NATIONAL CARDIAC REGISTRY

ANNUAL STATUS REPORT 2025

NATIONAL CARDIAC REGISTRY

Data period: 1 January 2024 - 31 December 2024

Report No 5, pages 90

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National Cardiac Registry Annual Report 2025, December 2025.
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NATIONAL CARDIAC REGISTRY

The National Cardiac Registry is supported by funding from the Commonwealth Department of Health, Disability and Ageing as part of the National Clinical Quality Registry Program.

Australian Government
Department of Health, Disability and Ageing

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Glossary

ACS	Acute Coronary Syndrome
ACTCOR	The Australian Capital Territory Cardiac Outcomes Registry
ACSQHC	Australian Commission on Safety and Quality in Health Care
AIHW	The Australian Institute of Health and Welfare
ANZSCTS	The Australian & New Zealand Society of Cardiac and Thoracic Surgeons
CABG	Coronary Artery Bypass Graft
CADOSA	The Coronary Angiogram Database of South Australia
CCAP	Chronic Care for Aboriginal People
CQR	Clinical Quality Registry
CRoWA	Cardiac Registry of Western Australia
CSANZ	The Cardiac Society of Australia and New Zealand
CVD	Cardiovascular Disease
DAPT	Dual Antiplatelet Therapy
ECG	Electrocardiogram
HREC	Human Research Ethics Committee
IQR	Interquartile range
LLT	Lipid Lowering Therapy
LVEF	Left Ventricular Ejection Fraction
MACCE	Major Adverse Cardiac and Cerebrovascular Events
MACE	Major Adverse Cardiac Events
NCR	National Cardiac Registry
NCR Ltd.	National Cardiac Registry Limited
NSTEMI	Non-ST Elevation Myocardial Infarction
NSWCOR	New South Wales Cardiac Outcomes Registry
NTTCD	Northern Territory Top End Coronary Database
OHCA	Out of Hospital Cardiac Arrest
PCI	Percutaneous Coronary Intervention
PHN	Pre-hospital notification
PVD	Peripheral Vascular Disease
QCOR	Queensland Cardiac Outcomes Registry
STEMI	ST-Elevation Myocardial Infarction
VCOR	Victorian Cardiac Outcomes Registry

Message from the Chair of the Board

Dr Jim Leitch - Chair of the National Cardiac Registry Limited Board

I am very pleased to introduce the 2025 Annual Status Report from the National Cardiac Registry (NCR).

2025 has been a productive and exciting time for the NCR. The registry continues to grow and mature. Negotiations with the private hospitals has resulted in agreement with a large operator and enrolments are planned in the new year. There has been growth in public hospital participation and substantial improvement in the completeness and quality of data received from the state registries. This has been achieved predominantly by clinician led advocacy for the NCR in WA and the NT along with jurisdictional support. There has been an increase in participation from NSW sites with support from the state department of health and from clinicians in participating sites. Challenges remain with lack of harmonisation of cardiovascular data across the various jurisdictions and the fragmented national registry landscape. The NCR has advocated for consolidation of the cardiovascular registries and participated in the Australian Cardiovascular Alliance report on cardiovascular data nationally.

This year the NCR has produced a special report on the utilisation of Same Day Discharge following elective Percutaneous Coronary Intervention (PCI) demonstrating large variation in length of stay nationally. The report has been distributed to the jurisdictions allowing them the opportunity to deliver more efficient health care. This special report is the first of many and demonstrates how the registry can add value while still providing the core function of ensuring excellence in cardiovascular care.

New guidelines for the treatment of acute coronary syndromes were published this year. The NCR offers an accessible national platform for evaluating how we are meeting some of these expectations. For some measures, for example door to balloon time of 60 minutes, adopted from international consensus, we are clearly not meeting the target. I encourage readers to examine the detailed analysis in the report which helps explain some of the barriers to improving this measure across Australia, and perhaps ways that it could be improved. On the other hand, the annual reports show a pleasing increase in the frequency of radial artery cannulation, a technique associated with a lower risk of complications and improved patient satisfaction. These are just two examples of how the NCR can be used to monitor guideline compliance and perhaps in the future to help develop national standards from locally derived data.

This report is a testament to everyone who contributes, often without specific compensation. We are funded by the Commonwealth government and the team to whom we report have provided very helpful guidance and support. I thank my fellow board members and directors for their thoughtful contributions. Clinician advocacy is the key to our growth, and I thank all those clinicians and department members who have devoted some of their busy lives to the NCR. Our Chief Executive Officer Megan Schoder has worked tirelessly along with the expert team at Monash to produce this outstanding summary of our work - thank you all.

Message from the Chair of the Steering Committee

A/Prof Jeff Lefkovits & Dr Rohan Poulter - Chair and Deputy Chair

On behalf of the National Cardiac Registry Steering Committee, it is our privilege to introduce this year's Annual Report. Building on our work in establishing and cultivating a national clinical quality registry for percutaneous coronary intervention (PCI), the last 12 months has seen the registry play an increasingly valuable role in strengthening cardiovascular care across Australia. The NCR provides clinicians, health services, and policymakers with insights needed to advance both the safety and effectiveness of PCI practice.

In today's rapidly evolving clinical environment, clinical registries like the NCR have become indispensable tools for quality assurance. Our registry's activities over the past 12 months have enabled our clinicians to evaluate their outcomes in the context of national benchmarks. This process supports continuous improvement and facilitates early identification of unwanted variation in practice. Recognising such variation is a critical first step toward targeted quality improvement activities. Ultimately, this leads to better patient outcomes and more efficient use of healthcare resources.

This year's report reflects the collective commitment of our contributors to harness data in service of better outcomes for every patient. We are particularly excited to have seen increased clinical engagement throughout 2024, and we warmly welcome the ongoing commitment and active participation of all jurisdictions in strengthening the registry. This collective engagement enhances data completeness, enriches the national picture of PCI practice, and reinforces our shared commitment to improving outcomes for all Australians.

As we look ahead, the Steering Committee of the NCR remains committed to strengthening the quality, depth, and impact of our data to support excellence in PCI care for all Australians.

Executive Summary

Cardiovascular disease (page 18) remains one of Australia's most significant health challenges, and the National Cardiac Registry (NCR) provides the national perspective needed to measure, compare and improve outcomes in cardiac care. With more than 119,000 percutaneous coronary intervention (PCI) (page 19) procedures recorded from 62 hospitals across all eight jurisdictions, and with both public and private data included, the NCR provides a clear national picture of cardiac care in practice. This allows benchmarking across the country, and highlights where improvements can make the greatest difference.

The NCR tracks eleven quality indicators (QIs) which includes survival, complications and readmissions. These measures enable meaningful comparisons across hospitals and jurisdictions, providing insights that drive improvements in safety, consistency and outcomes. National benchmarking has already assisted to inform clinical guidelines, supported updates to hospital protocols and guided quality improvement initiatives that directly benefit patients. Importantly, the NCR QIs complement the Heart Foundation's Acute Coronary Syndrome (ACS) Guidelines[1] and the Australian Commission on Safety and Quality in Health Care (ACSQHC) Clinical Care Standards,[2] reinforcing national efforts to deliver consistent, high quality cardiac care.

Collaboration is central to the NCR's approach. Clinicians, hospitals, professional societies, governments and consumers, including representatives from Aboriginal and Torres Strait Islander communities all contribute to its design and delivery, ensuring the data reflects shared priorities and supports change. Funded under the National Clinical Quality Registry (CQR) Program and aligned with *The National Strategy for Clinical Quality Registries and Virtual Registries 2020 -2030*[3] and the Australian Framework for CQRs, with operations managed by Monash University, the NCR plays a key role in helping to guide policy development and inform health service planning at both state and national levels.

This report outlines the progress achieved to date, the impact on patients and services and the opportunities ahead. With expansion into additional cardiac conditions, enhanced reporting and integration with digital health systems, and a growing focus on timely reporting and improved insights, the NCR is well positioned to deliver even greater value for patients, clinicians and governments at a local, jurisdictional and national level. We encourage you to read on and see how collaboration at a national scale is translating data into action and improving outcomes for all Australians.

1 Heart Foundation (2025) Australian clinical guideline for diagnosing and managing acute coronary syndromes 2025, accessed 1 October 2025, https://www.heartfoundation.org.au/for-professionals/acs-guideline

2 Australian Commission on Safety and Quality in Health Care (ACSQHC) (2021) National Safety and Quality Health Service Standards, Australian Government, accessed 1 October 2025, https://www.safetyandquality.gov.au/sites/default/files/2021-05/national_safety_and_quality_health_service_nsqhs_standards_second_edition_-_updated_may_2021.pdf

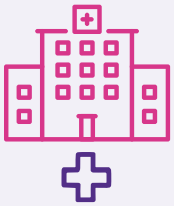
3 Department of Health (2020) National Clinical Quality Registry and Virtual Registry Strategy, accessed 1 October 2025. https://www.health.gov.au/sites/default/files/2023-04/a-national-strategy-for-clinical-quality-registries-and-virtual-registries-2020-2030_0.pdf

1. National Cardiac Registry

50%
of all **PCI procedures in Australia** are captured each year by the NCR[4]

8
States and Territories are participating in the NCR allowing for complete national coverage

58
hospitals contributed PCI data for inclusion in the analysis from January to December 2024



6
new hospitals are contributing PCI data which will be included for analysis in the 2026 annual report

22,773
individual patients have been included in the NCR analysis from January to December 2024

25,495
PCI procedures have been captured by the NCR from January to December 2024

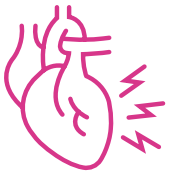
104,473
individual patients have been included in the NCR analysis since 2019

119,095
PCI procedures have been captured by the NCR since 2019

Increase Decrease No change
from previous year's reported figure

4 Australian Institute of Health and Welfare (2025), Heart, stroke and vascular disease: Australian facts, AIHW, Australian Government, accessed 1 September 2025.

2. Key Findings



55.3% ↑ 1%
of PCIs were for **Acute Coronary Syndromes (ACS)**

28.8% ↑ 1%
of patients receiving a PCI have **diabetes**

19.7% ↔
of PCI procedures were performed **out-of-hours**

81.0% ↔
of procedures utilised **radial access** during the PCI which is associated with fewer complications

0.6% ↔
of PCIs had an **in-hospital major bleeding** event post-PCI

0.3% ↔
is the rate of **in-hospital major bleeding** when **radial access** was adopted

56 minutes ↔
was the **median door to PCI mediated reperfusion time for Primary PCI** patients (time between arrival at hospital to restoring blood flow to the heart, for emergency patients)

47 minutes ↑ 1 min
was the **median door to PCI mediated reperfusion time** for Primary PCI patients when **PHN (prehospital notification) was utilised**

1.7% ↔
in-hospital mortality

2.9% ↔
of all PCIs were **unplanned cardiac readmissions**

96.3% Lipid lowering therapy
94.7% Dual antiplatelet therapy ↔

of PCI patients were discharged with **recommended compliance medications**

84.1% ↑ 6%
of patients were referred to **cardiac rehabilitation** post PCI procedure

↑ Increase ↓ Decrease ↔ No change
from previous year's reported figure

3. Value and Impact

Participation in the NCR provides hospitals across Australia with an opportunity to benchmark clinical quality at a local, jurisdiction and national level. Some hospitals, particularly those in regional or remote locations have previously been unable to compare their own data against other cohorts and the NCR now provides a mechanism for this to occur.

Access to national performance data has strengthened transparency, supported governance and informed service planning, and jurisdictions have adopted NCR Key Performance Indicators such as in-hospital and 30-day stroke rates. These are now regularly reported to hospitals and health departments.

NCR data is being used to improve patient care and assist in the design of clinical pathways. A number of hospitals used reperfusion times before and after implementing emergency department bypass systems and prehospital notification protocols for STEMI patients. These initiatives led to measurable reductions in treatment times and improved coordination between departments.

Analysis of data has highlighted variation in care and informed planning at both hospital and jurisdiction levels. Over the past 12 months, the NCR has seen a marked increase in hospital participation, with new hospitals commencing data collection and many more committed to joining in the year ahead. Ongoing engagement through governance committees, jurisdictional cardiac and registry working groups and national workshops are supporting this growth.

NCR participation also supports compliance with the Acute Coronary Syndromes Clinical Care Standards,[5] contributing to hospital accreditation processes, and guiding collaborative clinical quality improvement initiatives. With NCR capturing half of the 51,302 PCI procedures performed annually across Australia, it will continue to grow while strengthening quality, safety and outcomes in cardiac care.[6]

ACT

> ***Project Officer, Cardiac Registry, Canberra Health Services***
>
> *The continued engagement with other jurisdictions through the steering and management committees, Monash and the NCR board has provided the opportunity to collaborate and seek subject expert advice on cardiology related topics both specific to the current NCR remit and to other associated topics of interest to the ACT.*

> *ACT data has been used specifically for supporting compliance to the Acute Coronary Syndrome (ACS)- Clinical Care Standard and local hospital accreditation requirements.*

> *Currently the ACT are reviewing the data around primary STEMI reperfusion times. This is an interdepartmental review including Cardiology, Cardiac Catheter Laboratory, Emergency Department and the Intensive Care Unit to consider the current processes, including delays or obstructions to processes or procedures. The aim is to improve reperfusion times for all patients presenting with primary STEMI. Whilst not yet complete, this may involve updates to policy and procedures.*

5 Australian Commission on Safety and Quality in Health Care (ACSQHC) National Safety and Quality Health Service Standards, Australian Government, accessed 1 October 2025, https://www.safetyandquality.gov.au/sites/default/files/2021-05/national_safety_and_quality_health_service_nsqhs_standards_second_edition_-_updated_may_2021.pdf

6 Australian Institute of Health and Welfare (2025) *Procedures and healthcare interventions* (ACHI 12th edition), Australia, 2023-24 [data cubes], accessed 1 September 2025. https://www.aihw.gov.au/reports/hospitals/procedures-data-cubes/contents/summary

NSW

Agency for Clinical Innovation, NSW Government

Participating Hospitals in NSW are using the data collected through NSWCOR database, for local governance reporting and service planning. The adoption of a standardised dataset that is used nationally has helped streamline data collection activities at NSW hospitals. This data is fed up to the Agency of Clinical Innovation in NSW, to then be on-shared for inclusion in the NCR reporting.

Future opportunities that could strengthen the value of collaboration with the NCR include streamlined integration with electronic Medical Records (eMR) to identify data points, implement data linkage and improve the automation of data collection processes. The aim is to reduce manual data entry where possible, providing real time data for clinicians, whilst also improving the quality and accuracy of the data being provided.

NT

Cardiology Research Coordinator and Cardiac Quality Nurse, Cardiac Expansion Unit, Royal Darwin Hospital

The establishment of the Northern Territory Top End Coronary Database has ensured that the NT is collecting PCI data that can be reviewed to determine areas of improvement. and allow quality projects to be established to improve patient care and outcomes.

Prior to the NCR there was no benchmark for comparing PCI services as there is only one PCI centre in the Northern Territory. The NCR ensures that Northern Territory data collection is in line with other States and Territories and can be benchmarked nationally.

QLD

Queensland Cardiac Outcomes Registry, Statewide Cardiac Clinical Informatics Unit, Queensland Health

The NCR key performance indicators reflect a strong commitment to delivering timely, safe, and effective cardiac care. By measuring outcomes from initial diagnosis through post-discharge recovery, the NCR promotes transparency, accountability, and continuous improvement in patient care. Public reporting of these metrics empowers patients, informs clinical practice, and drives system-wide excellence in cardiovascular health.

The inclusion of data from private hospitals further strengthens the value of the NCR by providing a more complete picture of cardiac care across the healthcare system. It enables meaningful comparisons between public and private sectors, supports equitable care delivery, and enhances the accuracy of national benchmarks. Site-level reporting, including private institutions, allows for robust benchmarking against national performance, fosters accountability, and helps identify targeted opportunities to improve patient outcomes and optimise clinical practice.

VIC

Victorian Cardiac Outcomes Registry, Monash University

Victoria has been able to benchmark our state (and three participating Tasmanian sites who contribute via VCOR) against the rest of Australia. While we have benchmarked all participating hospitals against each other for some time, having the capability to expand beyond Victoria and at a national level is extremely meaningful. Pleasingly, we have been able to ascertain that Victorian Hospitals are performing well at a national level.

VCOR adopted additional KPI's set by the NCR and has been reporting on these on a quarterly and yearly basis to both hospitals and government. This has expanded the quality improvement activities of the registry and has enabled our hospitals to receive state and national level reports on key KPI's such as In-Hospital and 30-day Stroke.

TAS

Cardiologist and Staff Specialist in Cardiology, Royal Hobart Hospital

Real time information regarding case mix and case complexity has been of great benefit to Tasmania. As we are located somewhat remotely from other PCI centres, it is particularly useful to understand how our case mix varies compared to other centres and to review PCI outcomes in Tasmania against the national cohort. Information regarding case mix and outcomes helps us in terms of case selection and day-to-day management decisions.

4. Message from the School of Public Health and Preventive Medicine, Monash University

Professor Sophia Zoungas - Head of School, Public Health and Preventive Medicine

NCR continues to play a pivotal role in improving real-world cardiac care and outcomes for Australians. As an essential component of national infrastructure within the Monash University Registry Portfolio—and the broader School of Public Health and Preventive Medicine (SPHPM), which houses 43 registries – NCR exemplifies the value of coordinated, evidence-based approaches to healthcare. Our work is underpinned by strong collaboration across jurisdictions, clinicians, registry teams, and the Department of Health, Disability and Ageing, ensuring that data-driven insights translate into meaningful improvements in patient care.

We acknowledge the vital contributions of clinicians, multidisciplinary teams, and consumers who make this work possible. Equity remains central to our mission, reflected in ongoing initiatives around Indigenous data sovereignty and culturally respectful data practices. Looking ahead, we are committed to advancing data quality, enhancing reporting capability, and exploring new opportunities to strengthen national impact – ensuring that NCR continues to deliver value for patients, providers, and the health system as a whole.

5. CVD Health

Cardiovascular Disease

Cardiovascular disease (CVD) encompasses various conditions affecting the heart and blood vessels, with coronary heart disease (heart attack, angina) and stroke being common forms. Often caused by a build-up of plaque in arteries, CVDs are a leading cause of death in Australia, and are influenced by lifestyle factors like diet, exercise, smoking and weight.

One in six people in Australia self-report as living with CVD, accounting for more than 4.5 million people. This represents almost 18% of the total Australian population.[7]

Burden of Cardiovascular Disease

CVDs are the leading cause of death globally.[8]

In 2022, CVD was the underlying cause of 45,000 deaths, 24% of all deaths in Australia. CVD was the second leading cause of death group, behind cancers (27% of all deaths) (AIHW 2024).[9]

CVD accounted for almost 12% of the total burden of disease (14% men, 10% women), ranking fourth behind cancer, mental and substance use disorders, and musculoskeletal conditions.[9]

In 2020–21, an estimated 9.5% of total allocated expenditure in the Australian health system ($14.3 billion) was attributed to CVD.[9]

Management of Cardiovascular Disease

Prevention of CVD focuses on a balanced diet, regular exercise, maintaining a healthy weight, and avoiding tobacco.

Most CVD risk-factors are preventable.[8]

The management of CVD can involve lifestyle interventions, medication, or more invasive approaches including Percutaneous Coronary Intervention or “PCI” (see page 19) or Coronary artery bypass graft surgery (CABG). A PCI is performed by a Cardiologist, whereas a CABG is performed by a Cardiac Surgeon.

PCI was identified as a key, high-volume procedure which the Registry could report on as it helps minimise cardiovascular complications and reduce the number of patients requiring open heart surgery. PCI data was being collected in existing state and territory based clinical registries and departments of health, showing an appetite and an infrastructure that would allow for more thorough data collection and national benchmarking.

Someone is hospitalised for CVD approximately every minute, equating to over 1500 hospitalisations per day, in Australia.[7]

7 Heart Foundation (2025) *Key Statistics: Cardiovascular disease*, accessed 15 October 2025, https://www.heartfoundation.org.au/your-heart/evidence-and-statistics/key-stats-cardiovascular-disease

8 World Health Organization (2025) Cardiovascular diseases (CVDs), accessed 15 October 2025, https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds)

9 Australian Institute of Health and Welfare (2025) Heart, stroke and vascular disease: Australian facts, AIHW, Australian Government, accessed 1 September 2025.

5.1 PCI Overview

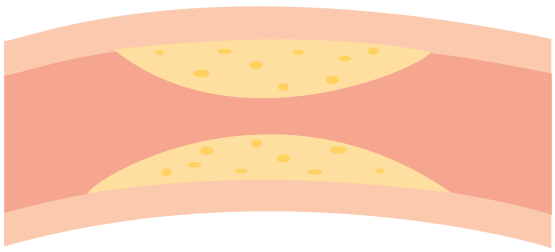
Percutaneous Coronary Intervention (PCI)
is a non-surgical procedure to relieve the narrowing or blockage of the coronary arteries and improve blood supply to the heart

Arteries are the blood vessels that carry blood from the heart to tissues and organs in the body.

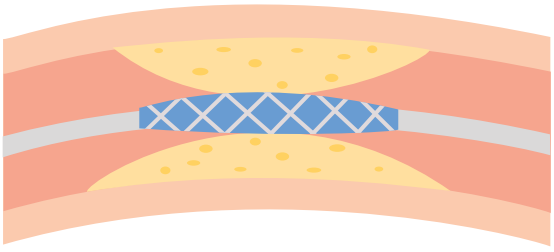
A Percutaneous Coronary Intervention (PCI) is a minimally invasive procedure which addresses the narrowing of coronary arteries. This narrowing is usually caused by a build-up of plaque in the inner lining of an artery wall, which reduces blood flow to the heart. If an artery becomes too narrow the blockage can trigger symptoms of angina (chest pain) and increase the risk of heart attack and heart failure.

A PCI involves inserting a tiny stent or balloon into a clogged artery, which is then expanded to widen the artery walls and restore blood flow to the heart. PCI is an efficient method for removing these blockages and treating cardiovascular disease.

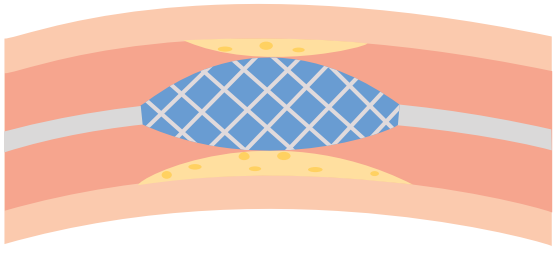
Figure 1. Percutaneous Coronary Intervention with stent insertion



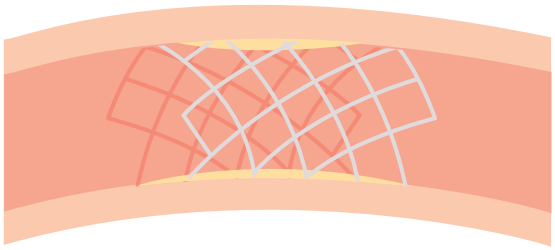
Build up of cholesterol partially blocking blood flow through the artery.



Stent with balloon inserted into partially blocked artery.



Balloon inflated to expand stent.



Balloon removed from expanded stent.

6. Message from the Heart Foundation

Mr David Lloyd - CEO, Heart Foundation

Since 1959, the Heart Foundation has worked to reduce the impact of heart disease, Australia's leading cause of premature death. In 2025, more than 40,000 Australians will lose their lives to heart disease. This is a sobering reminder of why we must act.

This year, we launched 'Health for Every Heart', our vision for cardiovascular health to be achievable by everyone in Australia by 20250. This rests on four goals: advancing health equity, creating environments that support healthy living, preventing and identifying risk early, and managing heart disease effectively to prevent repeat events.

The National Cardiac Registry (NCR) is central to this mission. NCR data gives us vital insights into who is most at risk, where care gaps exist, and how outcomes differ across Australia. It highlights issues like slower emergency response times in rural hospitals and helps us advocate for improvement, such as expanding access to cardiac rehabilitation, which is proven to reduce hospital readmissions.

The NCR is not just about numbers. It is about driving real change. With this data, we can push for better care, support innovation, and build a healthier future for everyone regardless of where they live or the resources they have access to. By working together across communities and sectors, we can create a lasting legacy of heart health for generations to come.

Heart Foundation

7. Message from Steering Committee Consumer Representative

Ms Karen Carey - Steering Committee Consumer Representative

The NCR continues to work with Karen Carey to ensure patient voices are considered during Steering Committee meetings and strategic decision making. Consumer Representatives provide insight and perspective that draws attention back to why the NCR exists; to drive better outcomes for all Australians.

Karen is one of Australia's leading consumer representatives and over the past year has been consulted on the co-design of several key NCR projects. Karen's input has helped with future considerations for the NCR, including data linkage with other registries, improved reporting features and the introduction of risk-adjusted reporting in the near future.

"NCR data can be used to demonstrate the safety and quality of the Australian healthcare system, but only if these messages are easily understood by the general public. When clinicians speak about health they often do so using industry language and make reference to complex issues. Patients require clear messaging to be equipped with everything they need to make informed decisions regarding their cardiovascular health. When patient voices are represented, key findings can be translated to the right people."

Karen has been consulted on the development of consumer-friendly resources, to help improve key public health messaging and awareness.

"Health consumers need PCIs to be high quality, safe, accessible, equitable and cost effective. Once the right information is targeted to consumers regarding the context, safety and complication rates of PCI, patients can engage in genuinely informed shared decision-making with their clinicians. I will continue working with the NCR to relay key health messaging to hospitals, consumers and healthcare providers."

The NCR is actively recruiting a second consumer representative to join Karen in consulting on the future direction of the NCR.

