AUSCR

ANNUAL REPORT

2024 AND 2025

STATUS UPDATE

DECEMBER, 2025

AUSTRALIAN STROKE
CLINICAL REGISTRY

FACILITATING QUALITY

This publication was produced on behalf of the Australian Stroke Clinical Registry (AuSCR) Consortium partners and was approved by the AuSCR Governance Committees.

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ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the Traditional Owners and custodians of all lands throughout Australia. We pay our respects to all Aboriginal and Torres Strait Islander peoples and their Elders, past, present, and emerging.

IMPROVING STROKE CARE FOR ALL AUSTRALIANS

Stroke is a significant health condition in Australia

After a stroke, more than one in three people have an ongoing disability that impacts their daily activities. In Australia, the care provided in hospital for a stroke is not always the same and this can impact patient outcomes. Stroke is Australia's fourth leading cause of death.

The Australian Stroke Clinical Registry (AuSCR) monitors the quality of stroke care in hospitals to support quality improvement, and reduce variation in access to recommended treatments.

• We appreciate your support •

The AuSCR is a collaborative national effort to monitor and improve the quality of stroke care in Australia. We acknowledge and gratefully respect the important contributions from patients, caregivers, and hospital clinicians.

Without your valued support, this report would not be possible.

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EXECUTIVE SUMMARY

OVERVIEW OF 2024

- In 2024, 69 hospitals contributed data to the AuSCR: 31 from Victoria [VIC]; 20 from Queensland [QLD]; six from Western Australia [WA] and South Australia [SA]; three from Tasmania; two from the Australian Capital Territory [ACT], and one paediatric hospital from New South Wales [NSW].
- Information is presented on 19,831 episodes of acute stroke for 17,970 patients admitted, or presenting to an Emergency Department, between 1 January 2024 and 31 December 2024.
- One in five patients were transferred from another hospital.
- Patient-reported outcomes between 90-180 days were collected up to June 2025 for 57% of eligible patients, slightly greater than in prior years.
- In 2025, six hospitals have commenced or recommenced participation in the AuSCR, one from Northern Territory, two from Queensland, one from Tasmania and two from Victoria.

PROGRESS TOWARDS THE 30/60/90 NATIONAL STROKE TARGETS

- The AuSCR data are presented in this report against the 30/60/90 National Stroke Targets that were established in August 2023 by the Australian Stroke Coalition.
- The median national door-to-needle time improved by six minutes, dropping from 73 minutes (2023) to 67 minutes (2024). Eleven hospitals are meeting the Target of a median time of less than 60-minutes. Preliminary 2025 data suggest this downward trend is continuing with a provisional door-to-needle time of 62 minutes.

HOSPITAL PERFORMANCE STROKE QUALITY INDICATORS ASSESSED

- Overall, provision of stroke unit care was 79%, which is similar to previous years. The achievable benchmark from top-performing hospitals was 96%. Patients in regional hospitals were 76% less likely to receive treatment in a stroke unit compared to those in metropolitan hospitals (OR: 0.24; 95% CI: 0.08-0.75, *P*-value: 0.01).
- Overall, 13% of patients with ischaemic stroke were provided intravenous thrombolytic therapy, and the achievable benchmark from top-performing hospitals was 20%. The proportion was similar between metropolitan (12%) and regional hospitals (14%).
- When patients with ischaemic stroke arrived within 4.5 hours onset, one in four received thrombolytic therapy.
- Of those provided with thrombolytic therapy, 43% received treatment within the recommended time window (i.e., within 60 minutes of hospital arrival).
- Overall, 12% of patients with ischaemic stroke received endovascular therapy (EVT), which was conducted at 14 hospitals. Over three in four procedures were considered successful with blood flow to the brain restored. The median time from hospital arrival to the beginning of the procedure (i.e., arterial puncture) was 106 minutes for patients who presented directly to an endovascular-capable hospital from the community.
- The provision of a care plan outlining post-discharge care in the community was provided to 73% of patients, which is similar to 2023 (75%). There was wide variation in this provision, with some hospitals providing a care plan to very few patients.
- Most patients were discharged with appropriate secondary prevention medications (86% blood-pressure lowering, 94% lipid-lowering and 98% blood-thinning medications).
- Young adults (aged 18-55 years) with stroke were more frequently treated with reperfusion therapy (23% vs 20% in people over 55 years), and more likely to be discharged to their usual residence (55% vs 47%).

- In this report, changes in adherence to selected quality indicators between 2019 and 2024 were evaluated for hospitals that had contributed data each year. There was little change in the proportion receiving thrombolytic therapy and stroke unit care. Improvements were seen over time for swallow screening or assessment before oral intake (from 48% in 2019 to 61% in 2024) and for blood-pressure lowering medications as secondary prevention medication at discharge (from 75% in 2019 to 88% in 2024; *P-value for trend* <0.001).

