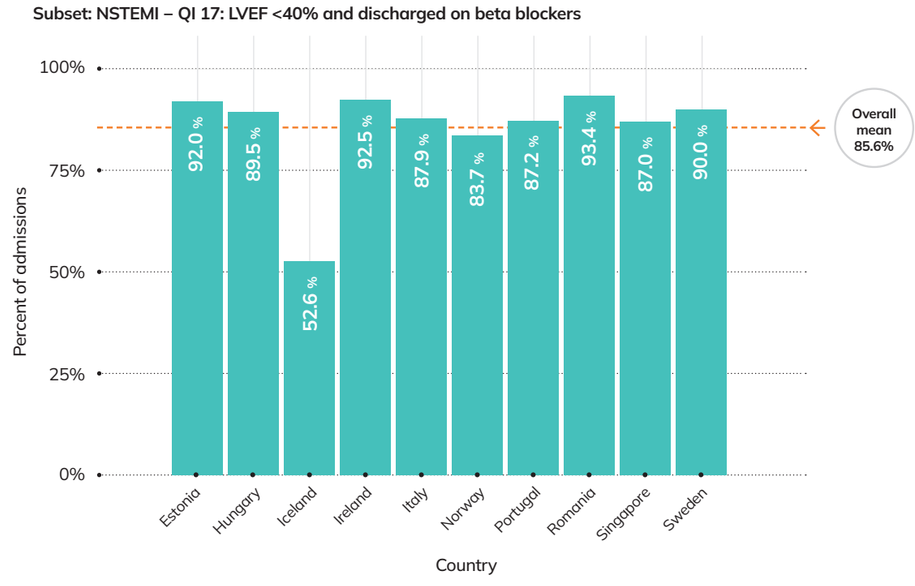


Figure 53. Quality indicator 17 – Patients with LVEF <40% who are discharged on beta blockers. Many patients with STEMI or NSTEMI and LVEF <40% were discharge on a beta blocker. (Data on quality indicator 17 for patients with NSTEMI were unavailable for England and Wales and Switzerland, and unavailable for patients with NSTEMI for France).





Acknowledgements

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- The ESC Board for their strong support.

EuroHeart leadership and operations team 2025

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Appendix

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Appendix Table 1. National coverage of ACS dataset