8. Driving Better Care Through Clinical Quality Registries

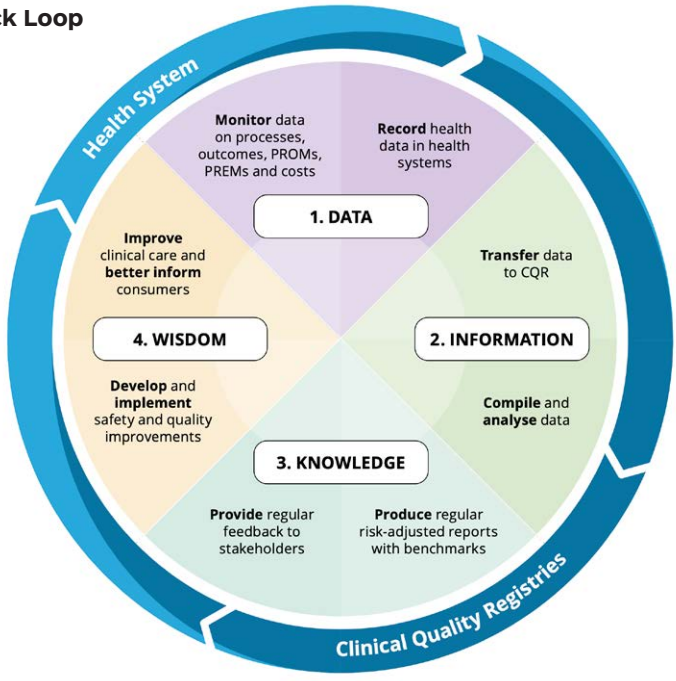
CQRs play a vital role in strengthening Australia's healthcare system by providing a consistent and structured mechanism for clinical quality improvement. They underpin efforts to enhance the safety, quality and value of care by providing clinicians, hospitals and policy makers with an opportunity to monitor outcomes, identify areas for improvement and implement change at a local, jurisdiction and national level.[10]

CQRs collect data at the point of care from both public and private hospitals, capturing details on patient demographics, clinical assessments, treatments and outcomes. These data are securely transferred, validated and analysed with results reported back to participating hospitals and jurisdiction-based registries. This feedback loop allows for national comparison against guideline recommendations, supporting the identification of variation and the implementation of targeted quality improvement initiatives. This creates an environment for continuous reflection, embedding opportunities for improvement into routine clinical practice.[10]

The NCR demonstrates the value of this approach. Participating hospitals are able to benchmark procedural outcomes nationally, strengthening clinical practice and supporting alignment with the Acute Coronary Syndrome Clinical Care Standards and the Acute Coronary Syndrome Guidelines.[10 11] This national collaboration enhances transparency and promotes consistency in care delivery across diverse healthcare settings.[10]

The Australian Framework for National CQRs[12] and the National Strategy for CQRs and Virtual Registries 2020 – 2030[13] provide the foundation for this work. These frameworks emphasise strong governance, secure and interoperable systems, and meaningful, timely feedback to stakeholders.[10] CQRs such as the NCR create opportunities for hospitals and jurisdictions to measure what matters most, strengthening accountability, enhancing transparency and improving outcomes for patients across Australia.

Figure 2: CQR Feedback Loop



10 Australian Commission on Safety and Quality in Health Care (ACSQHC) National Safety and Quality Health Service Standards, Australian Government, accessed 1 October 2025, https://www.safetyandquality.gov.au/sites/default/files/2021-05/national_safety_and_quality_health_service_nsqhs_standards_second_edition_-_updated_may_2021.pdf

11 Heart Foundation (2025) *Australian clinical guideline for diagnosing and managing acute coronary syndromes 2025*, accessed 1 October 2025, https://www.heartfoundation.org.au/for-professionals/acs-guideline

12 Australian Commission on Safety and Quality in Health Care (ACSQHC) *Australian Framework for National Clinical Quality Registries 2024*, accessed 1 October 2025, HYPERLINK "https://www.safetyandquality.gov.au/sites/default/files/2024-08/fast-facts-australian-framework-for-national-clinical-quality-registries-2024.pdf

13 Department of Health. (2020). National Clinical Quality Registry and Virtual Registry Strategy, accessed 1 October 2024. https://www.health.gov.au/sites/default/files/2023-04/a-national-strategy-for-clinical-quality-registries-and-virtual-registries-2020-2030_0.pdf

9. Participating Hospitals (2019-2024)

ACT

The Canberra Hospital

NSW

Coffs Harbour Hospital*
Concord Repatriation General Hospital
Dubbo Hospital
Gosford Hospital
Lismore Base Hospital*
Nepean Hospital
Orange Hospital
Port Macquarie Hospital*
Tweed Valley Hospital*
Wollongong Hospital

NT

Royal Darwin Hospital

QLD

Cairns Hospital
Gold Coast University Hospital
Ipswich Hospital
Mackay Base Hospital
Princess Alexandra Hospital
Royal Brisbane and Women's Hospital
Sunshine Coast University Hospital
The Prince Charles Hospital
Townsville University Hospital

SA

Ashford Hospital
Calvary Adelaide Hospital
Lyell McEwin Hospital
Royal Adelaide Hospital
The Queen Elizabeth Hospital

TAS

Hobart Private Hospital
Launceston General Hospital
Royal Hobart Hospital

VIC

Albury Hospital
Austin Hospital
Ballarat Hospital
Bendigo Health
Box Hill Hospital
Cabrini Health
Epworth Healthcare (Eastern)
Epworth Healthcare (Geelong)
Epworth Healthcare (Richmond)
Footscray Hospital
Frankston Hospital
Holmesglen Private Hospital
Jessie McPherson Private Hospital
Knox Private Hospital
Latrobe Regional Hospital
Melbourne Private Hospital
Mulgrave Private Hospital
Northern Hospital
Northern Private Hospital
Peninsula Private Hospital
Royal Melbourne Hospital
St John of God Ballarat
St John of God Bendigo
St John of God Berwick
St John of God Geelong
St Vincent's Hospital Melbourne
St Vincent's Private Hospital, Melbourne
St Vincent's Private Hospital, Werribee
Sunshine Hospital
The Alfred Hospital
Victorian Heart Hospital
University Hospital Geelong
Warringal Private Hospital
Western Private Hospital

WA

Fiona Stanley Hospital
Joondalup Health Campus*
Royal Perth Hospital
Sir Charles Gairdner Hospital

**Sites planning to contribute partial and/or full-minimum dataset in 2025*

2016-18

Ischaemic Heart Disease prioritised by ACSQHC

National registry concept established

Framework for consistent data capture

2019

Project team established – Monash University

Inaugural Steering Committee meeting with representation from all States and Territories

2020-21

NCR Indigenous Committee established

NCR Platform launched nationally

NCR Ltd incorporated by the Australian Securities and Investment Commission

2022

First public facing Annual Status Report

All States and Territories contributing data

2023

Private hospitals commence participation

NCR exceeds 70,000 PCI cases

2024

NCR Direct Entry Model

REDCap tool developed for direct entry

Partnership with Her Heart

2025

Over 60 hospitals contributing More than 119,000 PCI cases

Enhanced analytical and reporting capability

10. Dynamic Reporting

The NCR takes a dynamic approach to reporting, designed to evolve as the maturity of the registry progresses and ensures stakeholders receive timely, accessible and meaningful data driven insights. The focus is on delivering information that shapes decisions, guides services, strengthens systems of care and provides value.

Beyond public facing reports, the NCR has built a dynamic reporting platform that allows users to interact with the data, track trends over time, benchmark performance and view key Quality Indicators (QIs). This ensures hospitals, clinicians and governments can translate findings into actionable insights.

In addition, supplementary reports provide jurisdictions with the ability to identify and benchmark their own hospitals data against the national cohort. Looking ahead, the NCR will continue to refine reporting capabilities, including enhancing real-time dashboards, expanding reporting functionality and refining user access, ensuring reports evolve as the registry matures.

10.1 NCR Platform Design

The NCR platform is adaptive by design, supporting the capture, hosting and reporting of data with the flexibility to enhance functionality as the registry matures. It enables anytime Comma Separated Value (CSV) uploads, dynamic reports and customisable filters (see Figure 3: Platform Key Attributes and Figure 4: The NCR Data Flow, page 28).

Improvements over the last year have focused on an expanded dataset, strengthened security measures and infrastructure enhancements. A comprehensive security audit was recently undertaken, reinforcing confidence in the platform's integrity. Platform improvements are currently being explored, including increased functionality of real-time dashboards, enhanced reporting capability, increased upload frequency and tailored user access.

Figure 3: Platform key attributes

Browser based	Dynamic reporting
User credentialing	Cloud hosting
Upload via CSV template	Multi-factor authentication
Anytime download of data	De-identified

10.2 REDCap Data Entry Tool

The NCR's bespoke REDCap data entry tool provides hospitals with a pathway to contribute data directly if they are unable to do so via a State or Territory based participating registry (See Figure 4: The NCR Data Flow, page 28). Secure and web-based, it ensures accuracy at the point of entry while retaining the flexibility to adapt as the requirements of the registry evolve. Hosted and managed within Australia by Monash University, it supports collaboration across sites or site groups, allows for automated reports and custom extracts, and has the capacity to expand functionality as participation grows.[14]

10.3 Data Management and Security

The NCR applies a nationally consistent approach to data management, guided by governance frameworks that are built on collaboration with states and territories and reflect national best practice. The NCR Data Management Plan and NCR Data Governance Framework are based on the principles of the Five Safes Framework which ensures data are captured, stored and accessed responsibly while enabling the registry to meet new priorities as they arise.[15]

10.4 Ethics

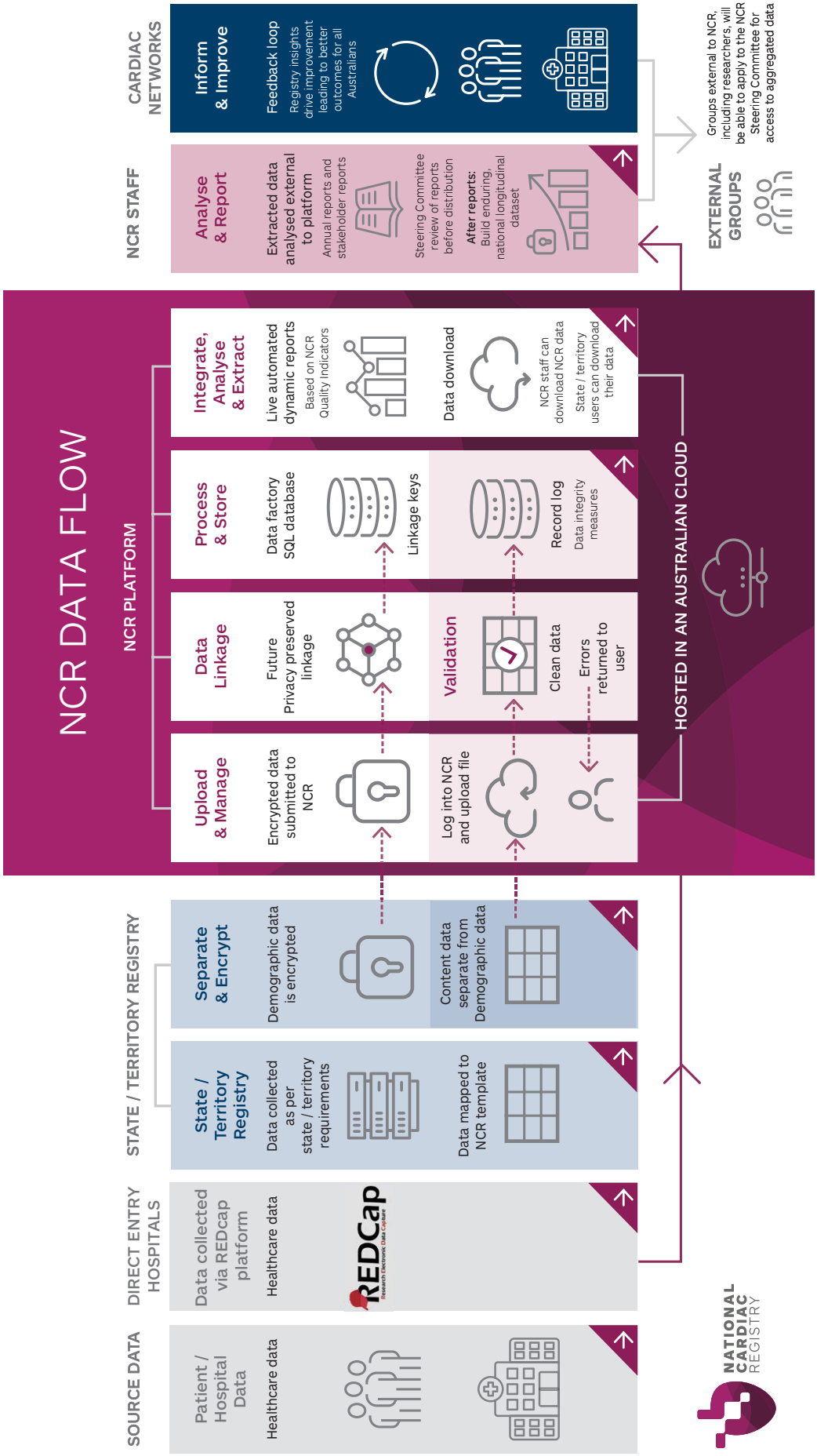
The NCR maintains Human Research Ethics Committee (HREC) approval under the National Mutual Acceptance (NMA) scheme operating via a waiver of consent. This ensures a nationally consistent ethical framework is adopted whilst accommodating state and territory requirements.

In 2024, approval was extended to allow data submission from hospitals participating through the direct entry model via opt-off consent. Local governance approvals are being obtained where required, ensuring that all participating hospitals operate within the appropriate ethical and legislative frameworks.

14 Monash REDCap, https://www.monash.edu/researchinfrastructure/helix/capabilities/redcap (accessed 15 October 2025)

15 Australian Institute of Health and Welfare (2025) The Five Safes framework, accessed 15 October 2025. https://www.aihw.gov.au/about-our-data/data-governance/the-five-safes-framework

Figure 4: The NCR Data Flow

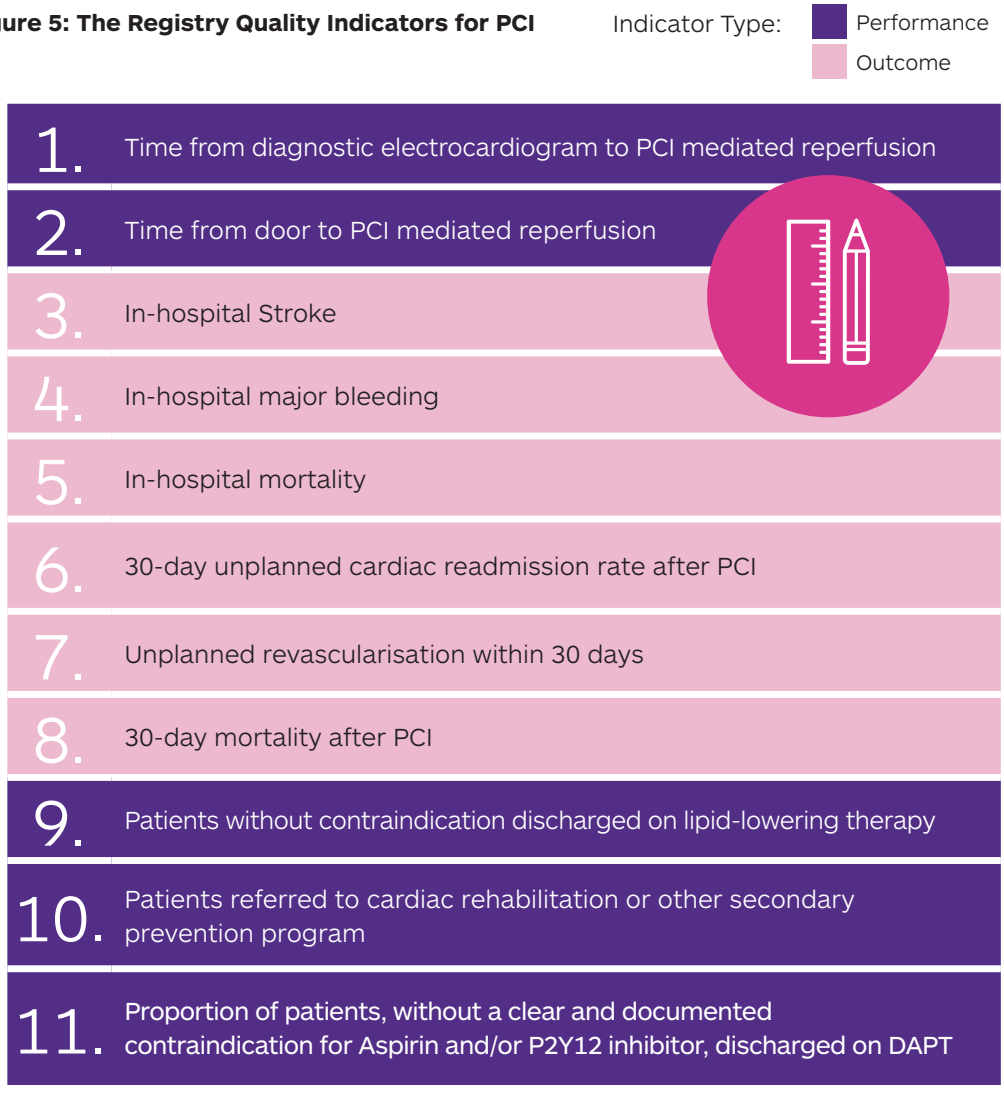


11. Measuring Quality and Performance

Quality indicators (QIs) are used to measure how effectively procedures and treatments deliver safe, high quality health care (QI Figure 3). They provide a structured and statistically validated way to analyse large datasets, monitor performance, identify variation and track quality improvement over time. The NCR QIs reflect the full care continuum for patients who undergo PCI, capturing both performance measures such as adherence to guideline recommended care including referral to cardiac rehabilitation and outcome measures such as in-hospital stroke during or after a PCI.

The eleven indicators were endorsed by the NCR Steering Committee following a review of national and international frameworks and registry models. This review included the Acute Coronary Syndromes Clinical Care Standard, the Canadian Cardiovascular Society Quality Indicators for PCI, the European Society of Cardiology Guidelines, SWEDEHEART (Sweden) and the National Institute for Cardiovascular Outcomes Research Audit (UK), alongside established Australian cardiac registries CADOSA, QCOR and VCOR.[16] [17] The QIs and dataset were reviewed and endorsed in 2023 by an expert advisory group with representation from all jurisdictions, and will be reviewed again within two years to maintain relevance with evolving standards and clinical practice.

Figure 5: The Registry Quality Indicators for PCI



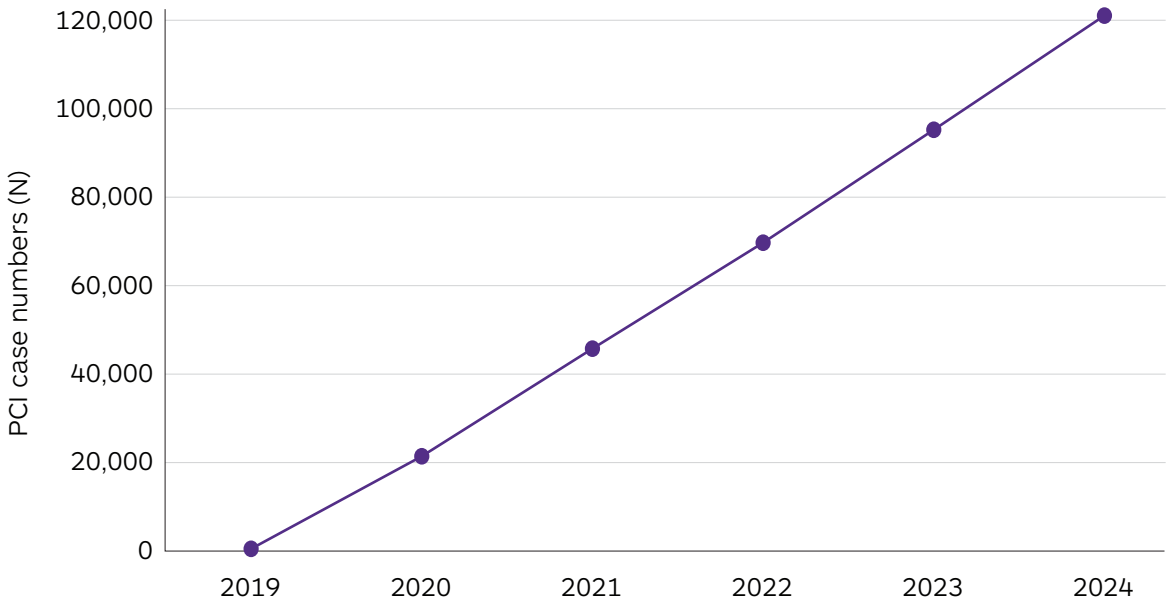
16 Australian Commission on Safety and Quality in Health Care (ACSQHC) National Safety and Quality Health Service Standards, Australian Government, accessed 1 October 2025, https://www.safetyandquality.gov.au/sites/default/files/2021-05/national_safety_and_quality_health_service_nsqhs_standards_second_edition_-_updated_may_2021.pdf

17 NCR (National Cardiac Registry) (2021) *Annual Status Report 2021*, NCR, accessed 15 September 2025, https://nationalcardiacregistry.org.au/annual-status-report/

12. Progress

Between January and December 2024, the NCR collected data from 25,495 PCI procedures, representing 50% of all PCI procedures nationally.[18] Of the 129 eligible hospitals, data were received from 58 hospitals (38 public and 20 private). Now capturing data from 119,095 procedures (Figure 6), with 5 additional hospitals preparing to upload data in 2026, participation will continue to grow. All hospitals which uploaded data from January and December 2024 provided at least 75% of the NCR dataset, reflecting strong engagement and commitment to national quality improvement.

Figure 6: Growth in PCI procedures captured by the Registry, January 2019 - December 2024

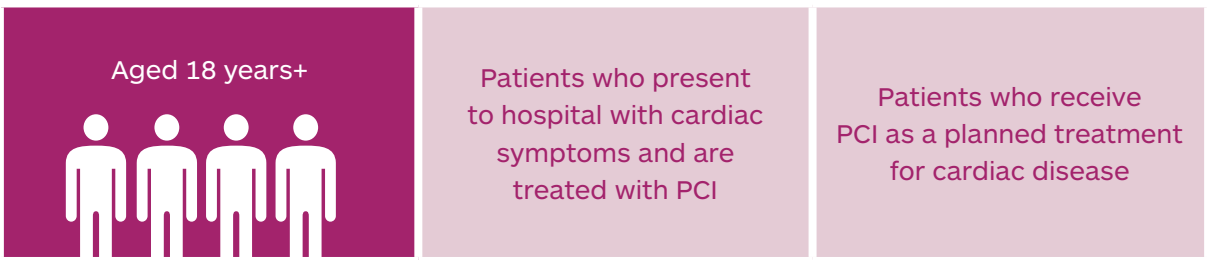


12.1 Data completeness

This report covers all eleven NCR Quality indicators, showing steady progress in dataset completeness. Table 1 outlines the number of state and territory registries contributing to each indicator and the number of hospitals represented, while Figure 5 defines the eligible patient cohort.

Data completeness for QIs 6, 7, 9 and 11 is less than for in-hospital QIs as some jurisdictions are still expanding on follow-up data collection methods. This also reflects jurisdiction infrastructure or system upgrades which will eventually strengthen national capability. Overall, data quality and increased hospital participation demonstrate ongoing improvements in completeness and consistency across the NCR.

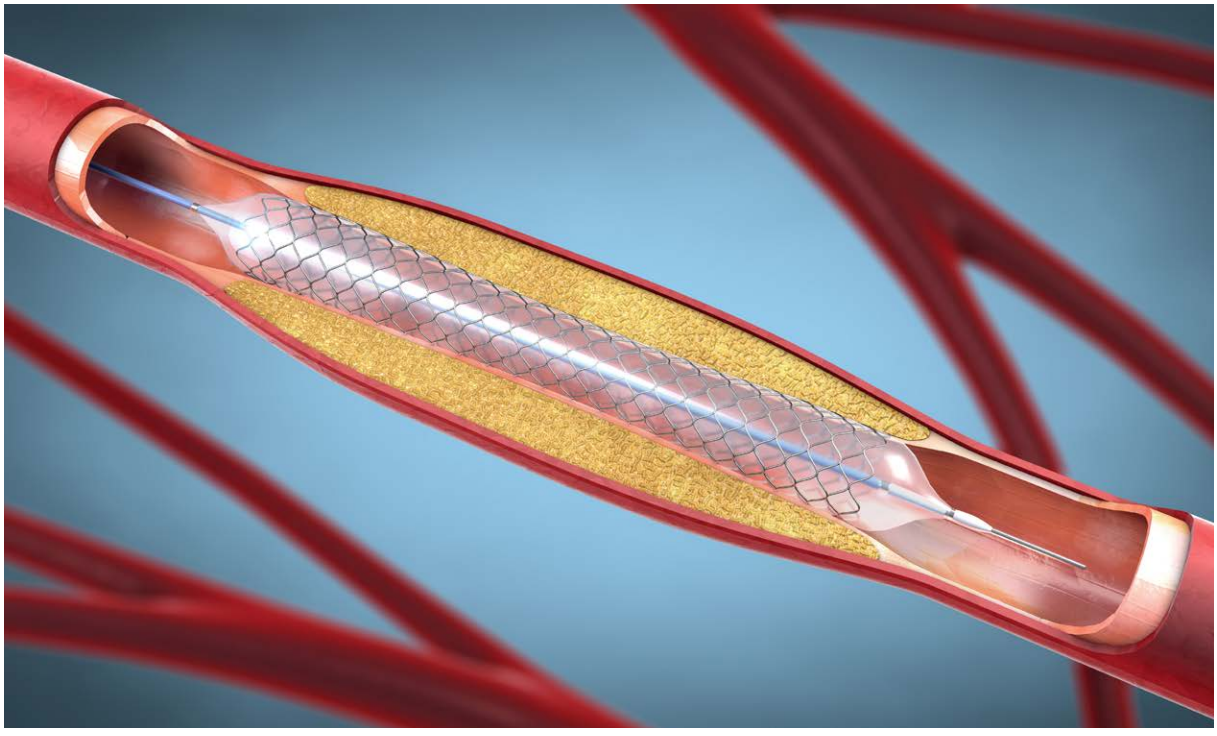
Figure 7: Eligible Participants



18 Australian Institute of Health and Welfare (2025) *Procedures and healthcare interventions (ACHI 12th edition), Australia, 2023-24* [data cubes], accessed 1 September 2025. https://www.aihw.gov.au/reports/hospitals/procedures-data-cubes/contents/summary

Table 1: Registry Quality Indicators (QIs) and data completeness 2024

	Indicator Type	Quality Indicator	Data completeness (%)	Hospitals contributing to QI	State/ Territories included in 2024 QI reports
1	Performance	Time from diagnostic electrocardiogram to PCI mediated reperfusion	100	46	8
2	Performance	Time from door to PCI mediated reperfusion	100	46	8
3	Outcome	Peri-PCI stroke	100	58	8
4	Outcome	In hospital major bleeding	91	53	6
5	Outcome	In hospital mortality	100	58	8
6	Outcome	30-day unplanned cardiac readmission rate after PCI	71	41	5
7	Outcome	Unplanned revascularisation within 30 days	71	41	5
8	Outcome	30-day mortality after PCI	91	53	7
9	Performance	Patients without contra indication discharged on lipid-lowering therapy	84	49	7
10	Performance	Patients referred to cardiac rehabilitation or other secondary prevention program	98	57	8
11	Performance	Proportion of patients without a clear and documented contraindication for Aspirin and/or a P2Y12 inhibitor, discharged on DAPT	84	49	7



13. Message from Her Heart

Professor Linda Worrall-Carter, Founder and Director, Her Heart

The National Cardiac Registry continues to play an important role in improving cardiac care by providing detailed, sex-disaggregated data that makes it possible to identify differences in how women experience the PCI pathway.