QUALITY IMPROVEMENT INITIATIVES

- The AuSCR supports quality improvement at a state-wide and local hospital level to improve quality of care by providing interactive data dashboards and summary reports.
- In 2024 we conducted two educational webinars and partnered with Stroke Foundation for a third. We co-convened the 12th National Stroke Quality Improvement Workshop and provided an AuSCR Workshop at the Asia Pacific Stroke Conference.
- In 2025 we co-convened the 13th National Stroke Quality Improvement Workshop and provided an AuSCR Workshop at the Australian and New Zealand Stroke Organisation (ANZSO) Conference.

HOSPITAL AND POST-DISCHARGE OUTCOMES

- Overall, 1,560 (9%) of the patients registered in the AuSCR died in hospital, similar to prior years, with intracerebral haemorrhage having higher case fatality (24%) than ischaemic stroke (6%).
- After discharge from acute care, 24% of patients went to rehabilitation, similar to 2023 (25%). Forty-eight per cent returned to their usual residence, with or without some form of support (44% in 2023).
- Patient-reported outcome information was self-reported by 7,616 survivors of stroke between 90 and 180 days after admission. Of those completing the modified Rankin Scale, 46% were considered independent (i.e., no symptoms or no significant disability despite symptoms).
- Three in four respondents reported having problems in one or more areas of health-related quality of life as measured with the EQ-5D-3L (mobility 48%, self-care 29%, completion of usual activities 59%, pain or discomfort 48%, and anxiety or depression 48%). The mean Visual Analogue Scale score, representing a measure of overall wellbeing, was 68 [range: 0–100]. After adjusting for age, women were more likely to report problems on each quality-of-life measure than men (p<0.001).
- During the follow-up survey, 52% of respondents requested an information pack about stroke and support services from Stroke Foundation, highlighting potential unmet information needs.

Australian Stroke Clinical Registry Team, 2024
L-R: Joosup Kim (Monash University), Adele Gibbs, Mulugeta Birhanu (Monash University), Violet Marion, Selina Chen, Helen Carter, Thao Tran, Julie Morrison, Jot Ghuliani, Dominique Cadilhac, Nancy Pompeani, Mya Thandar, Prabhu Juvvireddy, Kate Paice. Absent for photograph: Elizabeth Gregory, Abigail Dewiso

RESEARCH ENGAGEMENT

- In 2024, 4,463 registrants said they would be willing to receive an invitation to participate in a research project. Overall, there are >39,000 people registered with the AuSCR who are willing to be contacted for research studies.
- Since 2009, there have been 28 research studies where the AuSCR Office sent an invitation to eligible registrants (n=16,631) to participate in a project on behalf of investigators with approved projects.

GOVERNANCE REPORT

Following an external review and establishment of an implementation working group, the AuSCR implemented major governance reforms throughout 2024 and 2025. A new governance structure was introduced aligned with the Australian Framework for Clinical Quality Registries to strengthen strategic oversight and use of the data for quality improvement:

- **Advisory Board**, chaired by **Professor Richard Lindley**, met for the first time in March 2025 and is responsible for the strategic direction of the registry. Members include consortium partner representatives, clinicians and lived experience representatives (see Appendix B: Committee membership)
- **Operational and Quality Improvement Committee**, chaired by **Professor Rohan Grimley**, convened in August 2025 and provides a clinical and lived experience interface to ensure effective use of registry data and support quality improvement. Members include representatives from each jurisdiction and lived experience representatives (see Appendix B: Committee membership).

We are pleased to welcome new members to support governance of the AuSCR, including individuals with lived experience, reinforcing our commitment to improving the quality of acute stroke care.

Our Paediatric, Telemedicine, Reperfusion, and Data Access groups continue to support these governance committees.

We extend our sincere gratitude to members of the Management Committee, particularly Professor Helen Dewey, Chair since 2022 and Steering Committee, Chaired by Professor Sandy Middleton since its inception in 2009. Their tireless efforts over many years have been instrumental in establishing AuSCR as a leading clinical quality registry.

This **17th Annual Report** is presented on behalf of the consortium partners: The Florey, Stroke Foundation, Australian and New Zealand Stroke Organisation and Monash University, who entered into a new consortium agreement this year. We are pleased to report progress against the 30/60/90 National Stroke Targets and see a positive shift in these indicators. Four hospitals commenced or recommenced participation in 2024, and a further six have commenced in 2025, including the first in the Northern Territory, and the first to contribute exclusively to the Emergency Department dataset.

In mid-2024, the AuSCR secured funding through the Australian Government National Clinical Quality Registry Program. This three-year funding will allow the registry to expand, innovate, and deliver a new data platform. The AuSCR is one of only 14 clinical quality registries supported by the Commonwealth - a testament to the efforts and impact of the registry.