	Level			
Country	**Patient**	**Ward/department**	**Hospital**	**Region**
England & Wales	Hospitals caring for ACS patients in the National Health Service must comply with of the National Cardiac Audit Programme. Some hospitals struggle to identify all patients in non-cardiology wards and/or provide data intermittently. Previous analysis shows an 85-90% agreement with national coding data.	Most hospitals have clinical/nursing teams that try to identify all cases nursed on non-cardiology wards, but some cases will be missed. Patients that die in the Accident & Emergency departments prior to formal admission to a ward will not appear in the national registry.	Data are provided by 178 NHS hospitals in England and 13 NHS hospitals in Wales, albeit with variable data quality. In the last annual cycle, a few hospitals (13 in England, 3 in Wales) failed to submit data within the permitted timeframes.	Data are collected from all regions and are representative of the patient population.
Estonia	All consecutive patients admitted to or referred to the only two tertiary care hospitals are included.	Occasional patients having a myocardial infarction in different wards of the hospital and treated outside the regular cardiology flow will not be recorded in the registry.	There are two tertiary care hospitals that cover over 70% of the myocardial infarction cases. There are 3 main secondary care hospitals with daytime PCI capability which are not yet part of EuroHeart in Estonia.	The hospitals reporting to EuroHeart cover the whole country. According to the mandatory Estonian myocardial infarction registry, the quality differences in the indicators reported in EuroHeart would not be large, but some variation exists.
France	Only ACS patients undergoing coronary angiogram/PCI from participant centres are included. Data are mandatory and automatically collected via an reporting software	Patients admitted for ACS but who do not undergo coronary angiography or PCI are not included. The entry door of the registry is the cath lab.	66 participant centres in 2023. 33% (66/200) of French centres. Collection of clinical, procedural and in-hospital data are 100% in all participating centres.	All French regions have at least one participating centre. In 10 regions all centres are (or will be) participating. With 33% of French centres and national coverage the data are representative of France.
Hungary	Registration is mandatory and Hungary compare the registered and reimbursed cases continuously. There are no exclusions.	No patients are excluded based on the type of wards they are admitted to.	All hospitals participate by law. ~90% of patients with myocardial infarction are registered.	Data are collected from all regions and is representative of the patient population.
Iceland	Participated in the SWEDEHEART registry since 2008. Since 2024, Iceland has worked on enhancing continuous data collection in hospital wards.	Some patients who are very frail or have multiple comorbidities might go elsewhere but a high proportion of patients are admitted to the cardiology department.	Landspitali is the only cardiology department in the country and all ACS patients tend to be moved there by ambulance or air ambulance.	There is very good collaboration with doctors elsewhere in the country and patients are sent to Landspitali from all regions.
Ireland	Dedicated Data Registrations Officers actively identify cases of ACS through hospital information systems. All patients with a working diagnosis of STEMI or NSTEMI are included i.e. >18 years old and confirmed diagnosis within 24 hours. Non-ACS cases are excluded. Patients are not required to opt-in.	No patients are excluded. All patients that come under cardiology are assessed through chart review to ascertain if they are an eligible ACS patient.	Three hospitals have submitted data to EuroHeart in 2024. This represents 6% of the approximately 50 hospitals in Ireland which care for ACS. One of the 3 hospitals is the primary PCI centre for the region. In the 3 hospitals, 100% of patients with a discharge diagnosis of STEMI or NSTEMI have been included.	Data are representative of one primary PCI centre and two referring hospitals in the south-west region of the country. The south-west health region is one of six health regions in Ireland
Italy	Patients >18 years of age and providing informed consent were included. Patients who were too ill to give consent or who died shortly after admission may not have been enrolled. Patient enrolment may not have been continuous at all sites.	Participation is approved at the unit level i.e. only specific units may enrol patients. Mainly Coronary Care Units (CCUs) participated in the registration. Some patients with NSTEMI cared for in internal medicine or geriatric wards might not be included.	The initiative involved 59 Coronary Care Units (CCUs) across Italy. According to national data (2022), there are 383 CCUs across the country. Therefore, the proportion of participating CCUs in Italy is 15%.	Data are collected at sites in 19 of the 20 regions of Italy.
Norway	The registration is mandatory. All patients are included based on the ICD10 diagnoses in the administrative system. No patients are excluded i.e. also those with ongoing resuscitation or early fatal event are included. No consent is needed. Registration is complete	Patients from all wards are included.	A total of 50 hospitals submit data (100 % of total hospitals). All hospitals, including tertiary centres for PCI, submit data. Coverage ranges from 75% to 98%. National coverage is >90 %.	Data are representative of the country; all regions are covered.

Appendix

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Appendix Table 1. National coverage of ACS dataset

	Level			
Country	**Patient**	**Ward/department**	**Hospital**	**Region**
Portugal	Patients need to consent to their data being collected. The electronic case report form is completed manually.	Only patients admitted to the cardiology ward are included. Patients admitted to internal medicine wards are not included.	Data are provided by 16 public hospitals (out of 44 public hospitals with cardiology wards). Coverage in each centre varies.	Data are being collected from all regions and are believed to be representative of the country's population, despite the lack of completeness in some cases.
Romania	Patients are not collected continuously due to the lack of registrars and the fact that the registry is not mandatory by law.	No patients are excluded based on the type of wards they are admitted to.	15 hospitals participate from 21 that are part of STEMI network. There are 39 PCI centres in Romania.	Data are representative of the country; all regions are covered.
Singapore	Singapore captures all PCI patients admitted for cath/PCI procedures. VVIP patients are excluded due to hospital policies. No barriers to continuous data collection as this is for an audit database.	No patients are excluded based on the ward/ department they are admitted to.	One hospital submits data to EuroHeart. This represents approximately 30% of total hospitals in the country. No variation in volume/quality.	Data are representative of the population from the country.
Sweden	Registration is mandatory only for patients with myocardial infarction. No patients are actively excluded.	For patients <80 years, the national coverage is >90%. Sweden has recently started a project to find out why those 10% are not registered. Being admitted to a non-cardiology ward may, at larger hospitals, be a problem.	100% of the hospitals.	All hospitals participate.
Switzerland	Only patients undergoing coronary angiography or PCI are registered. Prospective data entry, checked with billing data during biannual monitoring.	Only patients undergoing coronary angiography or PCI are registered.	32 of 43 interventional centres participate.	32 of 43 interventional centres participate. The data collected represents ~70% of Swiss coronary angiographies and PCIs.

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