The 2024 analysis, developed in partnership with Her Heart, highlighted several important trends across access, treatment and outcomes. Women remain under-represented in PCI procedures, procedural timings for women undergoing primary or 'emergency' PCI was 27 minutes longer than compared to men, radial access was used less frequently, women experience higher rates of obesity and diabetes, major bleeding, and higher in-hospital mortality.

Bringing these findings together has created a clearer national picture of where inequities persist and where improvements can be made. The Registry's ability to present this evidence in a consistent and comparable way supports clinicians, researchers and policymakers to better understand the care women receive and the outcomes they experience. These findings highlight persistent gaps in women's cardiac care.

Her Heart's involvement in this work has ensured that findings relevant to women's cardiac health are translated into broader discussions across the sector. This collaboration supports ongoing efforts to embed sex-specific evidence into clinical practice, strengthens national awareness of inequities in care, and enhances the sector's ability to implement changes that will improve outcomes for women across Australia.

HER HEART

14. Women and Men PCI Key Findings

WOMEN	MEN
70 years ↔ is the **average age** of women receiving a PCI	66 years ↔ is the **average age** of men receiving a PCI
76.8% ↑ 4% of PCIs performed on women utilised the **radial access** approach	82.4% ↑ 3% of PCIs performed on men utilised the **radial access** approach
0.9% ↔ of PCIs performed on **women had an in-hospital major bleeding event** post-PCI	0.5% ↔ of PCIs performed on **men had an in-hospital major bleeding event** post-PCI
17.6% ↔ is the rate of **severe obesity** for women	11.7% ↔ is the rate of **severe obesity** for men
31.0% ↑ 3% is the rate of **diabetes** in women	28.0% ↑ 3% is the rate of **diabetes** in men
2.0% ↔ is the rate of **in-hospital mortality** for women	1.6% ↔ is the rate of **in-hospital mortality** for men

Median times from symptom onset to **PCI mediated reperfusion 2024**

	Symptom Onset	First Medical Contact	Diagnostic ECG	Arrival at PCI Hospital	Reperfusion
Women	194 mins	112 mins	96 mins	58 mins	
Men	167 mins	100 mins	89 mins	55 mins	
Difference	**27 mins**	12 mins	7 mins	3 mins	

↑ Increase ↓ Decrease ↔ No change
from previous year's reported figure

15. Message from the Chair of the NCR Indigenous Committee

Mr David Follent - Chair of the NCR Indigenous Committee

The National Cardiac Registry (NCR) Indigenous Committee is an Indigenous Advisory Group (IAG) to the NCR Board and acknowledges the critical role of the NCR in addressing persistent disparities in cardiac care for Aboriginal and Torres Strait Islander peoples. Over the past year, the IAG has maintained a strong focus on enhancing culturally responsive data governance, ensuring that data collection, interpretation, and reporting appropriately reflect the needs, priorities, and experiences of First Nations communities.

Indigenous data on PCI outcomes is collected to measure, monitor and report on disparities in cardiovascular care. Findings in this report identify that the mean age of Aboriginal and Torres Strait Islander people undergoing PCI was 56 years, compared to 67 years for the overall PCI cohort. This significant difference highlights the earlier onset of cardiovascular disease among Aboriginal and Torres Strait Islander peoples and underscores the urgent need for targeted prevention, culturally safe care, and equitable access to services. There is much work to do across all levels of government and health systems to close the gap in cardiovascular outcomes and ensure that Aboriginal and Torres Strait Islander peoples live longer, healthier lives.

The IAG formally recognises and expresses its appreciation to Aunty Vicki Wade, Christine Ingram, and Robert Buffington for their sustained leadership, cultural expertise, and strategic contributions. Their guidance has been instrumental in informing the Groups' deliberations and strengthening the integrity and cultural authority of its advice to the NCR.

A key strategic initiative this year has been the IAG's collaboration with Gullidala, an Indigenous Social Enterprise, to develop an Indigenous Data Sovereignty Policy for the NCR. This work represents a significant step in embedding First Nations data sovereignty principles within NCR governance structures and ensuring that data custodianship, rights, and decision-making processes uphold cultural, ethical, and community expectations. Gullidala's systems-focused, relational, and Indigenous-led methodologies provide a strong foundation for this work. Their expertise in Indigenous knowledge translation, partnership development, and community empowerment supports the NCR in progressing toward more culturally safe and accountable data practices. This partnership marks an important milestone for the NCR and provides a clear and constructive pathway for strengthening cultural governance, supporting equity-focused system improvements, and ensuring that Aboriginal and Torres Strait Islander perspectives remain central in the NCR's future directions.

The NCR is committed to closing the gap in heart health by ensuring Indigenous Australians are represented in cardiac data, care and outcomes. Together with the Indigenous Committee, the Indigenous Advisory Group, Gullidala and new partnerships on the horizon, we are aiming to shape a heart health system that listens to, includes and respects Aboriginal and Torres Strait Islander voices, because … *better data means stronger care and stronger care saves lives.*

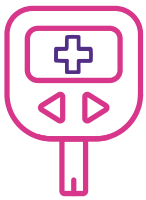
16. Aboriginal and Torres Strait Islander Peoples PCI Key Findings

3.1%
of the overall PCI cohort identify as Aboriginal and/or Torres Strait Islander peoples

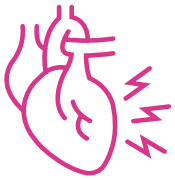
55.8 years
is the **average age** of PCI patients identifying as Aboriginal and/or Torres Strait Islander peoples

39%
of PCI procedures **were performed on women** identifying as Aboriginal and/or Torres Strait Islander peoples

61%
of PCI procedures **were performed on men** identifying as Aboriginal and/or Torres Strait Islander peoples



47.8%
of Aboriginal and/or Torres Strait Islander peoples had **diabetes** when they received a PCI procedure



70%
of Aboriginal and/or Torres Strait Islander peoples who had a PCI presented with **Acute Coronary Syndrome (ACS)**

28.2%
of PCI patients identifying as Aboriginal and/or Torres Strait Islander peoples **had a previous PCI**

93.7%
is the rate of **procedure success** for Aboriginal and/or Torres Strait Islander peoples

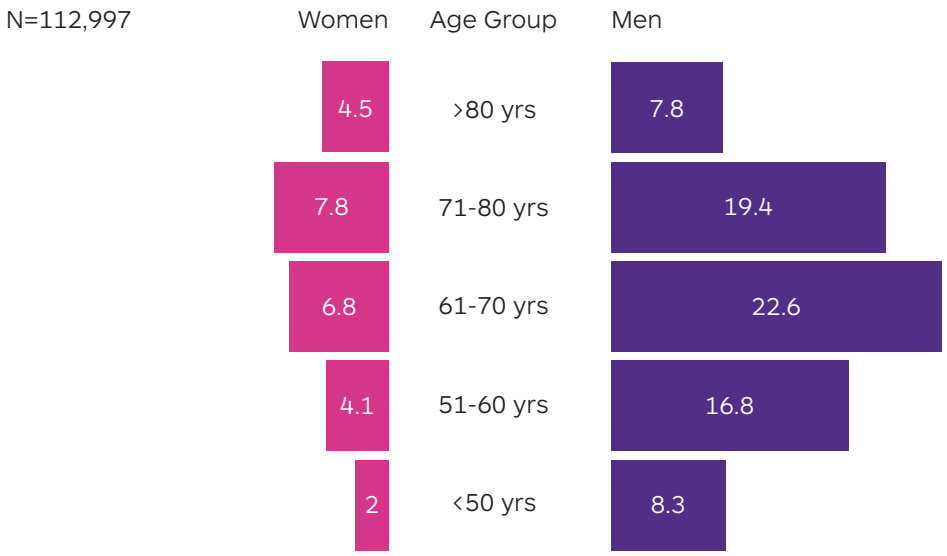
17. Clinical Findings

This report presents data on PCIs undertaken in public and private hospitals across Australia for the calendar year 1 January 2024 to 31 December 2024. A total of 25,495 PCI procedures performed on 22,773 patients were submitted to the NCR from 58 hospitals (38 public and 20 private). Analyses in the report are based on the data submitted through the 2024 reporting cycle, with outcomes and performance trends presented across a six-year reporting period (2019 – 2024).

17.1 Patient Characteristics and Clinical Features

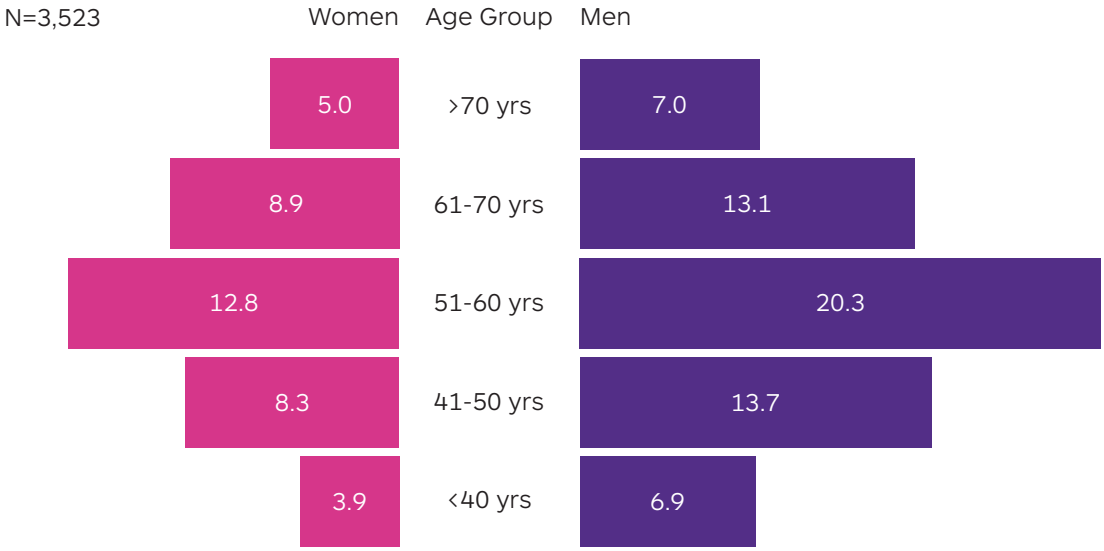
In 2024, the majority of PCI procedures (77.7%) were undertaken in public hospitals. Men accounted for 75.1% of all procedures, with a median age of 66 years (IQR: 58, 75), while women had a median age of 70 years (IQR: 61, 78). The peak frequency of PCI remained the same occurring in the sixth decade for men and the seventh decade for women (Figure 8A). Within the PCI patient cohort between 2020 and 2024, 14.1% of patients underwent multiple procedures.

Figure 8A: Age group and sex (2020 - 2024)



Between 2020 and 2024, 3.1% of all PCI patients identified as Aboriginal and/or Torres Strait Islander peoples, increasing from 2.6%. Men accounted for 61.1% of procedures, with a median age of 55 years (IQR: 48, 63), while women had a median age of 56 years (IQR: 47, 64). The peak frequency of PCI procedures within this cohort remained the same, occurring in the fifth decade for both men and women (Figure 8B). Women in this cohort had higher rates of diabetes (58.5% vs 41.0%), but lower rates of previous PCI (25.9% vs 29.7%) and previous CABG (6.7% vs 7.3%) compared with men. Men and women within this cohort had similar rates of peripheral vascular disease (3.0% vs 3.1%).

Figure 8B: Aboriginal and/or Torres Strait Islander distribution of PCI by age group and sex (2020 - 2024)



Trends in patient demographics and clinical features (2019-2024)

Demographic characteristics of patients from 2019 to 2024 are summarised in Table 2. The median age increased slightly following the inclusion of private hospital data and over time, while diabetes remained stable with a minor rise in 2024. A small reduction was observed in peripheral vascular disease and previous CABG, while previous PCI increased with broader hospital participation. The ratio of men to women remained consistent across the reporting period.

Table 2: Patient characteristics and trends 2019 - 2024

Patient characteristics	PUBLIC			PUBLIC & PRIVATE		
	2019	2020	2021	2022	2023	2024
	N=13,519	N=15,559	N=16,302	N=20,606	N=23,359	N=25,495
Age - years (mean +/- SD)	64.6 +/- 12.1	64.5 +/- 12.2	64.7 +/- 12.1	66.4 +/- 11.9	66.5 +/- 12.0	66.6 +/- 12.1
Sex - women (%)	24.2	25.1	25.5	24.6	25.6	24.7
Diabetes (%)	27.0	27.3	27.4	26.1	27.0	28.8
Peripheral vascular disease (%)	5.1	4.5	3.6	3.5	3.9	3.9
Previous PCI (%)	24.6	25.1	25.4	28.1	28.6	28.7
Previous CABG (%)	7.1	6.5	6.3	5.9	6.0	5.7

Patient characteristics by clinical presentation 2024

Patient demographic information by clinical presentation is summarised in Table 2.1A. The cohort is categorised into patients with ST-elevation myocardial infarction (STEMI), non-ST-elevation acute coronary syndromes (NSTEACS) and non-acute coronary syndromes (non-ACS).

Patients presenting with STEMI continued to differ from other PCI patient cohorts, being younger and less likely to have traditional cardiac risk factors such as diabetes, peripheral vascular disease or severe obesity. STEMI patients also had lower rates of previous revascularisation procedures, including previous coronary artery bypass grafting (CABG) and PCI. As expected for patients with myocardial infarction, moderate to severe left ventricular impairment remained more than twice as common compared with other groups (33.9% vs 15.6%). Rates of cardiogenic shock and out-of-hospital cardiac arrest (OHCA) were also substantially higher in the STEMI cohort (Table 2.1A).

Table 2.1A: Patient characteristics by clinical presentation 2024

Patient characteristics	STEMI	NSTEACS	Non-ACS	All
	(N=6,313)	(N=7,779)	(N=11,386)	(N=25,478)**
Age - years (mean +/- SD)	63.8 +/- 12.5	66.0 +/- 12.6	68.7 +/- 11.0	66.6 +/- 12.1
Sex - women (%)	22.7	27.8	24.1	24.9
Sex - men (%)	77.3	72.2	75.9	75.1
Diabetes (%)	25.2	30.3	29.8	28.8
Peripheral vascular disease* (%)	2.1	3.7	5.0	3.9
Severe obesity (BMI≥35kg/m^2) (%)	11.7	14.7	13.0	13.2
Previous PCI (%)	12.8	23.2	41.2	28.7
Previous CABG (%)	1.9	7.3	6.7	5.7
Moderate or severe LV dysfunction (LVEF<45%) (%)	33.9	15.6	13.7	20.1
Cardiogenic shock (%)	7.6	0.8	0.5	2.4
Out-of-hospital cardiac arrest (%)	6.7	0.5	0.8	2.2
Estimated glomerular filtration rate ≤30mls/min (%)	3.5	4.5	3.6	3.8

* Missing data (N=3,435) **Missing data (N=17)

Patient demographic information for Aboriginal and Torres Strait Islander peoples by clinical presentation for combined 2020-2024 period is summarised in Table 2.1B. The cohort is categorised into patients with STEMI, NSTEACS and non-ACS.

Patients in this cohort presenting with STEMI continued to differ, being younger and less likely to have traditional cardiac risk factors such as diabetes, peripheral vascular disease or severe obesity. STEMI patients also had lower rates of previous revascularisation procedures, including CABG and PCI. As expected, moderate to severe left ventricular impairment was highest amongst STEMI patients than in other clinical categories (35.8% vs 19.1% vs 21.1%), and rates of cardiogenic shock and OHCA were substantially higher in the STEMI cohort (Table 2.1B).

Table 2.1B: Aboriginal and Torres Strait Islander Patient characteristics by clinical presentation 2020 - 2024

Patient characteristics	STEMI	NSTEACS	Non-ACS	All
	(N=1,074)	(N=1,390)	(N=1,057)	(N=3,523)
Age - years (mean +/- SD)	52.8 +/- 11.7	55.6 +/- 12.1	59.1 +/- 11.7	55.8 +/- 12.1
Sex - women (%)	34.8	41.0	40.3	38.9
Sex - men (%)	65.2	59.0	59.7	61.1
Diabetes (%)	38.4	51.5	52.6	47.8
Peripheral vascular disease* (%)	2.0	3.2	4.0	3.0
Severe obesity (BMI≥35kg/m²) (%)	14.5	20.5	21.4	19
Previous PCI (%)	14	25.4	46.4	28.2
Previous CABG (%)	2.8	8.8	9.2	7.1
Moderate or severe LV dysfunction (LVEF<45%) (%)	35.8	19.1	21.1	25.2
Cardiogenic shock (%)	6.0	0.9	0.8	2.4
Out-of-hospital cardiac arrest (%)	5.9	0.5	0.9	2.3
Estimated glomerular filtration rate ≤30mls/min (%)	3.3	8.2	8.2	6.7

* Missing data (N=3,435)

Differences in patient demographic data and clinical characteristics are shown across different hospital types in Tables 2B to 2E (pages 39-41).

Low volume hospitals represented 10.6% of total PCI procedures, including a mix of ten public (four metro and six non-metro) and 10 private (eight metro and two non-metro) hospitals. This included five private hospitals with fewer than 100 PCI procedures per year. Patients in low volume hospitals generally had lower rates of comorbidities including diabetes, previous PCI and CABG, and lower rates of moderate to severe left ventricular impairment and cardiogenic shock (Table 2B).

Table 2B: Patient characteristics by hospital volume 2024

Patient characteristics	Low volume<250	Medium volume 250-500	High volume >500	All
	(N=2,699)	(N=6,488)	(N=16,308)	(N=25,495)
Age - years (mean +/- SD)	66.6 +/- 12.0	67.3 +/- 11.5	66.3 +/- 12.2	66.6 +/- 12.0
Sex - women (%)	26.2	25.2	24.6	24.9
Sex - men (%)	73.8	74.8	75.4	75.1
Diabetes (%)	26.8	27.4	29.6	28.8
Peripheral vascular disease* (%)	3.9	3.0	4.3	3.9
Severe obesity (BMI≥35kg/m²) (%)	14.0	12.6	13.3	13.2
Previous PCI (%)	27.7	29.8	28.4	28.7
Previous CABG (%)	4.7	6.1	5.7	5.7
Moderate or severe LV dysfunction (LVEF<45%) (%)	14.8	18.4	21.8	20.1
Cardiogenic shock (%)	1.0	2.2	2.6	2.3
Out-of-hospital cardiac arrest (%)	1.6	2.1	2.3	2.2
Estimated glomerular filtration rate ≤30mls/min (%)	2.7	3.1	4.3	3.8

* Missing data (N=3,435)

Patients treated in hospitals with on-site cardiac surgery facilities were slightly older and more likely to have higher rates of diabetes and previous CABG. Lower rates of severe obesity and moderate to severe left ventricular impairment were seen amongst this patient cohort (Table 2C).

Table 2C: Patient characteristics by on-site CABG vs off-site CABG hospitals 2024

Patient characteristics	On-site CABG (N=16,194)	Off-site CABG (N=9,301)	All (N=25,495)
Age - years (mean +/- SD)	67.1 +/- 12.0	66.0 +/- 12.2	66.6 +/- 12.1
Sex - women (%)	24.1	26.3	24.9
Sex - men (%)	75.9	73.7	75.1
Diabetes (%)	29.4	27.6	28.8
Peripheral vascular disease* (%)	4.0	3.7	3.9
Severe obesity (BMI≥35kg/m²) (%)	12.9	13.6	13.2
Previous PCI (%)	28.9	28.3	28.7
Previous CABG (%)	6.2	4.8	5.7
Moderate or severe LV dysfunction (LVEF<45%) (%)	19.4	21.2	20.1
Cardiogenic shock (%)	2.1	2.7	2.3
Out-of-hospital cardiac arrest (%)	1.9	2.6	2.2
Estimated glomerular filtration rate ≤30mls/min (%)	4.0	3.6	3.8

* Missing data (N=3,435)

Patient characteristics by hospital location are presented in Table 2D. Metropolitan hospitals (N=44) were located inside Australian capital cities with non–metropolitan hospitals (N=14) outside, accounting for 16.9% of all PCI procedures. Twelve of the non-metropolitan hospitals were public, with eight of these hospitals classified as low volume sites.

Patients treated in non-metropolitan hospitals had higher rates of comorbidities including peripheral vascular disease, severe obesity, moderate to severe left ventricular impairment and OHCA, but lower rates of diabetes and previous PCI. A greater proportion of STEMI presentations (31.7%) were seen across non-metropolitan hospitals compared to metropolitan sites (23.4%).

Table 2D: Patient characteristics by metro vs non-metro hospitals 2024

Patient characteristics	Metro (N=21,196)	Non-metro (N=4,299)	All (N=25,495)
Age - years (mean +/- SD)	66.7 +/- 12.1	66.2 +/- 12.0	66.6 +/- 12.1
Sex - women (%)	24.4	27.1	24.9
Sex - men (%)	75.6	72.9	75.1
Diabetes (%)	29.0	27.6	28.8
Peripheral vascular disease* (%)	3.7	5.6	3.9
Severe obesity (BMI≥35kg/m²) (%)	12.9	14.2	13.2
Previous PCI (%)	29.2	25.9	28.7
Previous CABG (%)	5.7	5.7	5.7
Moderate or severe LV dysfunction (LVEF<45%) (%)	19.2	24.0	20.1
Cardiogenic shock (%)	2.3	2.7	2.3
Out-of-hospital cardiac arrest (%)	2.0	3.0	2.2
Estimated glomerular filtration rate ≤30mls/min (%)	3.8	4.1	3.8

* Missing data (N=3,435)

Patient characteristics by sex are presented in Table 2E. Consistent with previous years, women were on average three years older than men and had higher rates of comorbidities such as diabetes and severe obesity. Rates of peripheral vascular disease decreased slightly within women (4.3% to 3.8%) compared with previous reporting periods. Men more frequently had a history of previous revascularisation procedures, a higher proportion of moderate to severe left ventricular impairment and reduced renal function.

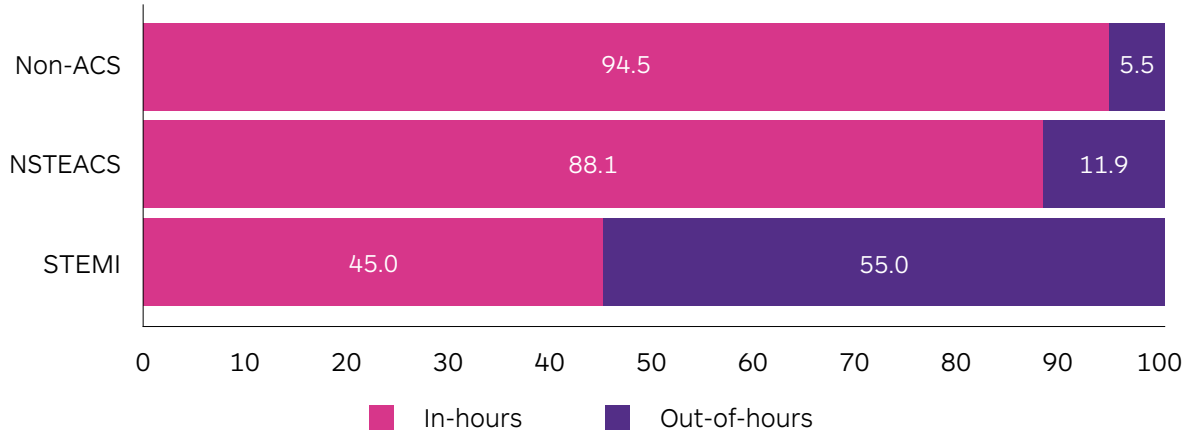
Table 2E: Patient characteristics by sex 2024

Patient characteristics	Men	Women	All
	(N=19,148)	(N=6,347)	(N=25,495)
Age - years (mean +/- SD)	65.9 +/- 12.0	68.9 +/- 12.2	66.6 +/- 12.1
Diabetes (%)	28.0	31.0	28.8
Peripheral vascular disease (%)	4.0	3.8	3.9
Previous PCI (%)	29.9	24.8	28.7
Previous CABG (%)	6.4	3.7	5.7
Severe obesity (BMI≥35kg/m^2) (%)	11.7	17.6	13.2
Moderate or severe LV dysfunction (LVEF<45%) (%)	20.8	18.1	20.1
Cardiogenic shock (%)	2.4	2.3	2.3
Out-of-hospital cardiac arrest (%)	2.5	1.3	2.2
Estimated glomerular filtration rate ≤30mls/min (%)	3.1	5.9	3.8

17.2 Clinical Presentation and Access

Consistent with previous reporting, approximately one in five procedures were performed out-of-hours, accounting for 19.7% (N=5,029) of all PCI cases in 2024 (N=25,478). More than half of all STEMI procedures (55%) occurred out-of-hours, reflecting the emergency nature of these procedures. As expected, the majority of elective (Non-ACS) procedures were performed during standard operating hours (Figure 9).