Development of a new data platform, following a Medical Research Future Fund grant, commenced in 2024 and is scheduled to go live in 2026.

Data dashboards have become a vital tool for hospitals to monitor their performance in real-time. There are now 11 dashboards available (see INTERACTIVE DATA DASHBOARDS), including a National Stroke Target dashboard which provides live national, state and stroke service type performance against these Targets.

The AuSCR has contributed to the review of the Stroke Clinical Care Standard[1] and will work to align data collection once finalised by Safety and Quality Commission.

We thank and acknowledge staff from contributing hospitals (See Appendix D: Acknowledgements) for their dedication in collecting and using this information to improve the quality of stroke care. We thank patients and carers for their input and time. We are grateful to the AuSCR Office team across The Florey and Monash University for their diligence and commitment to ensuring a highly reputable clinical quality registry program that has received national and international recognition.

We hope you enjoy reading this important report into the quality of acute stroke care and outcomes in Australia.

Prof Dominique Cadilhac
Executive Director, AuSCR

Prof Richard Lindley
Chair, AuSCR Advisory Board

First face-to-face meeting of the AuSCR Advisory Board.
Hobart September 2025

NATIONAL SNAPSHOT

2024

69 hospitals

7 states & territories

19,831 episodes of stroke

6,812 patient reported outcome surveys

ADHERENCE TO THE ACUTE STROKE CLINICAL CARE STANDARD (ADULT EPISODES)

13% of patients received clot-busting therapy

43% received clot-busting therapy within target time

67 mins Door to needle time

12% received endovascular therapy

106 mins Median time from arrival to surgery

1 in 5 were **not** treated in a stroke unit

73% received a care plan on discharge

86% discharged with blood pressure lowering medications

94% discharged with lipid-lowering medications

98% discharged with blood-thinning medications

LONGER-TERM PATIENT OUTCOMES (3-6 months, adult episodes)

1 in 2 reported problems with anxiety or depression, mobility, pain, or usual activities

1 in 3 reported moderate to severe disability

1 in 5 reported being readmitted to hospital

1 in 5 were deceased

NATIONAL STROKE TARGETS

National Stroke Targets have been developed to improve acute stroke care in Australia, and reduce avoidable death and disability, by 2030 (National Stroke Targets 30/60/90 – Australian Stroke Coalition).

The AuSCR is proud to support these Targets by providing hospitals real-time access to their own data in dashboards, a National Targets Dashboard to see national and state progress (see INTERACTIVE DATA DASHBOARDS) and in calculating award winners for the Australian Stroke Coalition National Targets Awards (Appendix J: ASC and WSO awards).

Calculations have been updated in line with the Australian Stroke Coalition 30/60/90 National Stroke Targets Definition and Scope Clarification, July 2025 (available at: National Stroke Targets 30/60/90 – Australian Stroke Coalition) and differ slightly from previous years' reporting. Further detail on state and stroke service type breakdown can be found in Table 5.

Quality indicator	National Stroke Target	National 2023 Median (IQR) / %	National 2024 Median (IQR) / %	No. of Hospitals at Target 2024‡
Thrombolytic therapy door-to-needle time*†	<60 mins	73 mins (52 - 104)	67 mins (46 - 96)	11/62
Endovascular therapy door-in-door-out time* *(optional ED dataset)*	<60 mins (Metropolitan)	96 mins (67 - 136)	96 mins (71 - 138)	2/19
	<75 mins (Regional)§	142 mins (118 - 176)	128 mins (109 - 170)	0/7
Endovascular therapy door-to-puncture time for transfers*#	<30 mins	35 mins (24 - 59)	37 mins (26 - 59)	2/13
Endovascular therapy door-to-puncture time for primary presenters†*#	<90 mins	107 mins (81 - 140)	106 mins (79 - 138)	3/14
Patients with a stroke diagnosis receiving stroke unit care	>90%	78%	79%	23/62

Includes adult episodes only.
**Includes only ischaemic stroke*
† *Excludes transfers, in-hospital strokes.*
§ *Includes inner and outer regional hospitals and excludes hospitals that primarily transport via air.*
‡ *Of the eligible hospitals providing this indicator. Excludes hospitals with <10 eligible episodes.*
# *Patients who receive their first brain scan after transfer to an EVT-capable hospital are considered direct presenters.*

INTRODUCTION

The Australian Stroke Clinical Registry (AuSCR) has an essential role in providing reliable data to monitor and improve stroke care across Australia. Since inception to December 2025 the AuSCR has recorded over 215,000 episodes of stroke care and collected approximately 95,000 patent reported outcome surveys. This Annual Report summarises data from patients admitted in 2024 with patient-reported outcome surveys collected until June 2025, and highlights opportunities for reducing variation in care and improving outcomes for Australians affected by stroke.