Figure 9: Proportion of cases in-hours and out-of-hours by clinical presentation 2024

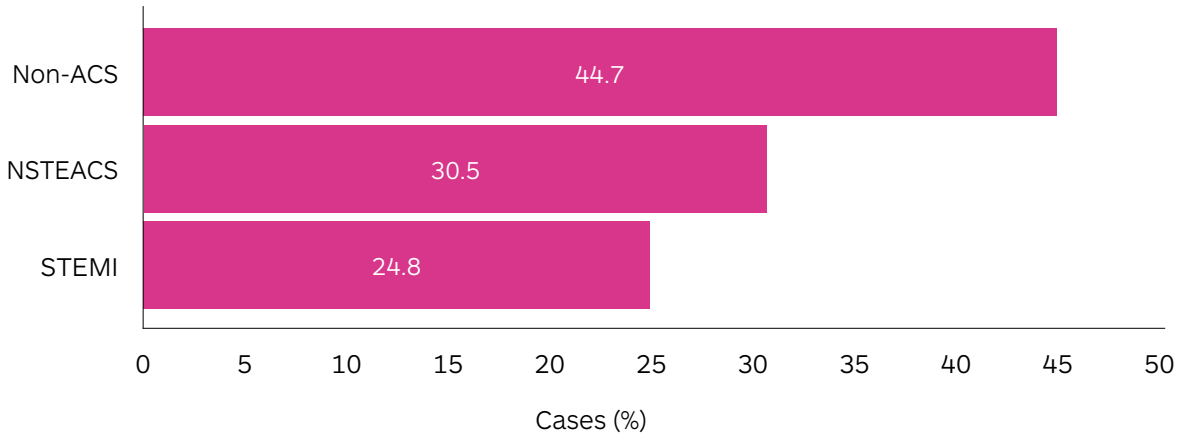


The proportion of PCI procedures for ACS and non-ACS remained consistent with the previous reporting period, with ACS cases accounting for over half of all procedures (Figure 7). Public hospitals continued to manage mostly ACS related activity (65.2%) compared to the private sector where ACS activity accounted for 20.9% of all procedures.

A higher number of all ACS procedures in the registry (66.3%) were undertaken in high volume hospitals (>500 cases per year) with a smaller proportion (24.0%) performed in medium volume centres and limited activity (9.7%) in low volume hospitals (<250 cases per year).

The range of ACS cases by hospital varied from 3.9% to 88.4% with all hospitals treating ACS cases in 2024.

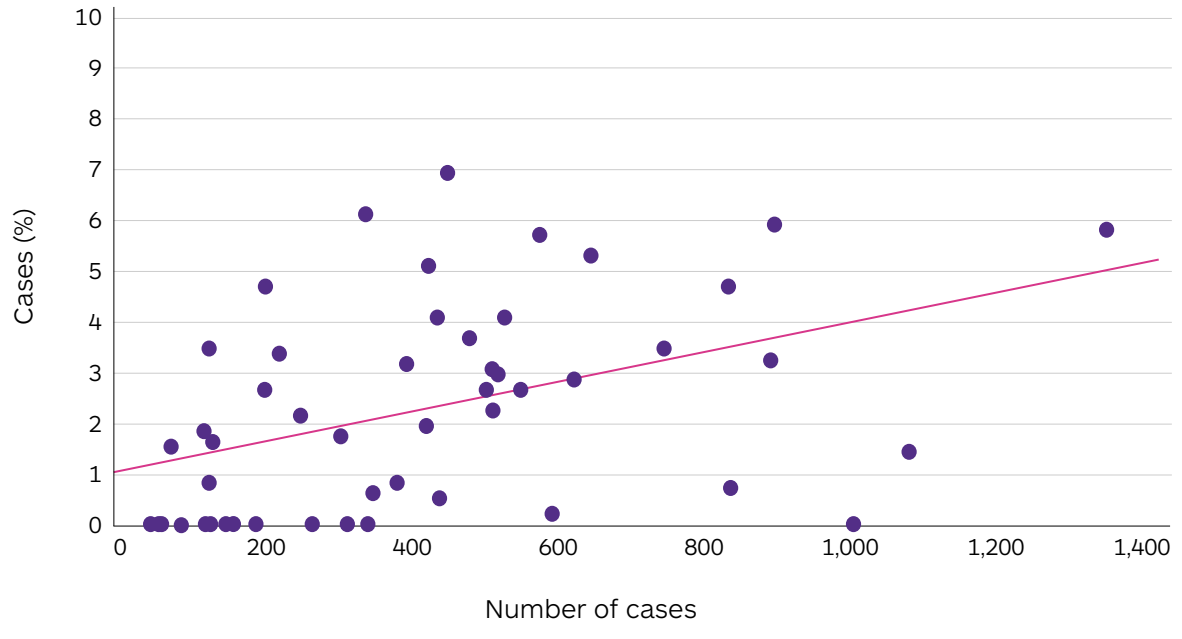
Figure 10: PCI cases by clinical presentation 2024



17.3 Clinical Presentation with Cardiogenic Shock and/or Intubated OHCA

Patients presenting with shock and/or intubated OHCA represent a high acuity cohort with elevated risk of peri procedural and post procedural mortality and morbidity. The portion of these cases undergoing PCI by hospital volume is presented in Figure 11. In 2024, these presentations remained consistent with the previous year, accounting for 2.8% (N=586) of hospitals' caseload range (0-6.8%) with the vast majority managed in public hospitals (96.4%). PCI for shock and/or intubated OHCA comprised 3.7% of public hospital activity, compared with 0.4% in the private sector.

Figure 11: Shock and/or intubated OHCA cases by hospital volume 2024*

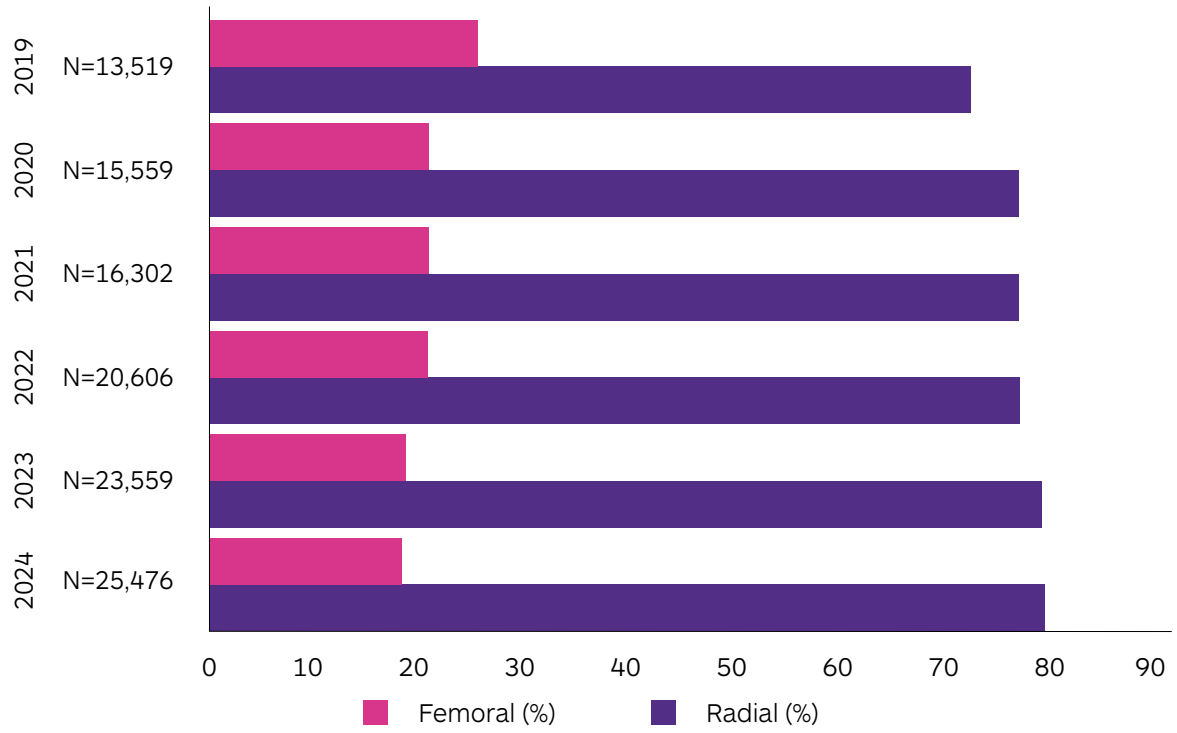


* 6 Hospitals excluded due to missing intubation data

17.4 Access Site

In line with clinical recommendations, the radial artery remained the predominant arterial approach in 2024 and utilised in 81.0% of procedures.[19] The femoral approach accounted for 18.7% of procedures, with the brachial approach accounting for just 0.3% of procedures. Annual trends for both radial and femoral arterial access are presented in Figure 12.

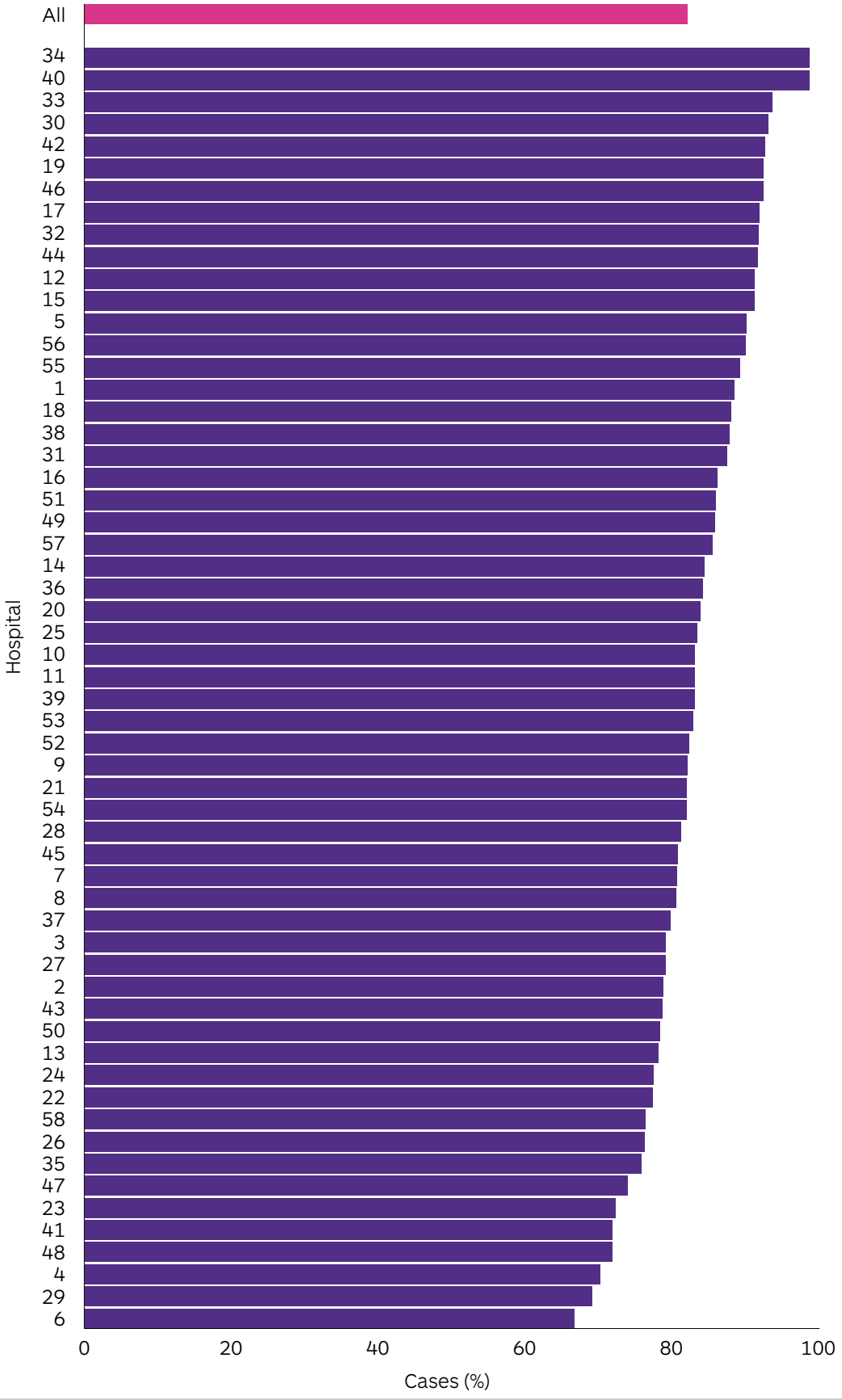
Figure 12: Arterial access routes 2019 - 2024



19 Heart Foundation (2025) *Australian clinical guideline for diagnosing and managing acute coronary syndromes 2025*, accessed 1 October 2025, https://www.heartfoundation.org.au/for-professionals/acs-guideline

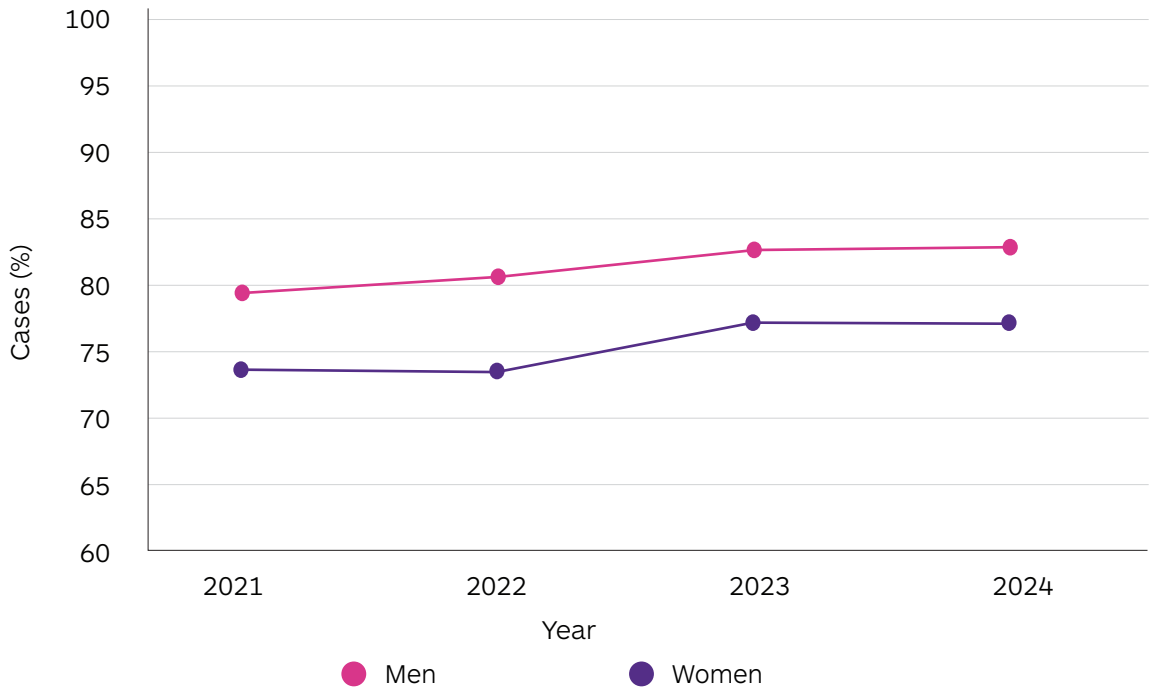
In 2024, radial access varied across hospitals, ranging from 65.8% to 97.4% (Figure 13). Radial access was utilised in 83.9% of STEMI cases, 82.6% of NSTEACS cases and 78.3% of non-ACS cases.

Figure 13: Arterial access route by hospital 2024



Radial access was used in 82.4% of men and 76.8% of women in 2024. Figure 14 shows that radial access in both men and women has increased over time and remained relatively stable over the past two years, however a persistent gap between men and women still remains.

Figure 14: Radial access by sex 2021 - 2024



17.5 Procedural characteristics and outcomes

In 2024, procedural success, defined as successful treatment of all lesions without major adverse cardiac events (MACE), increased slightly from 92.8 to 93.2%. Procedural success by patient and procedural characteristics is presented in Tables 3A-3E (pages 45-47).

PCI for in-stent restenosis accounted for 4.8% of cases. The proportion of in-stent restenosis varied according to hospital volume, onsite CABG capability and metropolitan versus non-metropolitan location (Tables 3A-3E). Procedural success remained lower for patients undergoing PCI for STEMI, with this group having the highest utilisation of mechanical ventricular support devices (Table 3A). Procedural success rates remained stable over the previous three years.

Table 3A: Procedural data by clinical presentation 2024

Procedural data	STEMI (N=6,309)	NSTEACS (N=7,769)	Non-ACS (N=11,381)	All (N=25,459)**
Radial access (%)	83.9	82.6	`78.3	81.0
Femoral access (%)	15.9	17.2	21.3	18.7
Drug-eluting stent(s) (%)	88.6	88.8	89.7	89.2
In-stent restenosis (%)	3.5	5.5	5.0	4.8
Mechanical ventricular support required (%)*	2.7	0.5	0.5	1.0
Lesion success (%)	94.8	96.2	95.6	95.6
Procedural success (%)	88.8	94.8	94.6	93.2

* Missing data (N=2,135) ** Missing data (N=36)

Procedural characteristics by hospital volume are presented in Table 3B. High volume hospitals recorded the highest use of mechanical ventricular support devices, a change from the previous reporting period when this was more common in low volume hospitals (2023: 1.1% vs 2024: 0.3%). Low volume hospitals also had higher rates of in-stent restenosis, whereas in the previous reporting period this rate was lower for this hospital type (2023: 4.9% vs 2024: 6%).

Table 3B: Procedural data by hospital volume 2024

Procedural data	Low volume <250	Medium volume 250-500	High volume >500	All
	(N=2,698)	(N=6,481)	(N=16,297)	(N=25,476)**
Radial access (%)	86.1	79.6	80.7	81.0
Femoral access (%)	13.7	20.1	19.0	18.7
Drug-eluting stent(s) (%)	91.0	89.5	88.7	89.2
In-stent restenosis (%)	6.0	4.9	4.5	4.8
Mechanical ventricular support required (%)*	0.3	0.5	1.3	1.0
Lesion success (%)	94.7	96.2	95.5	95.6
Procedural success (%)	92.9	93.6	93.1	93.2

* Missing data (N=2,135) ** Missing data (N=19)

Procedural characteristics by on-site CABG vs off-site CABG capability are presented in Table 3C. Hospitals with on-site CABG capability treated less in-stent restenosis cases, while procedural success rates were similar to the previous reporting period.

Table 3C: Procedural data by on-site CABG vs off-site CABG hospitals 2024

Procedural data	On-site CABG	Off-site CABG	All
	(N=16,176)	(N=9,300)	(N=25,476)**
Radial access (%)	78.1	86.0	81.0
Femoral access (%)	21.6	13.7	18.0
Drug-eluting stent(s) (%)	88.9	89.6	89.2
In-stent restenosis (%)	4.5	5.3	4.8
Mechanical ventricular support required (%)	1.2	0.8	1.0
Lesion success (%)	96.2	94.5	95.6
Procedural success (%)	93.9	92.0	93.2

* Missing data (N=2,135) ** Missing data (N=19)

Procedural characteristics by metropolitan versus non-metropolitan hospitals are presented in Table 3D. Treatment of in-stent restenosis was less frequent in patients treated at metropolitan hospitals.

Table 3D: Procedural data by metro vs non-metro hospitals 2024

Procedural data	Metro	Non-metro	All
	(N=21,178)	(N=4,298)	(N=25,476)**
Radial access (%)	80.5	83.6	81.0
Femoral access (%)	19.2	16.2	18.7
Drug-eluting stent(s) (%)	89.5	87.6	89.2
In-stent restenosis (%)	4.6	5.6	4.8
Mechanical ventricular support required (%)*	1.1	0.7	1.0
Lesion success (%)	95.6	95.3	95.6
Procedural success (%)	93.3	92.7	93.2

* Missing data (N=2,135) ** Missing data (N=19)

Procedural data by sex are presented in Table 3E. Lesion success rates were similar between men and women, while procedural success differed slightly (93.3% and 92.9%, respectively). Rates of in-stent restenosis and use of mechanical ventricular support were higher among men.

Table 3E: Procedural data by sex 2024

Procedural data	Men	Women	All
	(N=19,135)	(N=6,341)	(N=25,476)**
Radial access (%)	82.4	76.8	81.0
Femoral access (%)	17.3	23.0	18.7
Drug-eluting stent(s) (%)	89.0	89.7	89.2
In-stent restenosis (%)	5.0	4.3	4.8
Mechanical ventricular support required (%)*	1.1	0.7	1.0
Lesion success (%)	95.5	95.7	95.6
Procedural success (%)	93.3	92.9	93.2
Left main lesion (%)	1.5	1.0	1.4

* Missing data (N=2,135) ** Missing data (N=19)

18. STEMI Key Findings

64 years ↔

is the **average age** of a PCI patient in the **STEMI cohort**

67 years ↔

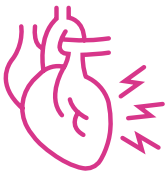
is the **average age** of a PCI patient in the **overall cohort**

55.0% ↔

of STEMI cases **achieved a door to PCI mediated reperfusion time within the 60 minutes target**

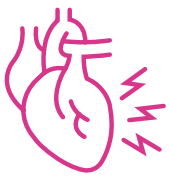
74.1% ↑ 2%

is the overall **rate of prehospital notification** (PHN) utilisation



8.1% ↔

of **STEMI patients experience MACCE** (major adverse cardiac and cerebrovascular events)



3.4% ↔

of the **overall cohort experience MACCE** (major adverse cardiac and cerebrovascular events)

7.5% ↔

of the **STEMI cohort experience MACE** (major adverse cardiac events)

3.1% ↑ 1%

of the **overall cohort experience MACE** (major adverse cardiac events)

23% ↓ 1%

of PCI patients presenting with STEMI symptoms are **women**

77% ↑ 1%

of PCI patients presenting with STEMI symptoms are **men**

↑ Increase ↓ Decrease ↔ No change
from previous year's reported figure

19. Percutaneous Coronary Intervention for Acute STEMI

In 2024, 6,313 cases were for PCI for ST-elevation myocardial infarction (STEMI), representing 24.8% of the overall PCI cohort. Within the STEMI cohort, 70.1% (4,220) of cases were for Primary PCI. This is defined as a PCI performed within 12 hours of symptom onset of STEMI in patients self-presenting acutely to a health service or via ambulance. 46 hospitals contributing data to the NCR undertook Primary PCIs in 2024.

The majority of Primary PCIs (95.6%) occurred in public hospitals, with low volume hospitals and private hospitals undertaking comparatively few procedures. Women represented 22.4% of these cases, a reduction of 1.0% from the previous year. High volume hospitals performed the largest proportion of these cases (69.8%) and the majority of procedures (80.6%) took place in metropolitan hospitals (Table 4A).

Table 4A: Primary PCI cases as a proportion of overall case numbers by hospital types 2024

	Primary PCI rate
Hospital types	**N (%)**
Low volume <250	238 (5.6)
Medium volume 250-500	1,038 (24.6)
High volume >500	2,944 (69.8)
On-site CABG	2,531 (60.0)
Off-site CABG	1,689 (40.0)
Metro	3,403 (80.6)
Non-metro	817 (19.4)
Public	4,033 (95.6)
Private	187 (4.4)
All	**4,220 (100)**

* PCI for STEMI (N=4,220) includes STEMI patients presenting within 12 hours of symptom onset and includes inter-hospital transfers and patients with a STEMI onset whilst a current in-patient.

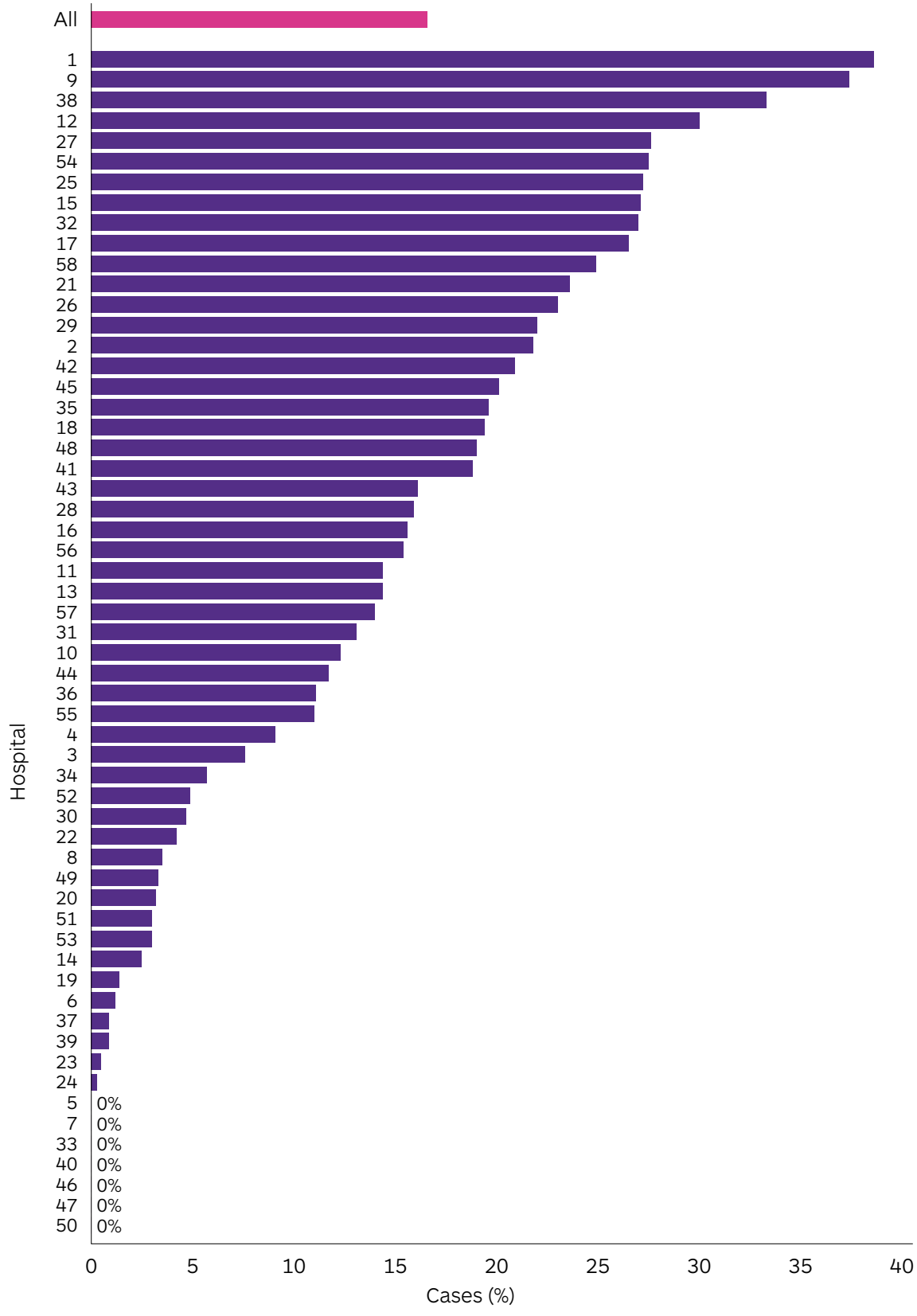
Primary PCI for STEMI by hospital is presented in Table 4.B. Among hospitals undertaking primary PCI, activity ranged from 0.3% to 38.6%, with 61.2% of primary PCIs performed out-of-hours, and 80.2% of cases performed in metropolitan hospitals.

Table 4B: PCI for STEMI subcategories 2024*

	Primary PCI rate
	N (%)
Primary PCI (<12hrs, no lysis)	4,220 (70.1)
PCI for STEMI 12-24hrs (no lysis)	313 (5.2)
Pharmaco-invasive PCI (<24hrs, previous lysis, stable)	454 (7.5)
Rescue PCI (<24hrs, previous lysis, unstable)	404 (6.7)
PCI for STEMI (1-7 days following lysis)	116 (1.9)
PCI for STEMI (1-7 days no prior lysis)	508 (8.4)

N=6015 * 297 missing cases for PCI indication

Figure 15: Primary PCI cases as a proportion of overall case numbers by hospital 2024*

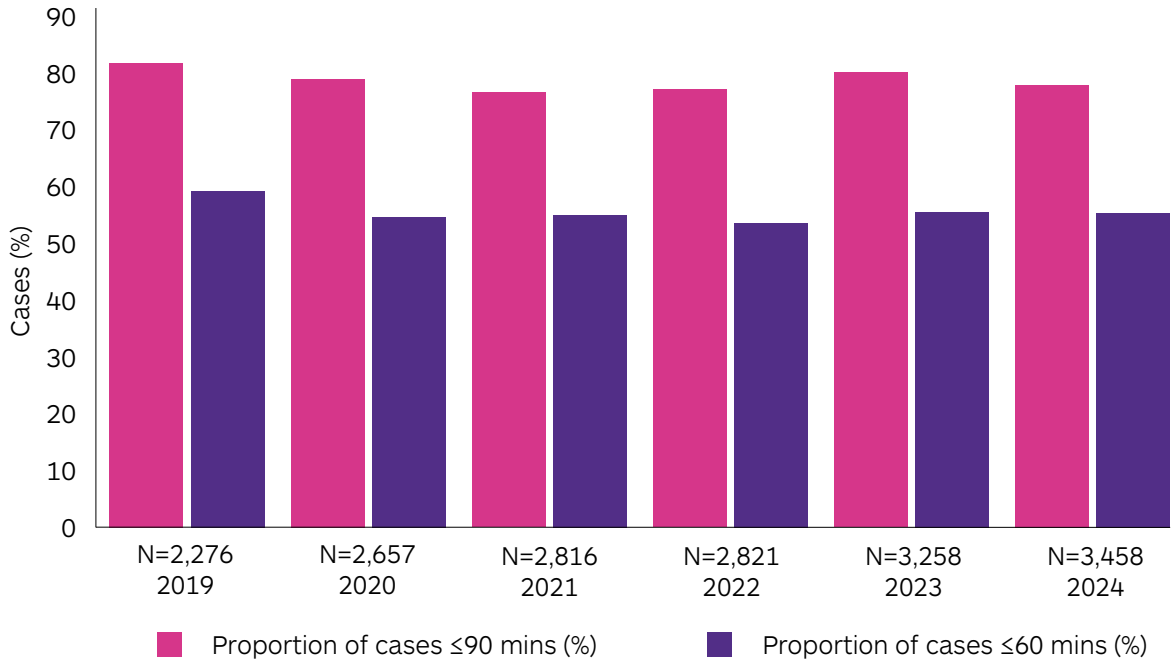


* Hospitals 5, 7, 33, 40, 46, 47 & 50 had no Primary PCI cases.

19.1 Reperfusion Times In Primary PCI

The key performance measure of door to PCI mediated reperfusion time serves as a benchmark for assessing hospital performance in management of patients with STEMI. Trends in the door to Primary PCI-mediated reperfusion time over six years (2019-2024), divided by the proportion of cases treated ≤90 minutes and ≤60 minutes are presented in Figure 16.

Figure 16: Time from door to PCI mediated reperfusion for primary PCI cases 2019-2024*



* Primary PCI for STEMI presentations excluding all inter-hospital arrivals and patients with STEMI onset whilst a current in-patient.

QI 2. Time from door to PCI mediated reperfusion

The proportion of cases treated ≤60 mins remained consistent with previous years but there was a decreased proportion of cases treated ≤90 mins in 2024 compared to the previous year (77.4% vs 79.6%). The median door to PCI mediated reperfusion across all hospitals was 56 mins (Table 5A).

Treatment delays in primary PCI were also influenced by hospital volume and geographical location. Door to PCI mediated reperfusion time was substantially longer in the low volume hospitals compared to the other groups (low: 66 mins vs high: 58 mins vs medium: 50 mins). Not unexpectedly, patients treated at the non-metropolitan hospitals had a slightly longer door to PCI mediated reperfusion time compared to metropolitan hospitals (metro:56 mins vs non-metro: 58 mins).

Table 5A: Time from door to PCI mediated reperfusion for primary PCI cases 2024*

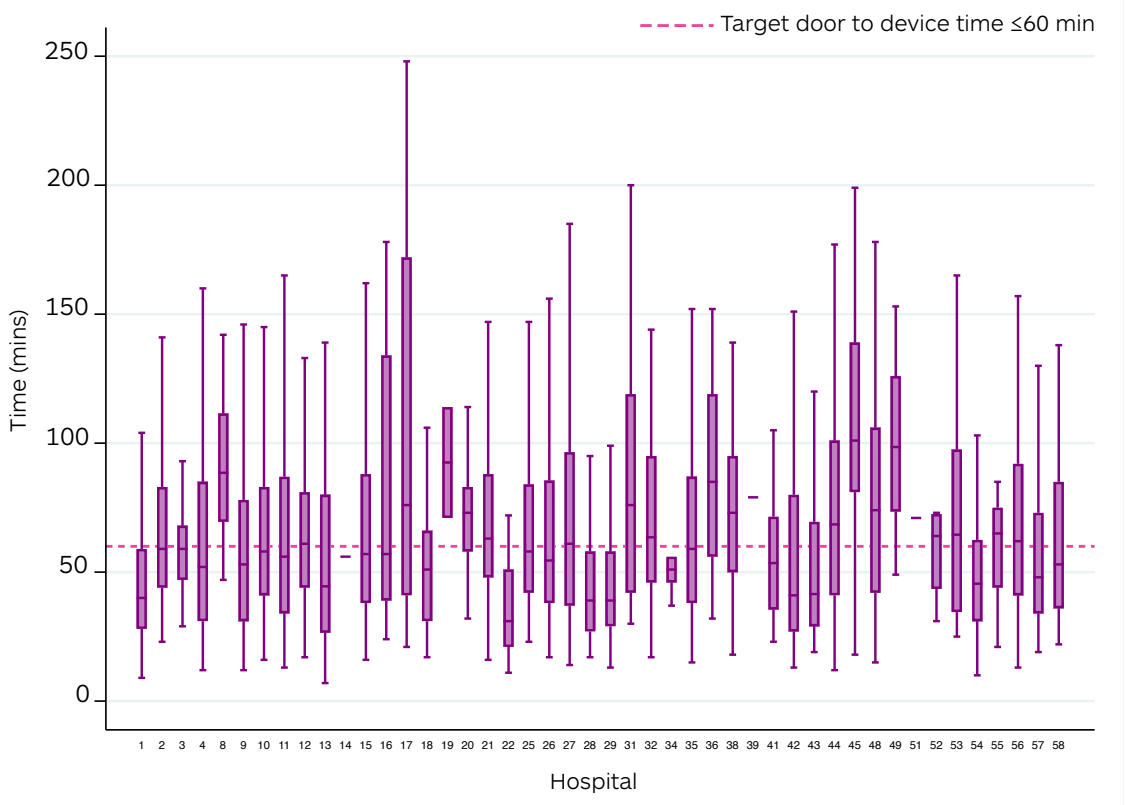
Door to PCI mediated reperfusion time	All Primary PCI cases (N=3,458)
Median - mins (IQR)	56 (37, 87)
Proportion of cases ≤90mins (%)	77.4
Proportion of cases ≤60mins (%)	55.0

* Primary PCI for STEMI presentations excluding all inter-hospital arrivals and patients with STEMI onset whilst a current in-patient.

46 sites contributed Primary PCI data in 2024.

The door to PCI-mediated reperfusion times by hospital are presented in Figure 17. In 2024, just over half of the hospitals (25/46) achieved a median door to PCI-mediated reperfusion time ≤60mins. Six hospitals treated a low volume of primary PCI (n<5).

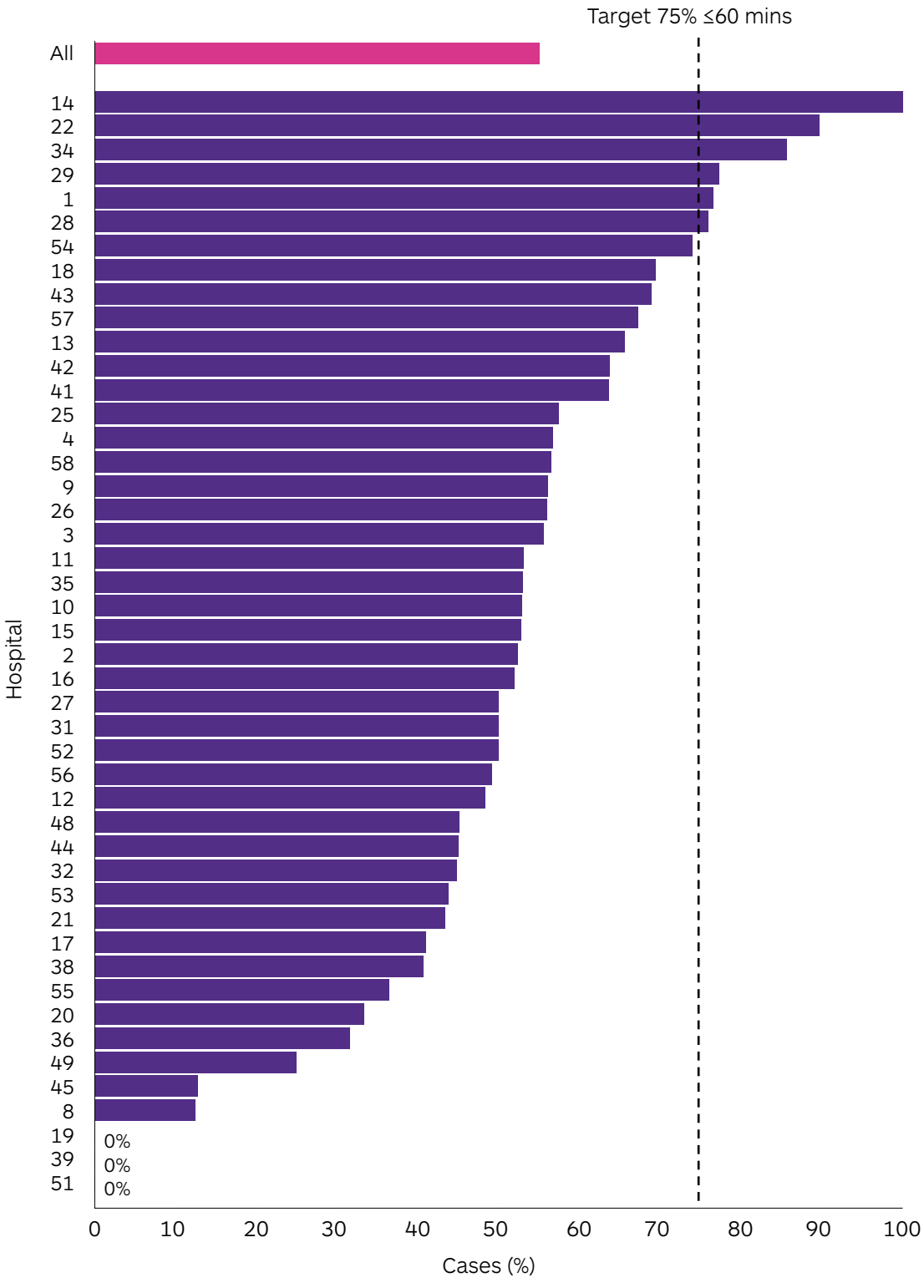
Figure 17: Time from door to PCI mediated reperfusion for primary PCI by hospital 2024



QI 2. Time from door to PCI mediated reperfusion

55% of all cases achieved a door-to-balloon time of ≤60 min in 2024. 6 out of 46 hospitals achieved a door-to-balloon time of ≤60 min in ≥75% of their cases (Figure 18). The only correlation between these high performing hospitals is that all 6 operate in a metropolitan environment. These sites are a mix of low, medium and high volume intakes, and represent both public and private hospitals.

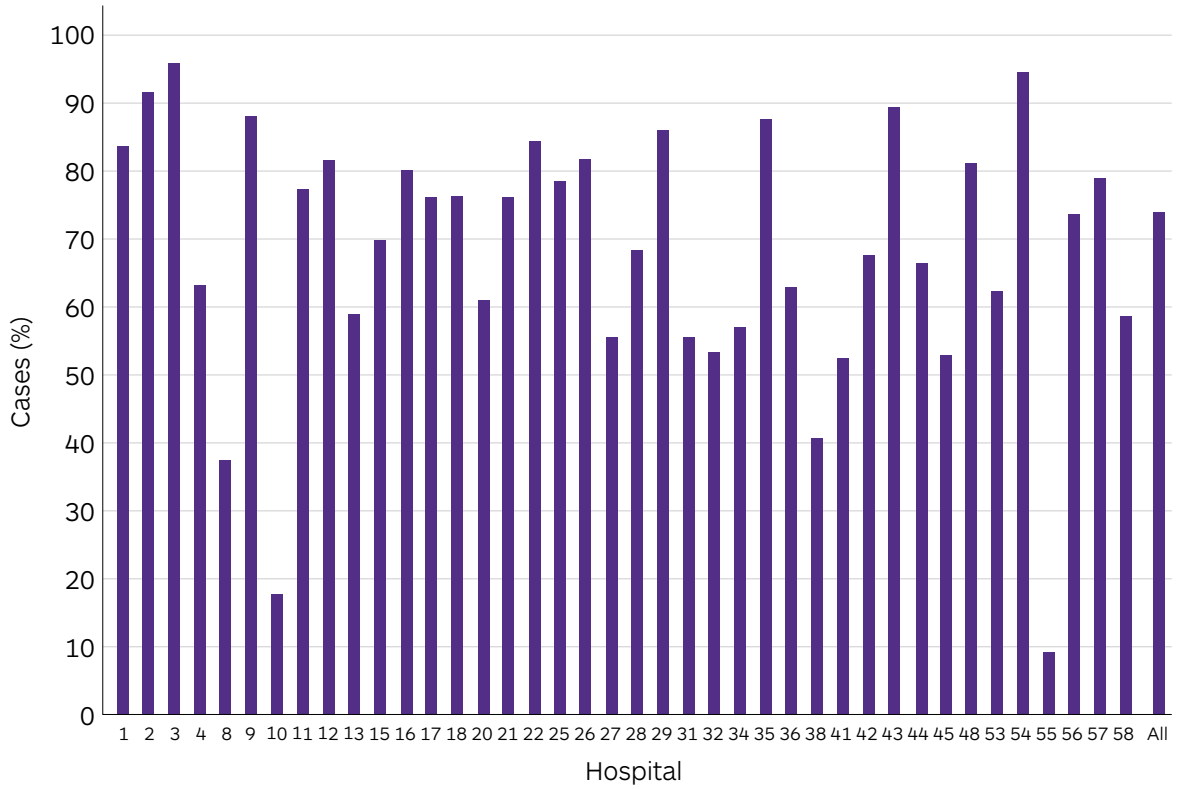
Figure 18: Proportion of primary PCI cases with door to device time ≤60mins by hospital 2024*



QI 2. Time from door to PCI mediated reperfusion

19.2 Pre-hospital Notification

Figure 19: Percentage of cases with Primary PCI cases with pre-hospital notification by hospital 2024



Pre-hospital notification (PHN) describes a hospital being notified of the imminent arrival of an acute STEMI patient. This may result in the opportunity to bypass the emergency department with direct admission to the cardiac catheter laboratory (CCL). The intention is to reduce treatment delay to allow for timely intervention.

Pre-hospital notification (PHN) occurred in 74.1% of primary PCI cases, reflecting a 2.4% increase from the previous year (Figure 19). The proportion of PHN cases varied widely among hospitals (range: 0-95%). Consistent with prior findings, PHN resulted in the significant reduction in median door to PCI-mediated reperfusion time (47 mins vs 89 mins) and an increase in proportion of cases treated ≤90 mins and ≤60 mins (Table 5B).

We further analysed the effect of PHN on the treatment delays in primary PCI by hospital volume and geographical location.

Similar rates of PHN were observed in medium to high volume hospitals (both at 76%) and in metropolitan hospitals (77%) treating primary PCIs, resulting in significant reductions in median PCI-mediated reperfusion times (low: 56 mins vs medium: 42 mins vs high volume: 49 mins and metro: 48 mins). PHN occurred at 46% in the low volume hospitals and at 62% in the non-metropolitan hospitals, but the latter group of hospitals still achieved an impressive medium PCI-mediated reperfusion time of 43 mins.

QI 2. Time from door to PCI mediated reperfusion

Table 5B. Door-to-device times for primary PCI cases by pre-hospital notification status 2024*

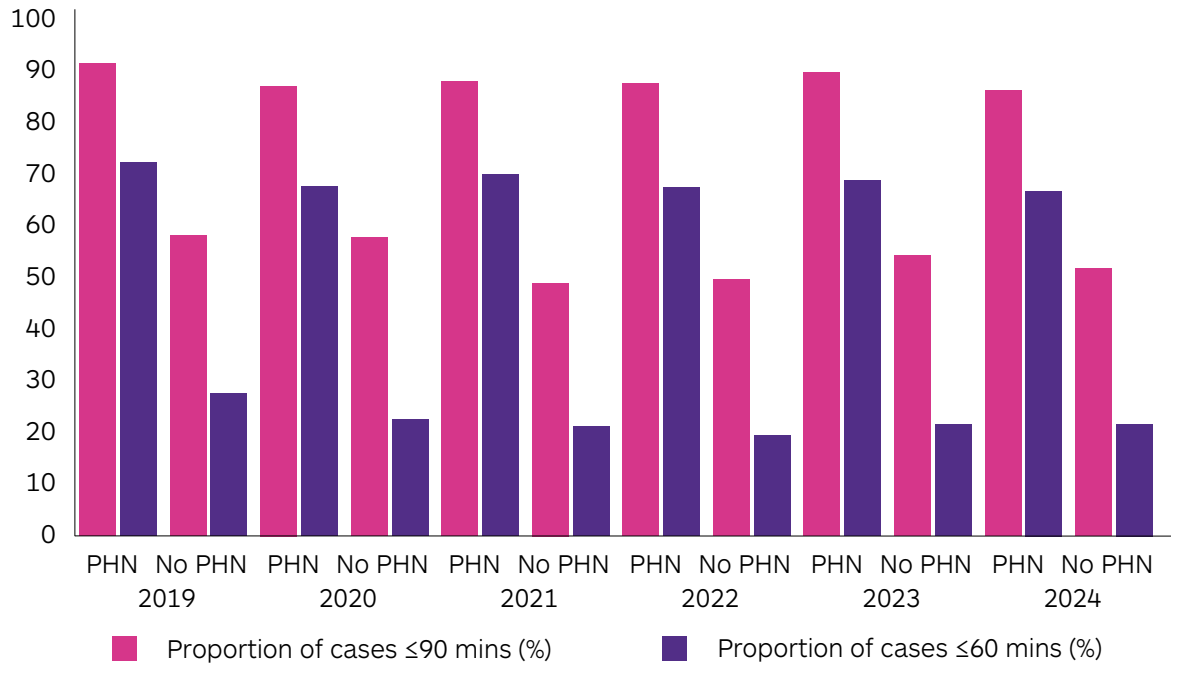
Door to PCI mediated reperfusion time	Primary PCI with PHN	Primary PCI no PHN	All Primary PCI cases
	(N=2,526) †	(N=885) †	(N=3,458)
Median -mins (IQR)	47 (33, 69)	89 (65, 125)	56 (37, 87)
Proportion of cases ≤90mins (%)	86.6	52.1	77.4
Proportion of cases ≤60mins (%)	67.1	21.8	55.0

† PHN data not supplied in 47 cases.

46 sites contributed Primary PCI data in 2024.

* Primary PCI for STEMI presentations excluding all inter-hospital transfers and patients with a STEMI onset whilst a current in-patient

Figure 20: Door-to-device-time for Primary PCI cases by pre-hospital notification status 2019-2024*

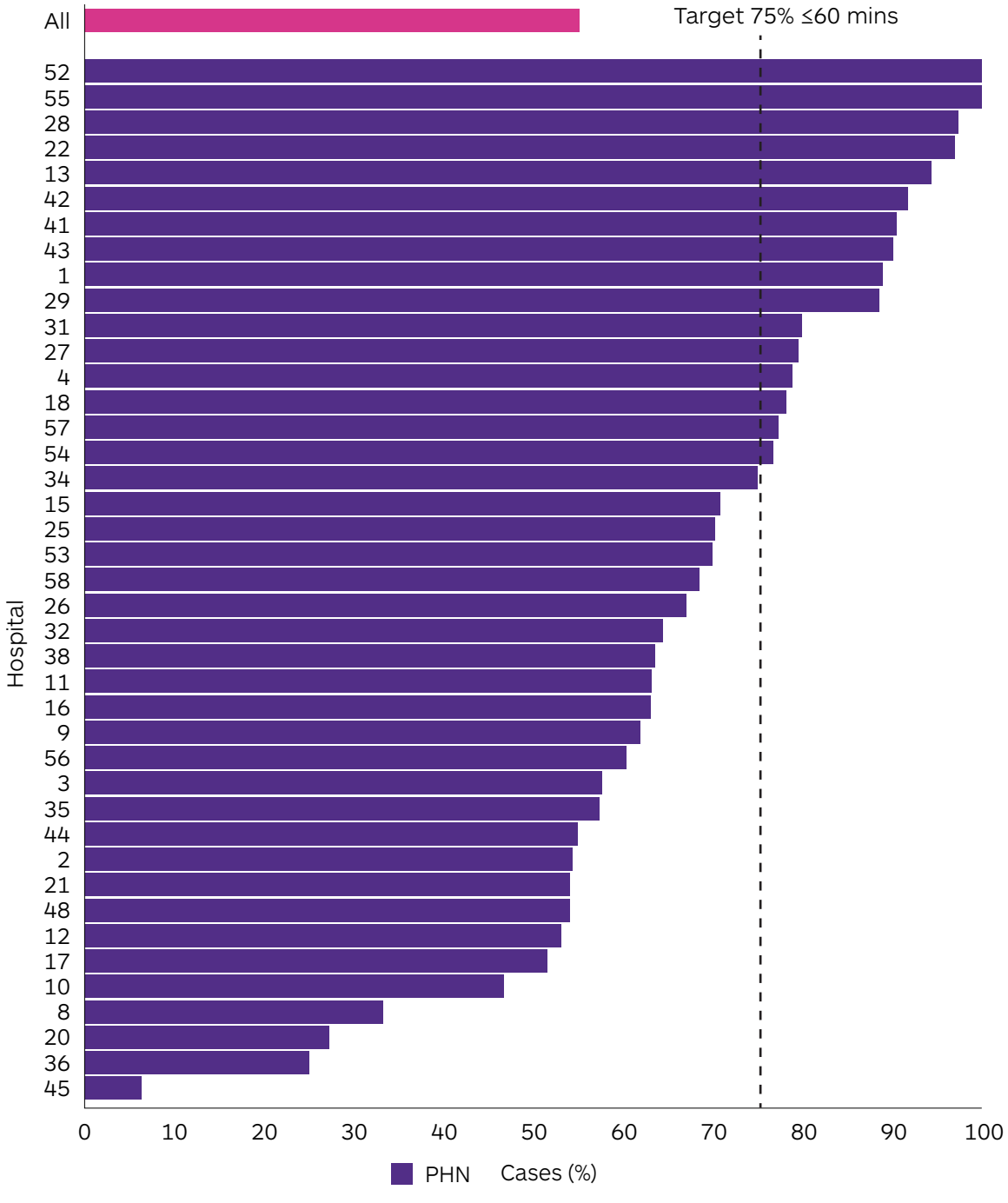


* Primary PCI for STEMI presentations excluding all inter-hospital transfers and patients with a STEMI onset whilst a current in-patient.