There remains variation among hospitals in the delivery of evidence-based stroke care, with many hospitals not fully meeting the **Acute Stroke Clinical Care Standard**.[1]

We highlight important areas of improvement including the time from hospital arrival to delivery of thrombolytic therapy for those with ischaemic stroke, one of the 30/60/90 National Stroke Targets.[2] These Targets, established in 2023, set acute clinical care goals for Australian hospitals to achieve by 2030.[3]

The AuSCR provides hospitals with essential data to review performance, identify priorities for quality improvement, and monitor progress over time. Hospitals received reports on their 2024 performance in August 2025 via one-page Scorecards, with detailed Hospital Performance Reports provided in November 2025. These reports show comparisons of the quality indicators to the national average and achievable benchmarks from the best-performing hospitals.

Hospital contributors have access to 11 interactive data dashboards including those on the Acute Stroke Clinical Care Standard and 30/60/90 National Stroke Targets. These dashboards were co-designed with clinicians and include multiple filters to support the use of data for quality improvement, and flags for missing or erroneous data to support data quality. Hospitals can also download their own data at any time. In 2024, over 100 external users accessed the dashboards, including users from 53 hospitals and government representatives from three states.

To support hospitals in using their data effectively, the AuSCR aligns with the national guidelines for best practices in clinical quality registries.[4] Data are collected on the provision of evidence-based therapies, supplemented with clinical and demographic information and entered via an online platform or data import process.

To further support hospitals in the use of their data for quality improvement, in 2024 we partnered with Stroke Foundation to deliver a webinar on Quality Improvement in Stroke Care, and conducted a webinar on the new data dashboards and an overview of the Annual Report. We held an AuSCR contributor workshop at the Asia Pacific Stroke Conference and co-convened the National Stroke Quality Improvement Workshop with Monash University and Stroke Foundation.

In early 2025, we surveyed hospital contributors to seek feedback on the impact of registry data and reports. Ninety-three percent of hospitals reported they had undertaken quality improvement activities for stroke in 2024. Most used AuSCR data (formal reports 78%; dashboards 57%) to inform their quality improvement efforts. Improving swallow screening or assessment and timeliness of thrombolytic therapy provision were the top areas of focus, and most (71%) reported an improvement in one or more aspects of stroke care. Overall, 85% reported that contributing to the AuSCR had led to improvements in their stroke care.

In this report, we present the data for 2024 on over 19,000 episodes of care from 69 hospitals, and the health outcomes collected for these patients until end June 2025.

> "I have found live reporting over time very useful to keep close tabs on our progress. The advent of the [dashboards] has added a lot to the power of our stroke data."
> **– Survey respondent, March 2025**

METHODS

DATA COLLECTION

As recommended for national registries, an 'opt-out' model for patient inclusion is used,[5] in addition to a waiver of consent for people who die while in hospital. Data are collected in the Australian Stroke Data Tool (AuSDaT), which is a harmonised online database platform enabling standardised and systematic data collection for multiple stroke data collection programs.[6] The AuSDaT enables hospitals to select bundles of variables organised into data collection programs, to enable local quality of care monitoring and state and national comparisons.

The AuSCR facilitates the collection of information for patients with stroke across the acute treatment pathway.[7] Each hospital collects a pre-specified set of variables depending on the type of services they provide, referred to as programs (e.g., paediatrics, endovascular therapy; see Appendix E: AuSCR data collection programs). There are also two optional programs available to hospitals in addition to their main program. The optional Emergency Department (ED) program enables data to be captured for patients treated in the ED before transfer to another hospital. The optional Fever Sugar Swallow (FeSS) program enables the collection of data on the monitoring and management of blood glucose (Appendix E: AuSCR data collection programs).

SUPPORTING DATA QUALITY

The AuSCR performs several quality control processes to ensure complete and accurate data, including:

Support for hospital data collectors and teams

- A comprehensive data dictionary with help notes to guide data entry (consistent with the National Stroke Data Dictionary).[8]
- AuSCR training for staff at participating hospitals, completed in person or via videoconference. A detailed manual, and training by AuSCR staff is provided, to ensure standardised data collection and interpretation.
- Fact sheets, webinars, and regular electronic newsletters for dissemination of new information, reminders and updates.

Database functions

- Database with built-in logic checks and variable limits to reduce the likelihood of data inaccuracies.
- Mandatory fields to reduce missing data.
- Integrated functions to identify duplicate records for a single episode or patient.
- Interactive data dashboards include data quality tabs listing episodes with missing or discrepant data, updated daily.