QI 2. Time from door to PCI mediated reperfusion

A comparison of hospitals' door to PCI-mediated reperfusion results with PHN is shown in Figure 21A. 17 of 41 hospitals achieved the target of at least 75% with a door to PCI-mediated reperfusion time ≤60 mins.

Figure 21A: Proportion of primary PCI cases with door to device time ≤60 mins by hospital with PHN 2024*



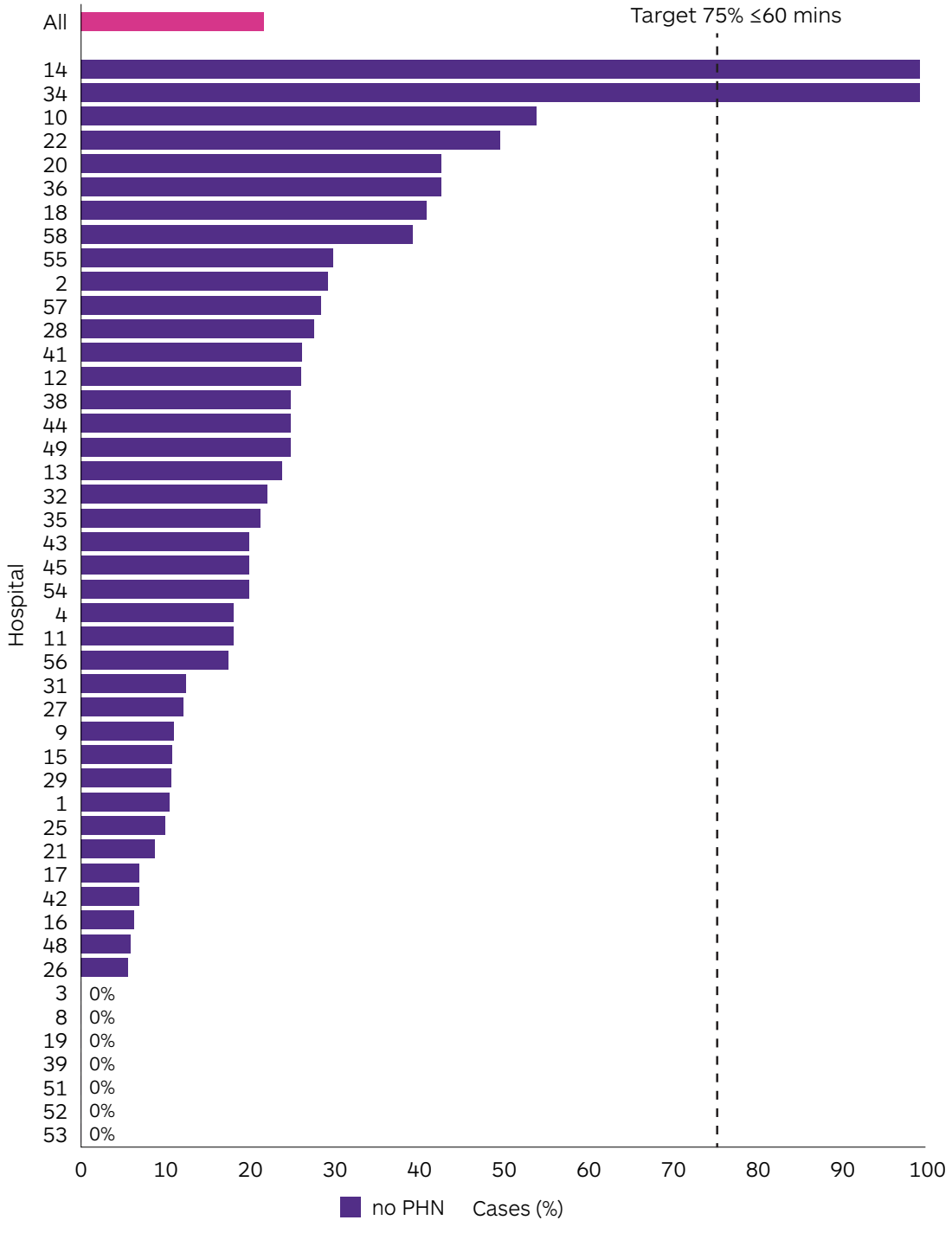
* Primary PCI for STEMI presentations excluding all inter-hospital transfers and patients with a STEMI onset whilst a current in-patient.

Hospitals 14, 19, 39, 49 and 51 had no Primary PCI cases with PHN.

QI 2. Time from door to PCI mediated reperfusion

A comparison of hospitals' door to PCI-mediated reperfusion results without PHN is shown in Figure 21B. In cases where there was no PHN, only 2 of 46 hospitals achieved the target of at least 75% with a door to PCI-mediated reperfusion time ≤60 mins. However both of these are low volume sites.

Figure 21B: Proportion of primary PCI cases with door to device time ≤60 mins by hospital without PHN 2024*



* Primary PCI for STEMI presentations excluding all inter-hospital transfers and patients with a STEMI onset whilst a current in-patient.

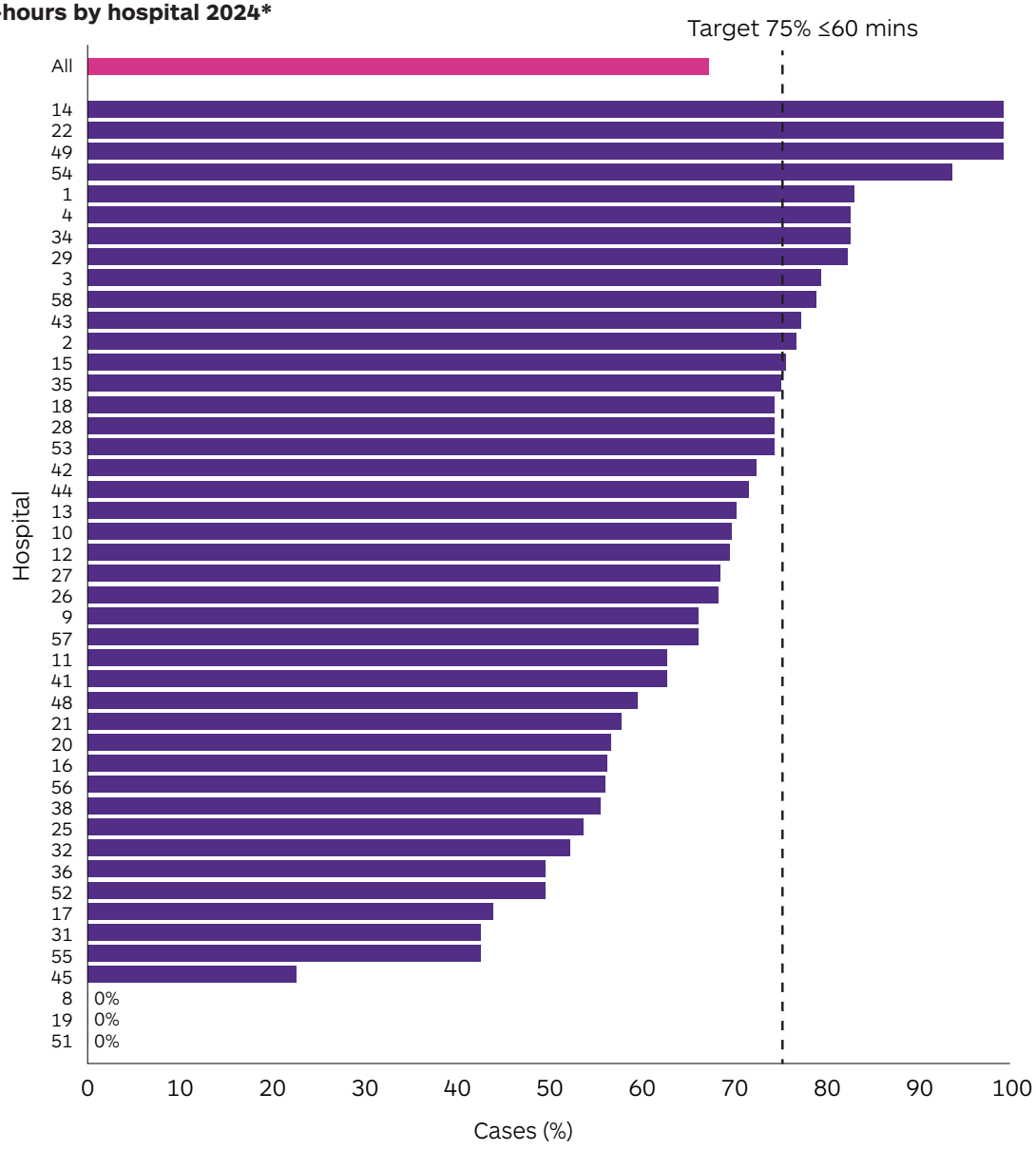
Hospitals 3, 8, 14, 19, 34, 39, 49, 51, 52 & 54 had low case numbers with PHN N≤5.

QI 2. Time from door to PCI mediated reperfusion

19.3 In-Hours Versus Out-Of-Hours Presentation

The distribution of primary PCI cases performed in-hours versus out-of-hours procedures is illustrated in Figure 22A & Figure 22B (pages 60-61). In 2024, 61.3% of cases were treated after hours (range by hospital 0-75%). 62.1% of cases treated after hours were performed in metropolitan areas and 58.1% in non-metropolitan hospitals. Out-of-hours rates were similar for the three volume groups (low: 61.1%, medium: 58.8%, high: 62.8%). Door to PCI-mediated reperfusion ≤60 minutes was achieved in 46.9% of cases out-of-hours and 67.8% of cases in-hours. Of note, three hospitals performed better after hours (Figure 22B). There is no correlation between these three sites as to how they became high performers, as they are each a low, medium and high volume site, across both public and private hospital type.

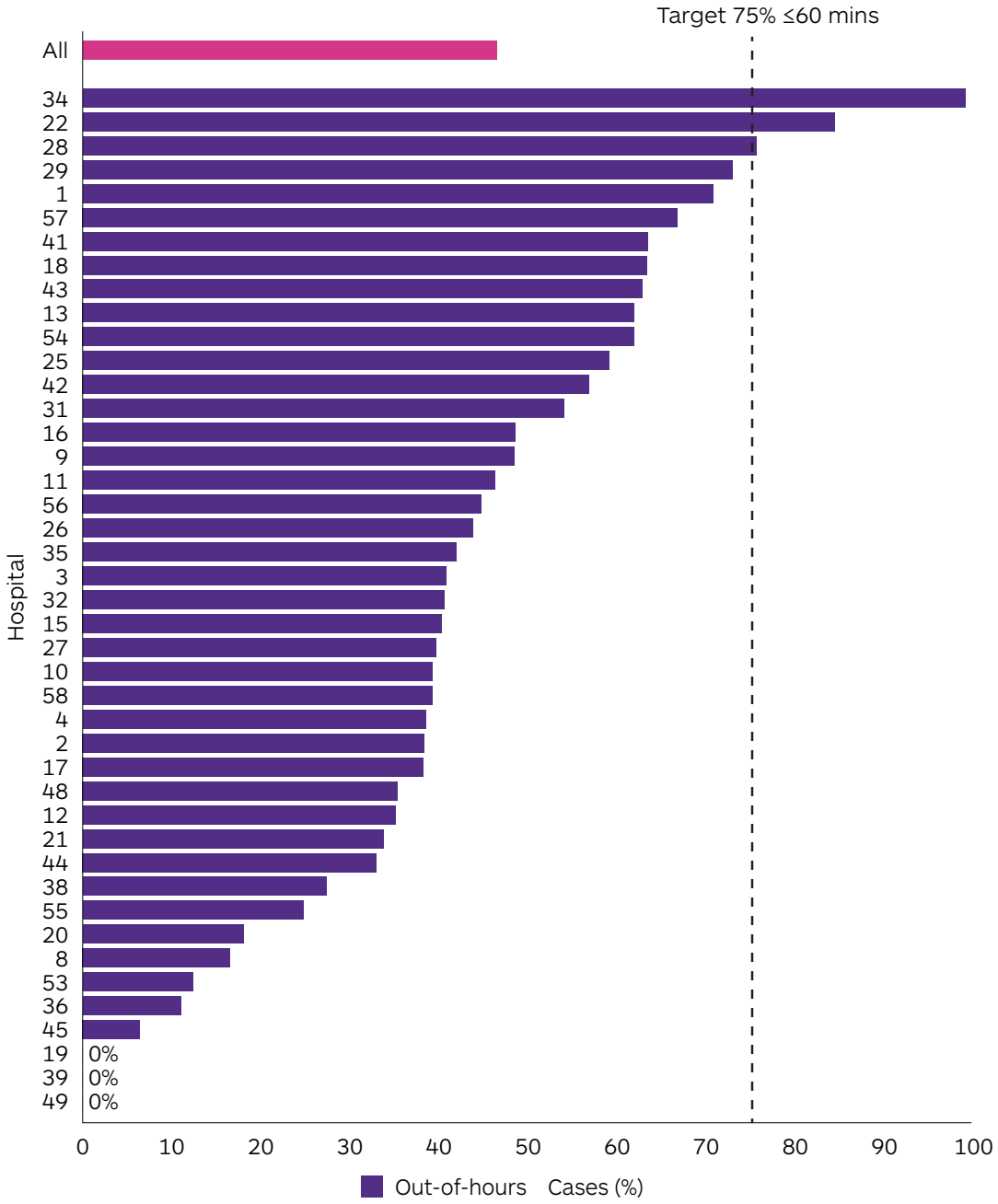
Figure 22A: Proportion of primary PCI cases with door to device time ≤60 mins by hospital: in-hours by hospital 2024*



* Primary PCI for STEMI presentations excluding all inter-hospital transfers and patients with a STEMI onset whilst a current in-patient. In-hours: 8:00am - 6:00pm (Mon-Fri). Out-of-hours: 6:00pm - 8:00am (Mon - Fri, national public holidays, weekends).

Hospital 39 had no in-hours cases.

Figure 22B: Proportion of primary PCI cases with door to device time ≤60 mins by hospital: out-of-hours by hospital 2024*



* Primary PCI for STEMI presentations excluding all inter-hospital transfers and patients with a STEMI onset whilst a current in-patient. In-hours: 8:00am - 6:00pm (Mon-Fri). Out-of-hours: 6:00pm - 8:00am (Mon - Fri, national public holidays, weekends).

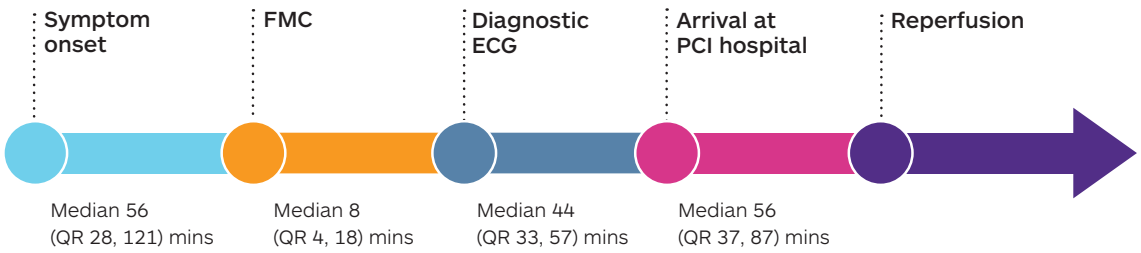
Hospitals 14, 51 & 52 had no out-of-hours cases.

QI 2. Time from door to PCI mediated reperfusion

19.4 Patient, Healthcare System and Procedural Timings

The various components of the time taken to treat STEMI patients encompass the patient, the health care system and the treating cardiac catheter laboratory. The total ischaemic time from patient symptom onset to reperfusion is presented in Figure 23. The effect of PHN on the various components of total ischaemic times are shown in Table 5C. In 2024, the overall median time from patient symptom onset to first medical contact (FMC) was 56 minutes (IQR: 28, 121), consistent with previous years. Overall, median times across the symptom onset to reperfusion journey for STEMI patients decreased in 2024.

Figure 23: Median times from symptom onset to PCI mediated reperfusion 2024*



* Primary PCI for STEMI presentations excluding all inter-hospital arrivals and patients with STEMI onset whilst a current in-patient.

Table 5C: Median times from symptom onset to reperfusion by prehospital notification status 2024

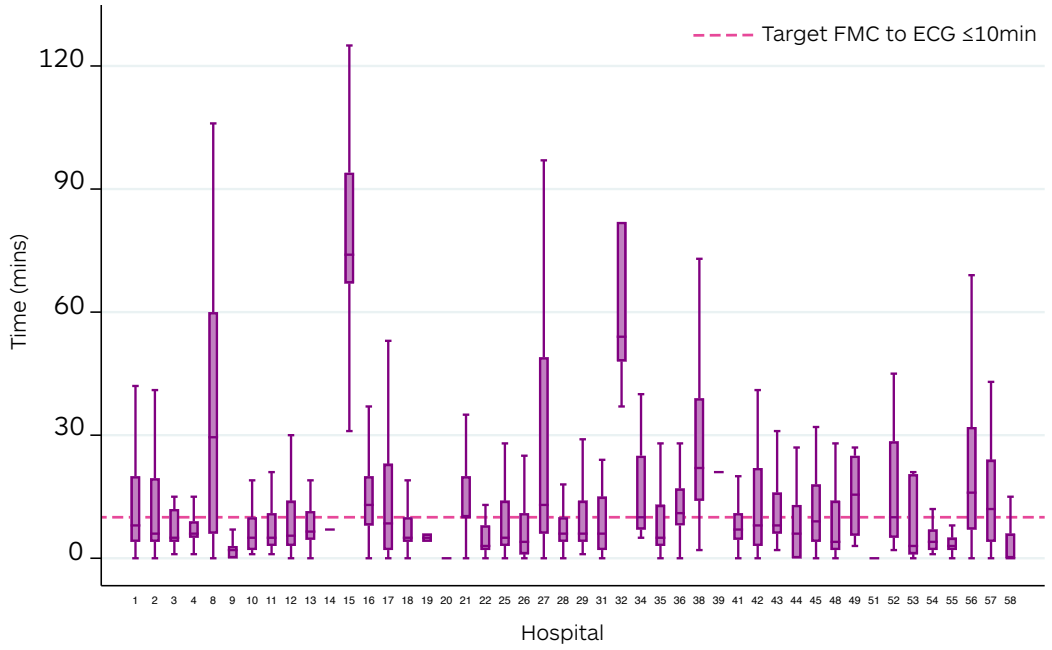
Symptom onset to reperfusion time	Primary PCI with PHN	Primary PCI no PHN	All Primary PCI cases*
	(N=2,526) †	(N=890) †	(N=3,463)
Median Symptom onset to FMC - mins (IQR)	50 (26, 107)	75 (35, 169)	56 (28, 121)
Median FMC to Diagnostic ECG - mins (IQR)	6 (3, 12)	12 (5, 37)	7 (3, 16)
Median Diagnostic ECG to door - mins (IQR)	44 (34, 57)	38 (27, 55)	44 (33, 57)
Median Diagnostic ECG to reperfusion time - mins (IQR)	91 (76, 114)	87 (66, 120)	91 (74, 115)
Median FMC to reperfusion time - mins (IQR)	101 (84, 126)	112 (82, 163)	103 (84, 134)
Median Symptom onset to reperfusion time - mins (IQR)	162 (126, 233)	210 (149, 338)	171 (130, 261)

† PHN data not supplied in 47 cases.

46 sites contributed Primary PCI data in 2024.

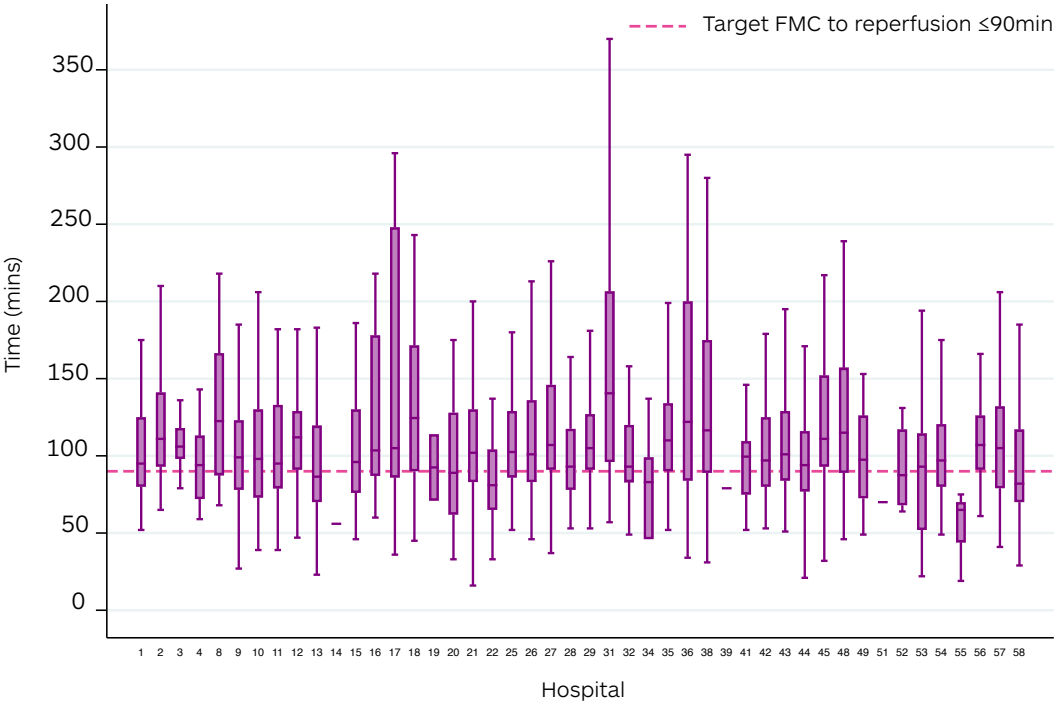
The overall median FMC to diagnostic electrocardiogram (ECG) time was 7 minutes (IQR: 3, 16) with 35 of 46 hospitals meeting the recommended benchmark of 10 minutes (Figure 24). FMC to diagnostic ECG time was 6 minutes, 6 mins shorter than without PHN, underscoring the importance of PHN.

Figure 24: First medical contact to diagnostic ECG time for primary PCI cases by hospital 2024



Australian guidelines recommend the benchmark of FMC to reperfusion time ≤90 min.[20] The median FMC to reperfusion time was 103 minutes (IQR: 84, 134) (Table 5C). Only 10 hospitals met this target (Figure 25).

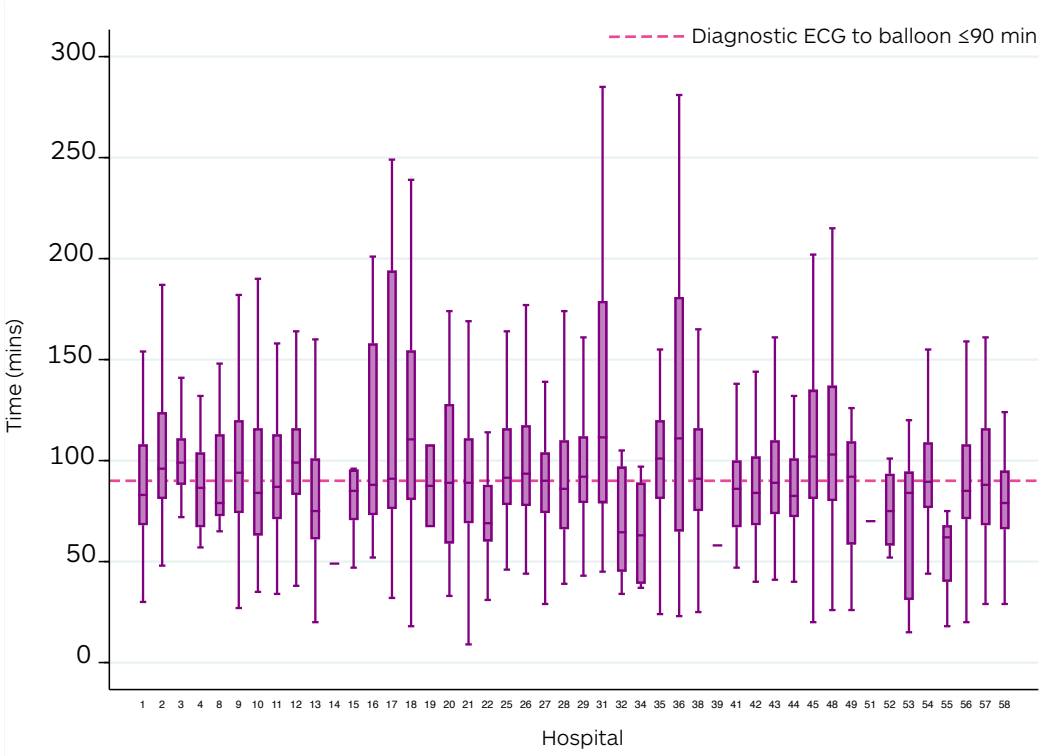
Figure 25: First medical contact to PCI-mediated reperfusion time for primary PCI cases by hospital 2024



20 Heart Foundation (2025) *Australian clinical guideline for diagnosing and managing acute coronary syndromes 2025*, accessed 1 October 2025, https://www.heartfoundation.org.au/for-professionals/acs-guideline

We further assessed the time delays from diagnostic ECG to PCI-mediated reperfusion as an additional metric of system performance (Figure 26). The median diagnostic ECG to reperfusion time for the 2024 cohort was 91 min (IQR: 74, 115) with variation among hospitals (range 49-112 min), see Figure 24 (Page 63).

Figure 26: Diagnostic ECG to reperfusion by hospital 2024



QI 2. Time from diagnostic electrocardiogram to PCI mediated reperfusion

Time delays for patients presenting with acute STEMI to non-PCI capable centres

According to the 2025 Australian clinical guidelines for diagnosing and managing acute coronary syndromes (ACS), primary PCI is the recommended reperfusion strategy for patients with acute ST-elevation myocardial infarction (STEMI) presenting to a non–PCI-capable facility and PCI performed ≤120 minutes of first medical contact (FMC).[21] Fibrinolytic therapy should be administered if timely PCI is not achievable.[21]

In 2024, 447 patients presented to a non-PCI-capable centre within 12 hours of symptom onset. The overall median FMC to reperfusion time was 147 min (Table 5D) and only 8 hospitals achieved a median FMC-to-reperfusion time ≤120 minutes. Patients treated at metropolitan hospitals had a shorter FMC to reperfusion time compared to patients from non-metropolitan centres (144 mins vs 172 mins).

Table 5D: First medical contact to reperfusion times for inter-hospital transfer cohort 2024

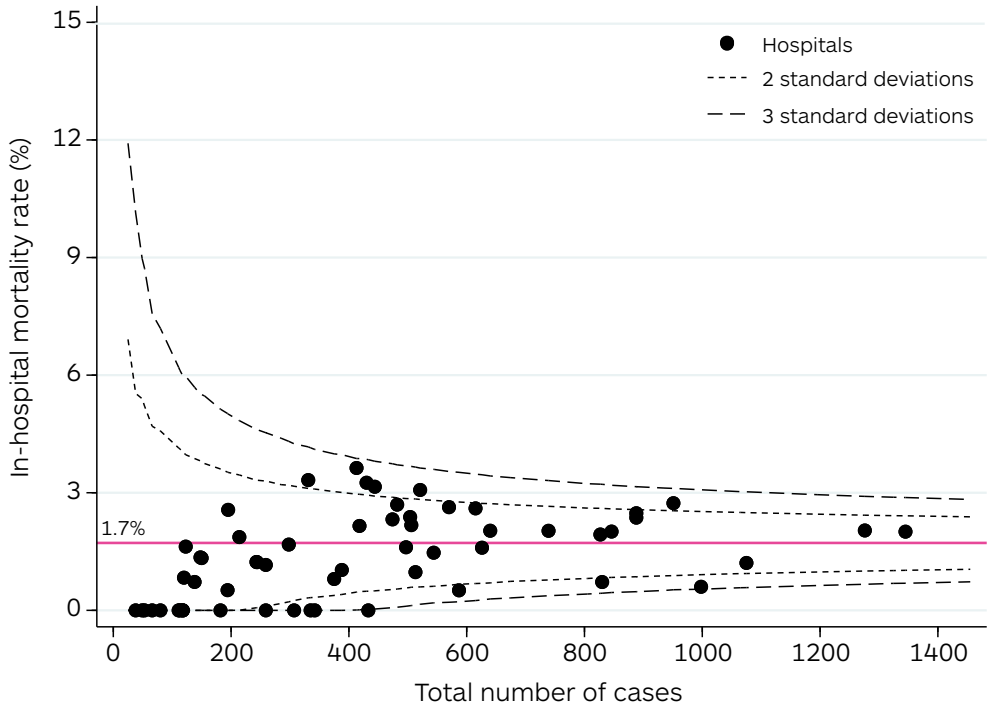
First medical contact to reperfusion time 2024 data	All (N=447)	PHN (N=246)	No PHN (N=190)	Metro (N=376)	Non-metro (N=71)
Median-mins (IQR)	147 (112, 219)	145 (106, 213)	146 (114, 219)	144 (111, 213)	172 (117, 270)
Proportion of cases ≤90mins (%)	10.1	13.0	6.8	10.9	5.6
Proportion of cases ≤120mins (%)	33.6	37.4	30.5	35.1	25.4

21 Heart Foundation (2025) *Australian clinical guideline for diagnosing and managing acute coronary syndromes 2025*, accessed 1 October 2025, https://www.heartfoundation.org.au/for-professionals/acs-guideline

20. In-Hospital Outcomes following PCI

In 2024, the overall in-hospital mortality rate was 1.7%, with all hospitals being within normal control limits. (Figure 27).

Figure 27: In-hospital mortality rate by hospital 2024



QI 5. In-hospital mortality

The rate of in-hospital mortality within the STEMI cohort was 5.2% which is similar to the 2023 rate of 5.1%. Table 6A presents the in-hospital mortality rates across various sub-groups. Women continue to have a slightly higher rate of in-hospital mortality, 2.0% compared to 1.6% of men.

Table 6A: In-hospital mortality rates for selected patient sub-groups 2024

Patient category	In-hospital mortality rate	Total
	N (%)	N
All PCI patients	438 (1.7)	25,471
STEMI patients	325 (5.2)	6,305
Cardiogenic shock and/or OHCA patients	179 (30.8)	581
NSTEACS	64 (0.8)	7,774
Non-ACS	49 (0.4)	11,375
Women	128 (2.0)	6,343
Men	310 (1.6)	19,128

QI 5. In-hospital mortality

Table 6B In-hospital mortality rates by hospital volume 2024

Patient category	Low volume <250	Medium volume 250-500	High volume >500	Total
	n/N (%)	n/N (%)	n/N (%)	N
All PCI patients	24/2,697 (0.9)	110/6,485 (1.7)	304/16,289 (1.9)	25,471
STEMI patients	17/448 (3.8)	84/1,508 (5.6)	224/4,349 (5.2)	6,305
Cardiogenic shock and/or OHCA patients	8/37 (21.6)	57/169 (33.7)	153/497 (30.8)	703
NSTEACS	4/921 (0.4)	14/1,871 (0.7)	46/4,982 (0.9)	7,774
Non-ACS	3/1,313 (0.2)	12/3,106 (0.4)	34/6,956 (0.5)	11,375

The volume of patients undergoing PCI at a hospital may be a factor in procedural outcomes. Overall 2,694 cases were performed in low volume centres out of the total cohort of 25,471 cases. Table 6B provides unadjusted in-hospital mortality data for hospitals divided by hospital PCI volume.

The overall mortality rate was the lowest in the low volume hospitals treating non-ACS presenters and trended upwards in the medium and high-volume hospitals. The highest mortality occurred in patients presenting with cardiogenic shock and/or OHCA, with the majority (95%) of these patients being treated in medium to high volume hospitals. Similarly, the mortality rate for STEMI patients was highest in medium to high volume hospitals with the majority (89.5%) of STEMI patients being treated in these hospitals.

The in-hospital mortality rate for cardiogenic shock and/or OHCA patients was highest in non-metropolitan hospitals (Table 6C). Similar rates of mortality were observed between metropolitan and non-metropolitan hospitals for the other clinical presentations.

QI 5. In-hospital mortality

Table 6C In-hospital mortality rates by metro vs non-metro hospitals 2024

Patient category	Metro	Non-metro	Total
	n/N (%)	n/N (%)	N
All PCI patients	355/21,173 (1.7)	83/4,298 (1.9)	25,471
STEMI patients	255/4,941 (5.2)	70/1,364 (5.1)	6,305
Cardiogenic shock and/or OHCA patients	169/560 (30.2)	49/143 (34.3)	703
NSTEACS	58/6,481 (0.9)	6/1,293 (0.5)	7,774
Non-ACS	42/9,734 (0.4)	7/1,641 (0.4)	11,375

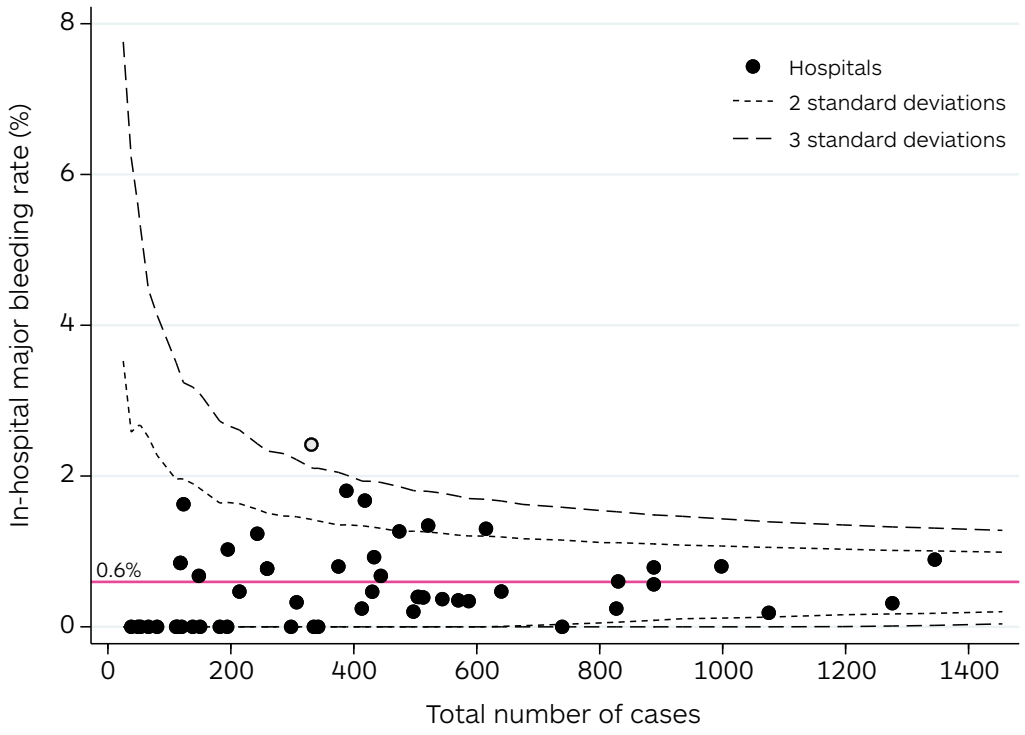
QI 5. In-hospital mortality

20.1 In-Hospital Major Bleeding

Major bleeding is a serious adverse outcome following PCI which is associated with increased length of stay and higher mortality rates.[22] The in-hospital major bleeding rate in 2024 was 0.6% (Figure 28), which was similar to the 2023 rate of 0.5%. The rate of major bleeding across hospitals was 0-2.4%, with one hospital being outside 3 standard deviations of the mean.

Higher rates of major bleeding were observed within STEMI patients, patients treated in a metro hospital and in medium volume (250-500) hospitals. These rates are shown in Table 7A, 7B and 7D on pages 71-72. Major bleeding post PCI continues to occur more often in the women population 0.9% vs 0.5% (men).

Figure 28: In-hospital major bleeding rate by hospital 2024



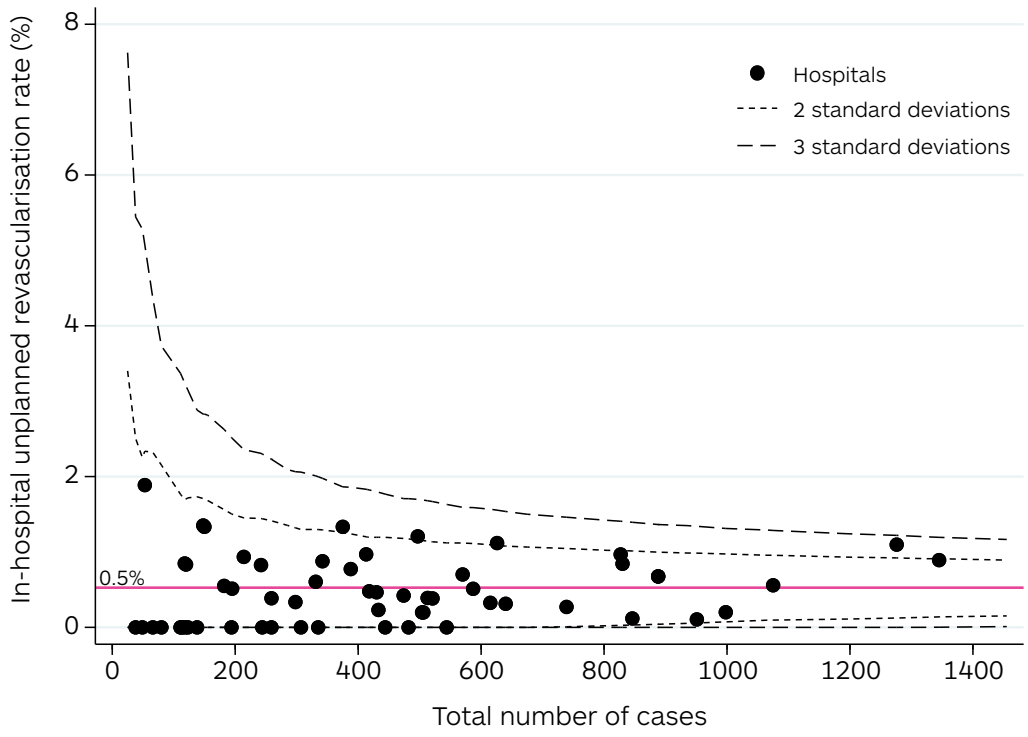
QI 4. **In-hospital major bleeding**

22 Ingraham BS, Valgimigli M, Angiolillo DJ, Capodanno D, Rao SV, Urban P and Singh M (2025) 'Relevance of High Bleeding Risk and Postdischarge Bleeding in Patients Undergoing Percutaneous Coronary Intervention,' *Mayo Clinic Proceedings*, 100(2):304-331. doi: 10.1016/j.mayocp.2024.09.010

20.2 In-Hospital Unplanned Revascularisation

Unplanned revascularisation is defined as an unexpected revascularisation procedure (PCI or CABG surgery), following a PCI and occurring during the same admission. The overall rate of in-hospital unplanned revascularisation was 0.5% with all participating hospitals within control limits (Figure 29) (range by hospital 0-1.9%).

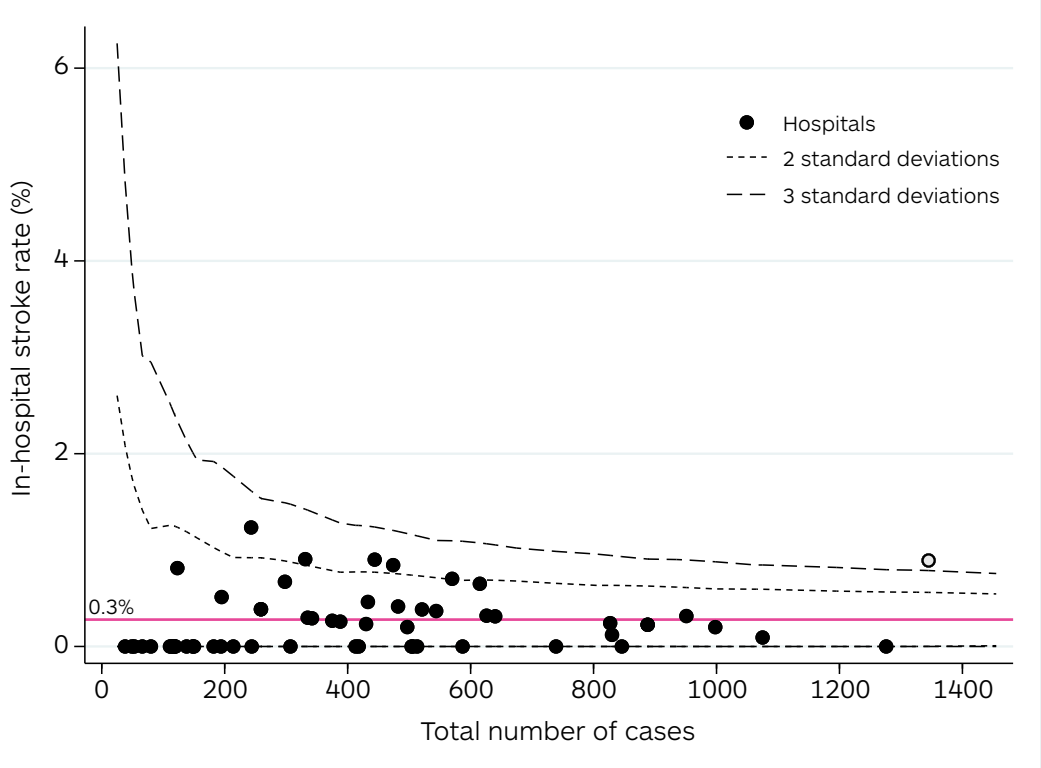
Figure 29: In-hospital unplanned revascularisation rate by hospital 2024



20.3 In-Hospital Stroke

The overall rate of in-hospital stroke post PCI remains low at 0.3% (range 0-1.2%). One hospital was outside 3 standard deviations of the mean. (Figure 30).

Figure 30: In-hospital stroke rate by hospital 2024



QI 3. **In-hospital stroke**

20.4 Outcomes by Clinical Presentation and Hospital Characteristics

Rates of in-hospital adverse events are presented in Tables 7A-7D (pages 71-72). Patients presenting with STEMI had higher rates of major bleeding, MACE (defined as death, new myocardial infarction, stent thrombosis and unplanned revascularisation) and MACCE (defined as MACE plus stroke) compared to NSTEACS and non-ACS presentations (Table 7A). MACE and MACCE rates were higher in high volume centres and facilities with CABG capability (Table 7C-7D, page 72).

Table 7A: In-hospital outcomes by clinical presentation 2024

In hospital outcomes	STEMI	NSTEACS	Non-ACS	Total
	(N=6,305)	(N=7,774)	(N=11,375)	(N=25,471)
Mortality (%)	5.2	0.8	0.4	1.7
Myocardial infarction (%)	0.5	0.2	0.2	0.3
Stent thrombosis (%)	0.5	0.1	0.1	0.2
Unplanned revascularisation (%)	1.0	0.5	0.3	0.5
MACE (%)	7.5	2.6	1.3	3.1
Stroke (%)	0.6	0.2	0.1	0.3
MACCE (%)	8.1	2.8	1.4	3.4
Major bleeding (%)	1.2	0.4	0.4	0.6
Median length of stay (Days)	3.0	3.0	1.0	2.0

MACE - ** Missing data (N=5,168)

Major Bleeding - *** Missing data (N=3,149)

Table 7B: In-hospital outcomes by hospital volume 2024

In hospital outcomes	Low volume <250	Medium volume 250-500	High volume >500	Total
	(N=2,687)	(N=6,485)	(N=16,289)	(N=25,471)
Mortality (%)	0.9	1.7	1.9	1.7
Myocardial infarction (%)	0.6	0.2	0.3	0.3
Stent thrombosis (%)	0.4	0.1	0.2	0.2
Unplanned revascularisation (%)	0.7	0.5	0.5	0.5
MACE (%)	1.8	2.1	3.8	3.1
Stroke (%)	0.2	0.4	0.3	0.3
MACCE (%)	1.9	2.4	4.0	3.4
Major bleeding (%)	0.4	0.8	0.5	0.6
Median length of stay (Days)	2.0	2.0	2.0	2.0

Table 7C: In-hospital outcomes by on-site CABG vs off-site CABG hospitals 2024

In hospital outcomes	On-site CABG (N=16,180)	Off-site CABG (N=9,291)	Total (N=25,471)
Mortality (%)	1.7	1.8	1.7
Myocardial infarction (%)	0.4	0.3	0.3
Stent thrombosis (%)	0.2	0.2	0.2
Unplanned revascularisation (%)	0.6	0.5	0.5
MACE (%)	3.5	2.4	3.1
Stroke (%)	0.3	0.3	0.3
MACCE (%)	3.8	2.6	3.4
Major bleeding (%)	0.6	0.6	0.6
Median length of stay (Days)	2.0	3.0	2.0

Table 7D: In-hospital outcomes by metro vs non-metro hospitals 2024

In hospital outcomes	Metro (N=21,173)	Non-metro (N=4,298)	Total (N=25,471)
Mortality (%)	1.7	1.9	1.7
Myocardial infarction (%)	0.3	0.4	0.3
Stent thrombosis (%)	0.2	0.4	0.2
Unplanned revascularisation (%)	0.5	0.6	0.5
MACE (%)	3.1	3.3	3.1
Stroke (%)	0.3	0.4	0.3
MACCE (%)	3.3	3.6	3.4
Major bleeding (%)	0.6	0.4	0.6
Median length of stay (Days)	2.0	3.0	2.0

21. Discharge Medications and Secondary Prevention Programs

21.1 Compliance with Discharge Medication Prescribing

The NCR collects data on selected medications that are administered post-procedure. These include aspirin, antiplatelets, statins and other lipid-lowering therapies.

Australian guidelines recommend that ACS patients undergoing PCI are treated with up to 12 months of dual antiplatelet therapy (DAPT) alongside lipid lowering therapy (LLT) in order to reach a low-density lipoprotein level <1.8mmol/L, and preferably <1.4mmol/L.[23]

Referral to cardiac rehabilitation or other secondary prevention programs can assist patients to better manage their medications and make lifestyle modifications post PCI procedure. The Cardiac Society of Australia & New Zealand (CSANZ) have published *A Clinical Guide for Assessment and Prescription of Exercise and Physical Activity in Cardiac Rehabilitation. A CSANZ Position Statement*.[24]

This document provides guidance and assists clinicians and health care teams to optimally manage people with cardiac conditions, including those who have undergone PCI.

Compliance with prescribing discharge medication is high, with the prescription of DAPT (94.7%) and LLT (96.3%), consistent among the various clinical presentations and hospital characteristics (Table 8). Minimal variation is observed with DAPT and LLT prescribing between the sexes (Table 8).

Table 8: Rates of prescription of DAPT and LLT by clinical presentation and hospital type 2024

	Discharged on DAPT	Discharged on LLT	Cases with data available
Clinical presentation	**%**	**%**	**N**
STEMI	94.6	97.9	4,345
NSTEACS	95.8	97.7	5,939
Non-ACS	94.1	94.7	9,262
Hospital types	**%**	**%**	**N**
Low volume <250	96.7	96.8	2,312
Medium volume 250-500	95.0	96.7	5,083
High volume >500	94.2	96.1	12,168
On-site CABG	94.3	96.0	12,188
Off-site CABG	95.4	97.0	7,375
Metro	94.6	96.2	17561
Non-metro	95.8	97.4	2,002
Public	95.6	93.3	13,916
Private	92.5	97.6	5,647
All	94.7	96.3	19,563

* Missing data (N=5,915)

QI 9. Patients without contraindication discharged on lipid-lowering therapy

QI 11. Proportion of patients, without a clear and documented contraindication for Aspirin and/or P2Y12 inhibitor, discharged on DAPT

23 Heart Foundation (2025) *Australian clinical guideline for diagnosing and managing acute coronary syndromes 2025*, accessed 1 October 2025, https://www.heartfoundation.org.au/for-professionals/acs-guideline

24 Verdicchio C, Freene N, Hollings M, Maiorana A, Briffa T, Gallagher R, Hendriks JM, Abell B, Brown A, Colquhoun D, Howden E, Hansen D, Reading S and Redfern J (2023) 'A Clinical Guide for Assessment and Prescription of Exercise and Physical Activity in Cardiac Rehabilitation A CSANZ Position Statement,' *Heart Lung Circulation*, 32(9):1035-1048. doi: 10.1016/j.hlc.2023.06.854.

21.2 Referral to Cardiac Rehabilitation

Attending a cardiac rehabilitation program after a cardiac event has shown to improve long term health outcomes for patients.[25] Being referred to a rehabilitation post PCI is an important first step as part of the patients rehabilitation program.

The overall rate of referral to cardiac rehabilitation following PCI in 2024 was 84.1%. This is an increase of 6.0% from the 2023 rate. Whilst overall the referral rates improved over the last 12 months, the registry observed wide variation in rates by hospital as presented in Figure 29 (range 46% to 100%). The referral rates were similar between women (83.8%) and men (84.1%). The referral rates by clinical presentation and hospital sector are shown in Table 9. Overall public, non-metro and high volume hospitals had slightly higher referral rates than other sectors.