Data management activities

- Monthly database maintenance is undertaken by Data Managers to check for duplicate entries using patient identifiers (name, date of birth, hospital medical record number) and date of stroke onset, arrival, admission or discharge.
- Training and reference resources available on the AuSCR website, including videos and written information.
- Reports back to hospital staff on missing and discrepant data, produced bi-annually.
- AuSCR Office staff conducted audits of randomly selected medical records at five hospitals in 2024.
- Bi-annual case ascertainment assessments, completed by cross-checking hospital reports of all eligible admissions (based on the ICD-10 principal diagnosis codes related to stroke) with the episode data entered in the AuSCR.

The AuSCR Annual Data Quality Report is a summary of data quality for the final 2024 dataset (e.g., time to record creation; data completeness; case ascertainment). A copy of this report can be downloaded from the AuSCR website at https://auscr.com.au/about/annual-reports/

PATIENT FOLLOW-UP SURVEY

Patient-reported outcomes data are obtained via a survey (including age-appropriate paediatric questions) at 90–180 days after admission. The AuSCR Office staff are responsible for following up on patients who have not: been reported as deceased; refused follow-up; or opted out of the registry.

Follow-up attempts were made between 90 and 180 days after each admission except:

- where acute data were not entered by the hospital within 180 days post-admission; or
- for patients reported as deceased before the 90–180 day follow-up.

In the case where there was a second admission (including transfer) within 180 days of the first admission, follow-up was only completed for the first admission. For patients unable to be contacted, survival status was determined via annual data linkage with the National Death Index (NDI), made available by the Australian Institute of Health and Welfare.

PATIENT-REPORTED OUTCOME MEASURES

Functional disability is measured using the modified Rankin Scale (mRS) – a standardised instrument for reporting disability after stroke which approximates post-stroke activity limitations.[9] During follow-up between 90 and 180 days post-admission, patients are asked to rate their level of functional disability across six levels: 0 (no symptoms at all); 1 (no significant disability despite symptoms); 2 (slight disability); 3 (moderate disability); 4 (moderately severe disability) and 5 (severe disability). The mRS analyses in this report exclude responses from individuals who were deceased at the time of follow-up (mRS=6).

Health-related quality of life is measured in adults using the European Quality of Life measure of health status (EQ-5D™)[10] three-level version of the instrument (EQ-5D-3L). The EQ-5D-3L provides a simple descriptive profile across five dimensions: mobility, self-care, usual activities, pain or discomfort, and anxiety or depression. Each profile is divided into three levels: no problems (1), some or moderate problems (2) and extreme problems (3). Responses to the EQ-5D-3L were dichotomised and reported based on whether patients had 'any' (i.e., moderate or extreme) versus 'no' problems with each domain. Additionally, the EQ-5D-3L includes a self-rated summary score of overall health using a Visual Analogue Scale (VAS), with responses ranging from zero (i.e., worst imaginable health state) to 100 (i.e., best imaginable health state).

OVERVIEW OF DATA ANALYSES

This report includes data on patients who presented to an ED before transfer and those who were admitted to participating hospitals between 1 January and 31 December 2024. Data entry for these acute stroke episodes and the associated follow-up questionnaires was closed off, and data extracted, on 25 September 2025. Data cleaning and analyses were undertaken by authorised Monash University statisticians.

Hospital postcodes were mapped to the Australian Statistical Geography Standard (ASGS) Remoteness Standard (2021) available from the Australian Bureau of Statistics.[11] The ASGS contains remoteness areas based on the Accessibility/Remoteness Index of Australia Plus. Areas are divided into five classes of remoteness according to relative access to services, spanning from Major Cities to Very Remote Australia. Descriptive information about paediatric episodes (aged <18 years) was not included in the overall patient characteristics, clinical and outcome data analyses. Where frequencies less of less than five occur, exact results may not be shown to preserve the confidentiality of patients.

As patients often receive care in multiple hospitals for the same stroke event, the AuSCR records for the same patient event were linked using a person-level identifier (a Statistical Linkage Key) and the date of stroke onset +/- 1 day. This enabled us to more accurately examine the delivery of certain quality indicators and provision of different types of reperfusion therapies across the care continuum for the same person-event.

For all quality indicator analyses presented in this report, episodes with missing information are included in the denominator. If these data were not provided, it was assumed that the indicator care was not offered.

For analyses of secondary prevention medications provided at discharge, patients with contraindications were excluded from the denominator. For other time-based performance measures (e.g., door-to-puncture), erroneous times (e.g., negative or beyond 12 hours) and in-hospital strokes were excluded. See Appendix G: Methods for deriving indicators for an overview of the methods used to derive quality indicators in the AuSCR.

For each quality indicator, data from individual hospitals were excluded if >30% of data for that variable were missing. Hospitals contributing <50 episodes of care were excluded from the funnel plots of quality indicators to ensure fair and reliable comparisons between hospitals.