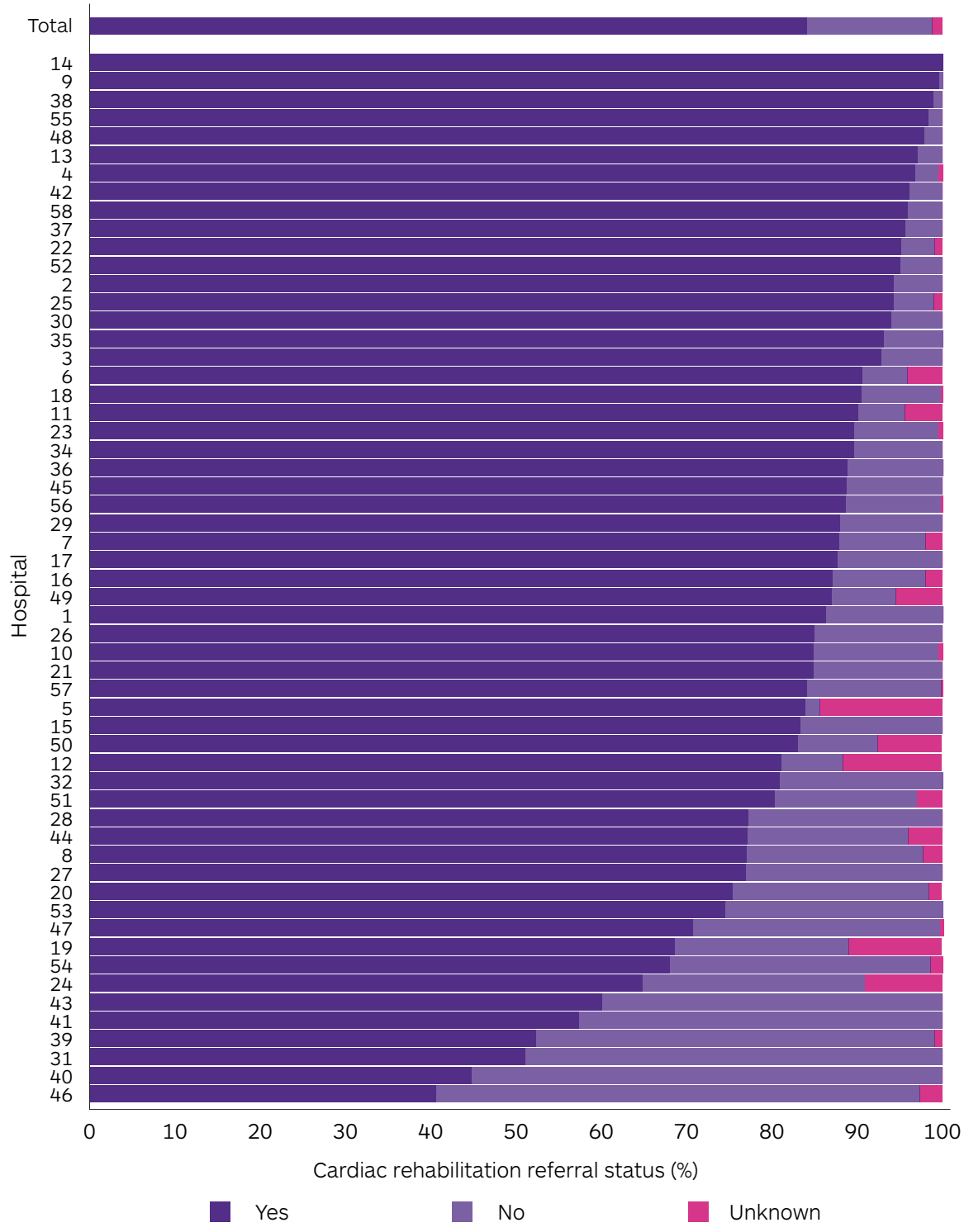
Table 9: Rates of referral to cardiac rehabilitation by clinical presentation and hospital type 2024

	Rehabilitation referral rate	Referral status 'unknown'	Cases with data available
Clinical presentation	%	%	N
STEMI	88.5	0.7	5,978
NSTEACS	85.8	1.1	7,687
Non-ACS	80.6	1.6	11,267
Hospital types	%	%	N
Low volume <250	83.7	1.9	2,593
Medium volume 250-500	82.4	1.4	6,373
High volume >500	84.8	1.1	15,983
On-site CABG	83.8	0.8	15,906
Off-site CABG	84.6	2.0	9,043
Metro	83.7	1.4	20,734
Non-metro	85.8	0.4	4,215
Public	85.1	1.1	19,378
Private	80.4	1.8	5,571
All	84.1	1.2	24,949

QI 10. Patients referred to cardiac rehabilitation or other secondary prevention program

25 Driscoll A, Hinde S, Harrison A, Bojke L, Doherty P (2020) 'Estimating the health loss due to poor engagement with cardiac rehabilitation in Australia,' *International Journal of Cardiology*, 317:7-12, doi: 10.1016/j.ijcard.2020.04.088

Figure 31: Cardiac rehabilitation referral by hospital 2024



One Hospital (Site 33) excluded due to incomplete data.

QI 10. Patients referred to cardiac rehabilitation or other secondary prevention program

22. 30-Day Outcomes

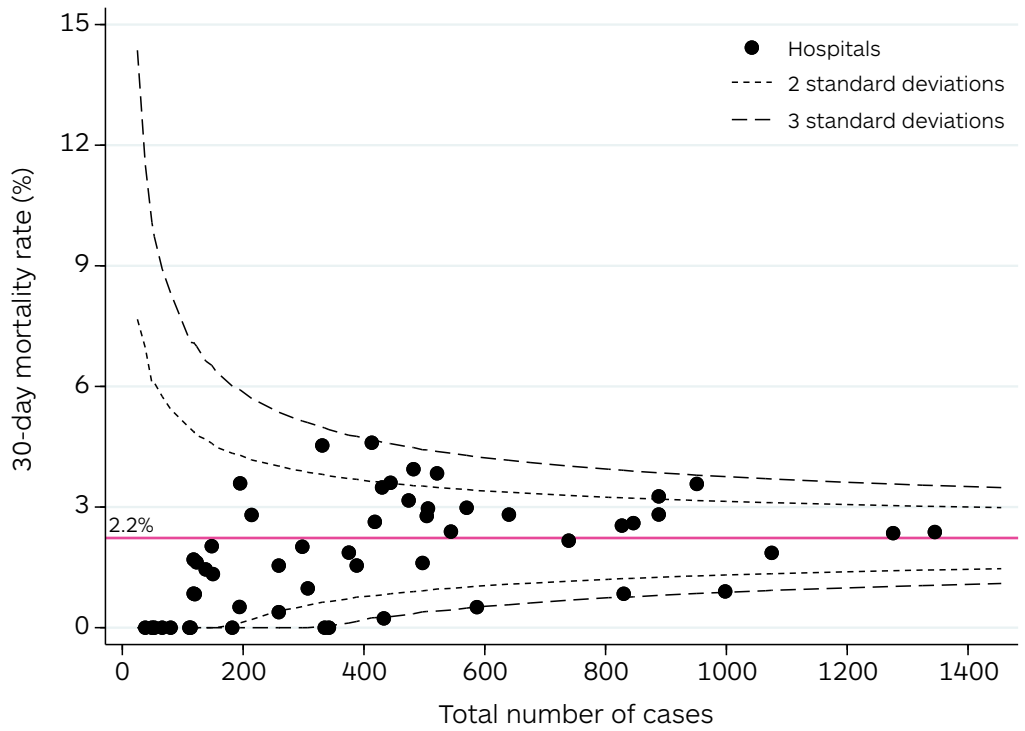
Patients' outcomes at 30-day post PCI are important measures of quality of care and complement the in-hospital measures reported by the NCR. In 2024 the NCR is able to report on 30-day mortality from seven of the eight Australian jurisdictions, with five jurisdictions providing data for 30-day unplanned revascularisation and unplanned cardiac readmissions.

The number of hospitals providing 30-day outcome data has increased over the past year, which enables the registry to report on 30-day outcomes from 72% of participating hospitals.

22.1 30-Day Mortality

The rate of unadjusted 30-day mortality following PCI in 2024 was 2.2%, with all participating hospitals within normal control limits (Figure 32). After high-acuity cases of shock and/or intubated OHCA were excluded, the overall rate declined to 1.2%. The 30-day mortality rate for patients aged 80 years and over was 4.3%, with the highest mortality observed in patients presenting with STEMI (6.7%).

Figure 32: 30-day mortality rate by hospital 2024

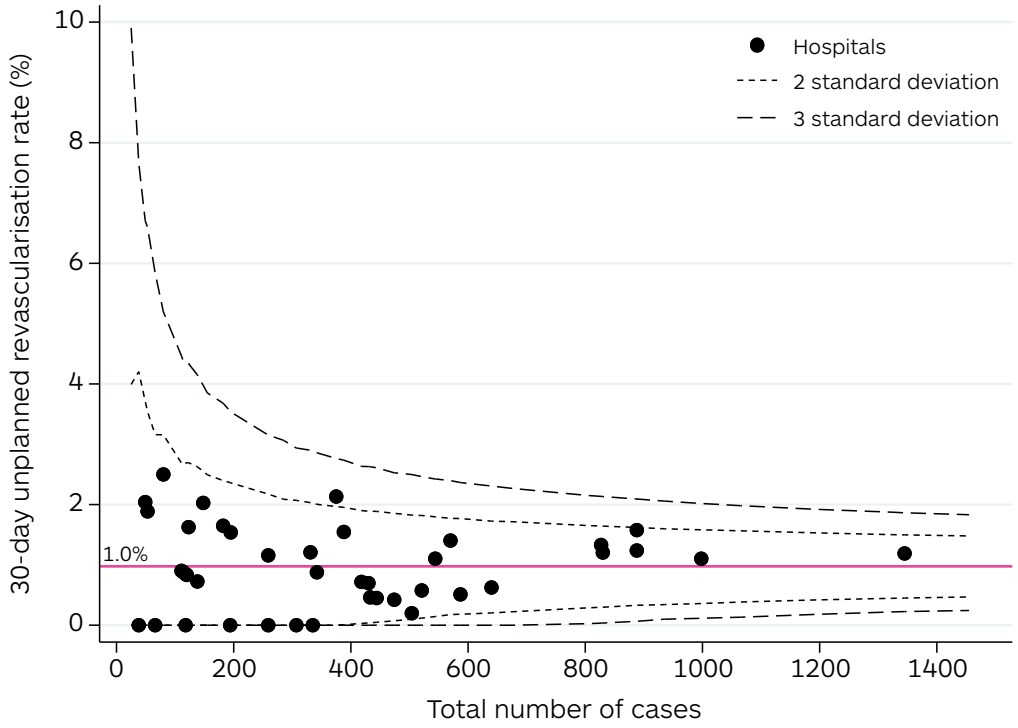


QI 8. **30-day mortality after PCI**

22.2 30-Day Unplanned Revascularisation

In 2024, the overall rate of unplanned revascularisation within 30 days following PCI was 1.0% with all participating hospitals within expected limits (Figure 33) (range 0-2.5%). These results have remained stable over the past three years.

Figure 33: 30-day unplanned revascularisation rate by hospital 2024

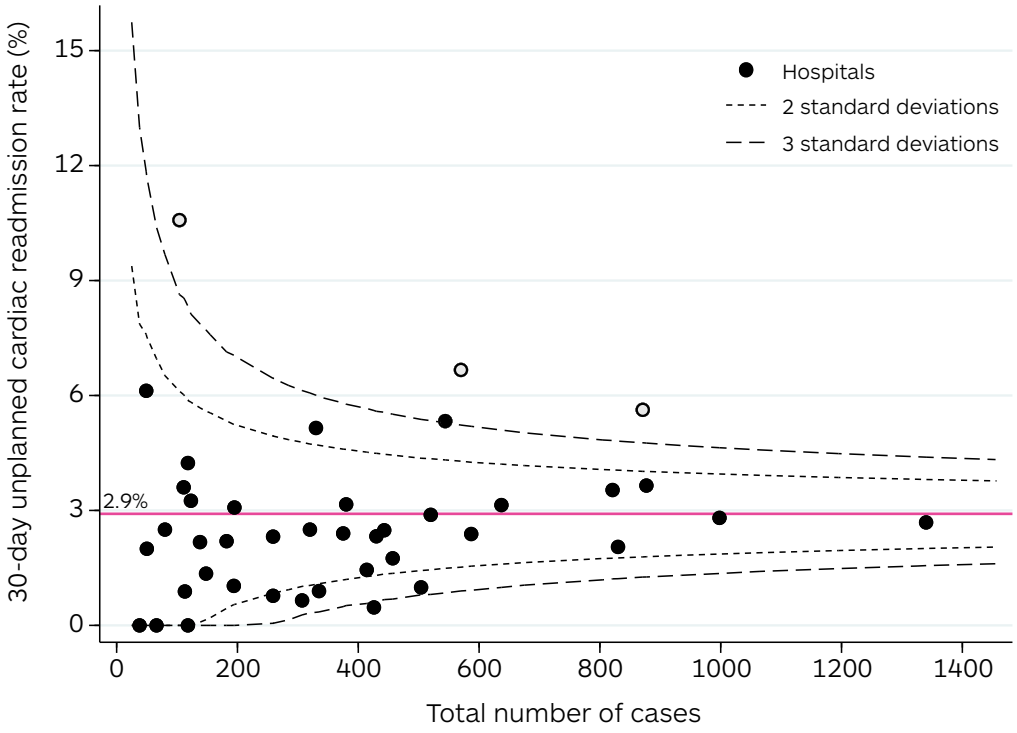


QI 7. **Unplanned revascularisation within 30 days**

22.3 30-Day Unplanned Cardiac Readmission

The data for this quality indicator is representative of 41 hospitals from five jurisdictions - 72% of the total number of cases captured by the registry in 2024. The overall rate of unplanned cardiac readmission was 2.9%, with three hospitals having rates that were >3 standard deviations beyond the mean.

Figure 34: 30-day unplanned cardiac readmission rate by hospital 2024



QI 6. **30-day unplanned cardiac readmission rate after PCI**

23. Acknowledgements

We would like to thank all State and Territory Registries for contributing to the NCR. We would also like to thank the NCR Steering Committee, the Monash Project Management Team at Monash University, School of Public Health and Preventive Medicine, NCR Ltd. Board Chairs Dr Leo Mahar (until October 2023) and Dr Jim Leitch (from October 2023), supported by the Company's Executive Officer Megan Schoder.

The Registry would not be possible without the participation of clinicians, allied health staff and all the Australian patients and their families who have contributed to the registries and shared their data to improve health outcomes for all Australians.

The Registry is a quality improvement initiative funded by the Commonwealth Department of Department of Health, Disability and Ageing.

Back row from left to right:

Ms Karen Carey, Consumer Representative; Mr William Vollbon, QCOR Manager; Ms Mel Tinsley, Associate Director, Agency for Clinical Innovation; Dr Allan Davies, Interventional Cardiologist; Dr Sean Kelly, Clinical Director, Intensive Care NSW; Dr Angus Baumann, Cardiologist; Ms Natalie Raffoul, Healthcare Programs Manager, Heart Foundation; Mr David Follent, Senior Project Officer, CCAP, Agency for Clinical Innovation.

Middle row from left to right:

Ms Karen Kool, Consumer Representative; Mr Ray Stewart, Senior Project Officer, NCR; Professor John Atherton, Director of Cardiology; Dr Jim Leitch, Chair of NCR Board; Dr Rohan Poulter, Interventional Cardiologist; Ms Megan Schoder, Executive Officer, NCR Ltd; Mr Andrew Johnson, Principal Data Scientist, Department of Health.

Front row from left to right:

Dr Mayanna Lund, President, CSANZ; Mrs Sue Morberger, Project Officer, Cardiology; Dr Johanne Neill, Cardiac Network Chair, Director of Cardiology; Mr Antony Kerslake, Department of Health, Disability and Ageing representative; Associate Professor Jeffrey Lefkovits, Interventional Cardiologist; Associate Professor Rosanna Tavella, CADOSA Registry Manager; Dr Julie Dockerty, Principal Medical Advisor.

Taken at the NCR Workshop October 2025.

24. The Registry Project Management Team

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Senior Project Officer	Ray Stewart
Project Officer	Tharini Sivakumaran

25. Governance Structure

25.1 The NCR Board

The NCR Board comprises the Chair, representation from each state and territory and representation from the Cardiac Society of Australia and New Zealand (CSANZ) and the Australian and New Zealand Society of Cardiac and Thoracic Surgeons (ANZSCTS).

From left to right:

From left to right: Dr Emily Granger, Former President of ANZSCTS; Dr Jim Leitch, Chair of the NCR Board; Dr Mayanna Lund, President of CSANZ.

Taken at the NCR Workshop, October 2024.

Table 10: National Cardiac Registry Limited Board

Member	Role within Board	Substantive Role
Dr James Leitch	Chair (from October 2023)	Cardiologist
Professor John Atherton	CSANZ representative	Director of Cardiology, Royal Brisbane and Women's Hospital, Professor, School of Clinical Medicine, Royal Brisbane Clinical Unit, Faculty of Medicine, University of Queensland Adjunct Professor, School of Biomedical Sciences, Faculty of Health, Queensland University of Technology
Associate Professor Jayme Bennetts	ANZSCTS representative	Director of Cardiothoracic Surgery, Monash Health, Professor, Monash University
Dr Jean-Frederic Levesque	NSW Board Director (until September 2025)	Chief Executive NSW Agency for Clinical Innovation; Deputy Secretary, Clinical Innovation and Research, NSW Ministry of Health
Dr Sean Kelly	NSW Board Director (from September 2025)	Clinical Director, Critical Care NSW Agency for Clinical Innovation, Director and Senior Staff Specialist Intensive Care Services, Central Coast Local Health District
Dr Angus Baumann	NT Board Director	Cardiologist, Alice Springs Hospital
Dr Peter J Scott	ACT Board Director (from August 2025)	Director of Cardiology, Canberra Health Services
Dr. Catherine McDougall	QLD Board Director (until September 2025)	Chief Medical Officer, Queesnland Health
Dr Johanne Neill	QLD Board Director (until September 2025)	Cardiac Network Chair, Director of Cardiology, Ipswich Hospital, QLD Cardiac Network Chair, Queensland
Dr Michael Cusack	SA Board Director	Chief Medical Officer, SA Health
Dr Paul MacIntyre	TAS Board Director	Clinical Director of Acute Medical Services, Royal Hobart Hospital
Professor Andrew Wilson	VIC Board Director	Chief Medical Officer, Safer Care Victoria
Dr Audrey Koay	WA Board Director (until October 2025)	Executive Director, Patient Safety and Clinical Quality Department of Health Western Australia
Dr Julie Dockerty	WA Board Director (from October 2025)	Principal Medical Advisor, Patient Safety and Clinical Quality Directorate, Department of Health Western Australia

25.2 National Cardiac Registry Audit and Risk Committee

The Audit and Risk Committee has been established to provide technical advice and support to the NCR Board in relation financial management, risk and auditing.

Table 11: National Cardiac Registry Audit and Risk Committee

Member	Role within Committee	Substantive Role
Dr Audrey Koay	Chair (until October 2025)	Executive Director, Patient Safety and Clinical Quality Department of Health Western Australia
Mr Robert Spiby	Member	Accountant, Partner, PKF Adelaide
Mr. Angus Baumann	Member	Cardiologist, Alice Springs Hospital
Dr Michael Cusack	Member	Chief Medical Officer, SA Health

25.3 National Cardiac Registry Indigenous Committee

The NCR Indigenous Committee has been established to provide expert advice and input to help shape the Registry for the benefit of Aboriginal and Torres Strait Islander people with member representation from across Australia.

Table 12. National Cardiac Registry Indigenous Committee

Member	Role within Committee	Substantive Role
Mr David Follent	Chair and NSW Representative	Senior Project Officer, CCAP, NSW Agency for Clinical Innovation
Mr Bob Buffington	ACT Representative	Aboriginal Health Clinician
Mrs Christine Ingram	VIC Representative	Team Leader & Outreach Worker Integrated Team Care Program
Mrs Vicki Wade	SA Representative (from February 2025)	Director of Rheumatic Heart Disease Australia, Menzies School of Health Research

25.4 National Cardiac Registry Variation Oversight Committee

The Variation Oversight Committee has been established to provide a mechanism for the reporting of variation in collaboration with participating registries. A core function of established clinical quality registries is to ensure that unwanted variation is addressed in a timely manner and communicated to relevant stakeholders.

Table 13. National Cardiac Registry Variation Oversight Committee

Member	Role within Committee	Substantive Role
Professor Andrew Wilson	Chair	Chief Medical Officer, Safer Care Victoria
Dr James Leitch	Member	Cardiologist
Associate Professor Rosanna Tavella	Member	CADOSA Registry Manager, Clinical Data Manager, Central Adelaide Local Health Network Affiliate A/Professor, Adelaide Medical School, University of Adelaide
Dr Rohan Poulter	Member	Interventional Cardiologist, Sunshine Coast University Hospital and Chair of the Queensland Cardiac Outcome Registry Interventional Steering Committee

25.5 National Cardiac Registry Steering Committee

The steering committee has been established to implement the strategic direction of the NCR, oversee the management of registry operations, report program operations and outcomes, review performance, and establish governance arrangements for collection, use and disclosure of data held within the Registry.

The core functions are:

(a) Report progress against deliverables to the Board;
(b) Engage with States and Territories to promote participation;
(c) Design registry outputs and oversee data analysis and reporting;
(d) Oversee the operational aspects of the registry - from its design, policy development, output and reporting;
(e) Fulfil all specific obligations as outlined within NCR policy documents;
(f) Provide advice on annual status reports, project plans including stakeholder analysis, communication strategy and risk management plan;
(g) Monitor the infrastructure model including technical and data hosting services and processes for the organisation of data;
(h) Define the minimum dataset and clinical quality indicators;
(i) Steer the ongoing development of the design of the NCR including; patient case selection, data collection processes, data management, analytics and methods to facilitate reporting to a range of stakeholders for ongoing quality improvement;
(j) Provide advice on a business model and assess the options for supporting the NCR, including cost-recovery options; and
(k) Review requests for NCR data with recommendations to the Board.

The NCR steering committee is comprised of Australian state and territory representatives, clinicians, government representatives, subject matter experts, Australian government nominees, consumer representatives, an Aboriginal and Torres Strait Islander Peoples representative, and a cardiac surgeon.

Table 14: National Cardiac Registry Steering Committee

Member	Role within Committee	Substantive Role
Associate Professor Jeff Lefkovits	Chair	Interventional Cardiologist and Clinical Lead for the Victorian Cardiac Outcomes Registry
Dr Rohan Poulter	Deputy Chair	Interventional Cardiologist at Sunshine Coast University Hospital and Chair of the Queensland Cardiac Outcome Registry Interventional Steering Committee
Dr Peter Scott	ACT Jurisdictional Representative	Director of Cardiology, Cardiology of Division, Canberra Health Division of Canberra Health Services (from August 2023 to January 2025)
Dr Kyrill Rogacev	ACT Principal Investigator	Deputy Director of Cardiology at the Canberra Hospital (from January 2025)
Mrs Sue Morberger	ACT Jurisdictional Representative	Project Officer, Cardiac Registry, Cardiology, Division of Medicine, Canberra Health Services
Professor David Brieger	NSW Clinical Expert	Interventional Cardiologist and Head of Cardiology, Concord Hospital; Board Chair of the Australasian Cardiac Outcomes Registry, Member, NSW Cardiac Clinical Network
Ms Mel Tinsley	NSW Jurisdictional Representative	Associate Director, Integrated Digital Enablement Accelerator (IDEA), Agency for Clinical Innovation
Dr Marcus Ilton	NT Clinician Expert	Cardiologist and Director of Cardiology, Royal Darwin Hospital
Ms Justine Williams	NT Gov. Representative	Cardiology Research Coordinator and Cardiac Quality Nurse, Cardiac Expansion Unit, Royal Darwin Hospital
Mr William Vollbon	QLD Gov. Representative	Queensland Cardiac Outcomes Registry Manager, Statewide Cardiac Clinical Informatics Unit, Queensland Health
Professor Chris Zeitz	SA Gov. Representative	Coronary Angiogram Database of South Australia, Head of Cardiology at Queen Elizabeth Hospital
Professor John Beltrame	SA Clinical Expert	Professor of Medicine, Michell Chair, Adelaide Medical School, University of Adelaide; Senior Cardiologist, Central Adelaide Local Health Network, Director of Research, Central Adelaide Local Health Network, CADOSA Data Custodian
Associate Professor Rosanna Tavella	SA Registry	CADOSA Registry Manager, Clinical Data Representative Manager, Central Adelaide Local Health Network Affiliate A/Professor, Adelaide Medical School, University of Adelaide
Dr Elizabeth Webber	TAS Gov. Representative	Medical Advisor Clinical Quality, Clinical Governance Medical Director,GP and Primary Care Clinical Quality, Regulation and Accreditation (CQRA) Group, DoH Tasmania (from September 2023)

Member	Role within Committee	Substantive Role
Dr Andrew Black	TAS Clinical Expert	Cardiologist and Staff Specialist in Cardiology at Royal Hobart Hospital
Ms Angela Brennan	VIC Registry Expert	Program Manager, Cardiac Registries at CCRET, School of Public Health and Preventive Medicine, Monash University
Ms Michelle Wolthuizen	VIC Gov. Representative	Director, Safety Insights, Safer Care Victoria (from February 2023 to February 2024)
Ms Nina Mulvey	VIC Gov. Representative	Assistant Director, Safety Insights, Safer Care Victoria (from February 2024 to September 2024)
Ms Linda Brown	VIC Gov. Representative	Director of Translational Research, Clinical Trials, Strategic Projects and Response at Safer Care Victoria (from November 2024)
Professor Tom Briffa	WA Clinical Expert	Cardiovascular Epidemiology Research Centre, School of Population and Global Health, University of Western Australia (until August 2024)
Dr Jamie Rankin	WA Clinical Expert	Head of Cardiology, Fiona Stanley Hospital, Western Australia (until August 2024)
Associate Professor Jon Spiro	WA Clinical Expert	Interventional Cardiologist, Royal Perth Hospital, Western Australia Associate Professor, University of Western Australia (from August 2024)
Professor Girish Dwivedi	WA Clinical Expert	Consultant Cardiologist, Fiona Stanley Hospital Professor of Cardiology, University of Western Australia (from August 2024)
Mr Ben Weber	WA Gov. Representative	Senior Analyst, Patient Safety and Clinical Quality Directorate, Department of Health Western Australia
Ms Karen Carey	Consumer Representative	Consumer Representative (from February 2024)
Dr. Benjamin Michael Robinson	ANZSCTS Representative	Consultant Cardiothoracic Surgeon, Royal Prince Alfred Hospital (from August 2024)
Mr David Follent	Chair of the NCR Indigenous Committee	Senior Project Officer, CCAP Representative, Agency for Clinical Innovation
Ms Sally Rayner	Department of Health and Aged Care	Director - Clinical Quality Registries (until August 2025)
Ms Terrie O'Brien	Department of Health and Aged Care	Director - Clinical Quality Registries (from September 2025)

26. NCR Partners

NATIONAL CARDIAC REGISTRY

Australian Government
Department of Health, Disability and Ageing

MONASH University

CSANZ
Cardiac Society of Australia and New Zealand

Australian & New Zealand Society of Cardiac & Thoracic Surgeons

Heart Foundation

HER HEART

Gullidala

PlaytimeSolutions

ACTCOR
ACT Cardiac Outcomes Registry

CADOSA
Coronary Angiogram Database of South Australia

NSWCOR
New South Wales Cardiac Outcomes Registry

NTTCD
Northern Territory Top End Coronary Database

QCOR
Queensland Cardiac Outcomes Registry

VCOR
VICTORIAN CARDIAC OUTCOMES REGISTRY

NSW GOVERNMENT
Agency for Clinical Innovation

ACT Government | ACT Health

Queensland Government | Clinical Excellence Queensland

NORTHERN TERRITORY GOVERNMENT | NT Health

Tasmanian Government | Department of Health

Government of South Australia
SA Health

Cardiac Registry of Western Australia (CRoWA)

VICTORIA | Department of Health

Government of Western Australia
Department of Health

SCV Safer Care Victoria

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