Benchmarks for AuSCR national quality indicators were calculated based on a modified version of the Achievable Benchmark of Care (ABC™) methodology[12] which has been used and validated for stroke.[13] Only hospitals that had submitted at least 50 episodes were eligible for inclusion. An Adjusted Performance Fraction (APF) score was then calculated for each hospital for the quality indicators. This approach allowed adjustment for under- or over-inflation due to small numbers of episodes reported from some hospitals. The benchmarks were calculated as the mean APF scores of the top-performing hospitals that represented at least 15% of the sample of eligible patients. We also report national averages and adherence achieved by the top-performing hospitals from the sample of hospitals that had registered at least 50 episodes of care.

Changes in adherence to selected quality indicators over time were also reported, from 2019 to 2024. These analyses were restricted to a sub-sample of 48 hospitals that consistently participated in the registry (i.e., provided data on at least 30 episodes each year from 2019 to 2024). Consequently, the estimates may differ to national estimates reported elsewhere.

Mean VAS scores were compared with published estimates for the normative population.[14] For comparisons between hospitals, mean VAS scores were adjusted to account for differences in case mix. Where possible, reference to the median (and interquartile range) was also made to assist in the interpretation of results.

Survival after hospital is ascertained for registrants using linkage with death registration data from the National Death Index. A risk-adjusted mortality rate (RAMR) at 30 days post-admission was calculated for each hospital for episodes of ischaemic stroke and intracerebral haemorrhage (ICH). To ensure RAMRs were reliable, analyses were conducted for hospitals that provided a minimum number of episodes (≥200 episodes for ischaemic stroke analyses and ≥50 episodes for ICH analyses). For hospitals with fewer episodes, data from 2023 and 2024 were pooled to derive RAMRs. Episodes of in-hospital stroke or transient ischaemic attack (TIA) were excluded from all RAMR analyses. Similar to earlier years, RAMRs were presented including and excluding hospital transfers.

Each RAMR was calculated by dividing the risk-adjusted hospital-specific mortality by the risk-adjusted average hospital mortality, and then multiplying by the unadjusted proportion of deaths in the whole sample.[15] Hospitals with risk-adjusted mortality outside the three standard deviation threshold limits were considered to have unwarranted variation.

All RAMR models were adjusted for age, sex, socioeconomic position, stroke type, previous history of stroke, and a measure of stroke severity. For ischaemic stroke, we adjusted for stroke severity using the National Institutes of Health Stroke Scale (NIHSS) score. NIHSS scores were missing for approximately one in three episodes, so multiple imputation techniques were used to assign an NIHSS score from another episode that had a similar set of patient characteristics (e.g., matched on age, sex, hospital ID, ability to walk on admission, transfer from another hospital, in-hospital stroke, and previous history of stroke). For ICH, it was not possible to adjust RAMR models using NIHSS scores as they were missing for the majority (>50%) of episodes and could not be reliably imputed. Therefore, similar to earlier years, RAMR models for ICH were adjusted for stroke severity using the ability to walk on admission (a validated measure of post- stroke outcome).[16] All analyses were performed using Stata/SE 18.0 (College Station, USA, 2023).

OVERVIEW OF HOSPITALS

HOSPITAL CHARACTERISTICS

In 2024, 69 hospitals participated in the AuSCR (Table 1), including six Children's hospitals. There were 44 hospitals that contributed to the optional ED dataset to capture acute care quality indicators prior to transfer to another hospital for ongoing management such as EVT. Overall, 64 participating hospitals provided thrombolytic therapy, and 15 provided EVT (including one paediatric hospital where EVT was provided at a partner adult hospital).

The median number of episodes per hospital was 186 (Q1 to Q3: 101 to 423). The maximum number registered was at one metropolitan hospital in Victoria (n=1,380). One paediatric hospital (New South Wales) did not participate for the full year and recorded three episodes in 2024. Data from this hospital, and other paediatric hospitals, are shown only in Table 1.

Stroke service type is defined in the National Acute Stroke Services Framework.[17] Briefly, comprehensive centres provide endovascular thrombectomy and neurosurgery, primary centres have dedicated stroke services and clinicians, and stroke capable regional general hospitals offer thrombolytic therapy (with telestroke support) and stroke unit-like care where transfer to a larger hospital is infeasible.

Beginning with a pilot in 2022, the Australian Stroke Coalition (ASC) has a process to certify hospital stroke units and confirm their stroke service type.[18] By the end of 2024, 19 hospitals participating in AuSCR were certified. Where not certified, the ASC has provided a 'best-fit' current status, that we have included in Table 1.

Table 1: Characteristics of participating hospitals

		Location						
	Total	ACT	NSW	QLD	SA	TAS	VIC	WA
Number of hospitals	69	2	1	20	6	3	31^	6
Number of episodes*	19,831	633	3	5,896	2,277	734	8,216	2,072
<75 episodes	14	0	1	1	3	0	8	1
75-349 episodes	35	1	0	14	0	2	15	3
350-499 episodes	9	1	0	1	1	1	4	1
›500 episodes	11	0	0	4	2	0	4	1
Location#								
Major City	40	2	1	13	4	0	14	6
Inner Regional	20	0	0	5	0	2	13	0
Outer Regional	9	0	0	2	2	1	4	0
Stroke Service Type								
Comprehensive Centre	14	1	0	4	1	1	5	2
Primary Stroke Centre	35	1	0	15	2	1	13	3
Stroke Capable Regional General Hospital	13	0	0	0	2	1	10	0
Thrombolytic therapy provided	64	2	0	19	5	3	30	5
Endovascular therapy provided	15	1	0	4	1	1	6	2
Contributed to the ED program	44	0	0	11	3	1	25	4
Contributed to the FeSS program	26	0	0	8	0	2	11	5

ACT: Australian Capital Territory; ED: emergency department; FeSS: Fever, sugar, swallow optional variables; NSW: New South Wales; QLD: Queensland; SA: South Australia; TAS: Tasmania; VIC: Victoria; WA: Western Australia.

^ Includes one telestroke centre.

** Categories as per definitions used by Stroke Foundation National Stroke Audit reports.*

 # Location categorised using Australian Statistical Geography Standard Remoteness Standard 2021.[11]

OVERVIEW OF PATIENTS

In 2024, 69 hospitals provided data for 19,831 episodes of care. After excluding 12 episodes of TIA (56% male; median age 79 years), the final analysis sample was 19,819 episodes of stroke care in 2024.

Of the 19,819 episodes, clinicians indicated that there were 16,537 ischaemic strokes, and 3,008 ICH (Figure 1). There were 205 episodes of undetermined stroke type, representing 1% of all episodes. Since 2019, there has been a declining trend in the recording of undetermined stroke (*p for trend* <0.001). Only 69 episodes (0.4%) had a missing stroke type.

During a calendar year, patients may have multiple admissions for stroke that are eligible for inclusion in the AuSCR. In 2024, there were 19,819 episodes of acute stroke care entered in the AuSCR for 17,970 patients. A total of 19,761 adult episodes of stroke care were captured in the AuSCR in 2024 (Table 2).

FIGURE 1: DISTRIBUTION OF STROKE DIAGNOSES

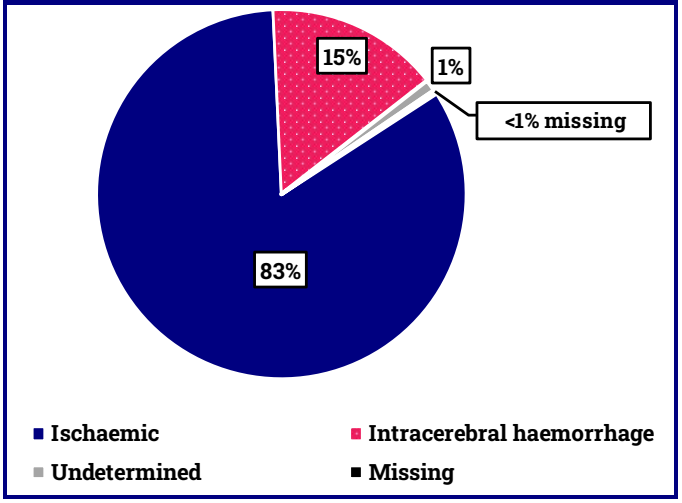


Table 2: Number of episodes and patients in 2024

	All stroke episodes	Adult stroke episodes
Number of episodes (N=69 hospitals)	19,819	19,761
Emergency Department dataset (n=44 hospitals)	637	633
Hospital admissions	19,182	19,128
Number of individual patients	17,970	17,916
Number of unique acute stroke events	18,502	18,447

PATIENT DEMOGRAPHICS

Table 3 provides the baseline characteristics of patients and information related to their episodes of care. Adult and paediatric episodes are presented separately. In addition to the six paediatric hospitals, seven non-paediatric hospitals contributed paediatric episodes (patients aged <18 years) in 2024.

In total, 43% of adult patients were female. The mean age of adult patients was 73 years (median: 75 years). There were 4,938 (28%) patients who were of working age (18 to 65 years), and 2,069 (12%) patients who were between 18 and 55 years of age.

Information on country of birth was available for 16,522 adult patients, with the majority (70%) born in Australia. The second most common place of birth was Europe (11% excluding the United Kingdom [UK]), followed by the UK (8%) and Asia (8%). Most adult patients spoke English (91%). There were 367 adult patients (2%) who identified as having an Aboriginal or Torres Strait Islander background.

Table 3: Patient characteristics (adult and paediatric episodes)

Patients	Adult (n=17,916)	Paediatric (n=54)
Episodes (N=19,819)	**19,761**	**58**
Age in years, median (Q1 to Q3)	75 (64 to 83)	4 (1 to 15)
Female, n (%)	7,621 (43)	20 (37)
Place of birth, n (%)		
Australia	11,516 (70)	51 (94)
United Kingdom	1,365 (8)	0 (0)
Other European counties	1,836 (11)	0 (0)
North Africa/Middle East	145 (1)	<5 (<9)
Asia	1,341 (8)	<5 (<9)
Rest of Africa	301 (2)	0 (0)
Others	18 (<1)	0 (0)
Aboriginal and/or Torres Strait Islander, n (%)	367 (2)	<5 (<9)
English spoken, n (%)	13,550 (91)	45 (92)

Q1: 25th percentile; Q3: 75th percentile.

STROKE SEVERITY

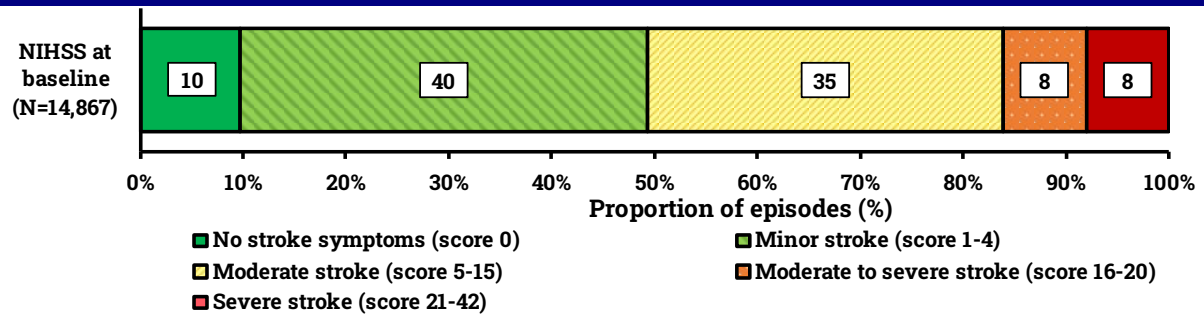
In the AuSCR, two different measures of stroke severity are collected at the time of hospital arrival.

A NIHSS score at the time of hospital arrival was recorded for 14,867 episodes (75% of the 2024 cohort vs 73% in 2023, p=0.046; Figure 2).

Patients with a diagnosis of ischaemic stroke had the lowest proportion of missing NIHSS scores (22%). Of the episodes receiving thrombolytic therapy (n=1,750), a NIHSS score was missing for 4%. Patients treated in a stroke unit had a greater proportion of NIHSS scores recorded in contrast to those treated in alternate wards (79% vs 61%, p<0.001).

The other indicator of stroke severity we collect is the ability to walk at time of hospital presentation/admission. This variable was recorded in 18,662 episodes (94% of the 2024 cohort), whereby 33% were documented as being able to walk at the time of admission. Of those who were able to walk on admission, the majority (61%) had a NIHSS score indicating a minor stroke (1-4).

FIGURE 2: STROKE SEVERITY



NIHSS: National Institutes of Health Stroke Scale

STROKE OCCURRING IN HOPSITAL

There were 765 episodes (4%) that occurred while patients were already in hospital for another condition. The proportion of in-hospital strokes varied from 0% to 10% between hospitals. Most in-hospital episodes were ischaemic (n=661, 87%) and the most common age range was between 75-84 years (n=230, 31%). Ten per cent of patients with an ischaemic in-hospital stroke received thrombolytic therapy. Of 356 ischaemic strokes that occurred while patients were admitted in an EVT-capable hospital, 26% received EVT. This is a higher proportion treated with EVT than those presenting from the community.

ARRIVAL WITHIN 4.5 HOURS OF STROKE ONSET

Among patients presenting from the community (i.e., excluding in-hospital strokes and episodes transferred from another hospital; n=14,903), valid dates and times of stroke onset and hospital arrival were available for 11,804 (79%). Of these, 6,446 (55%) arrived at hospital within 4.5 hours of symptom onset. Patients with ischaemic stroke were less likely to arrive at hospital within 4.5 hours of symptom onset than patients with ICH (53% vs 61%; $p<0.001$).

ARRIVAL BY AMBULANCE

The method of arrival to the ED was collected for 18,896 episodes. Of these, 14,635 (77%) were transported by ambulance. The proportion of patients who arrived by ambulance was greatest for those experiencing ICH (83%). Of the 6,445 episodes that arrived at the hospital from the community within 4.5 hours of symptom onset, 89% were transported by ambulance.

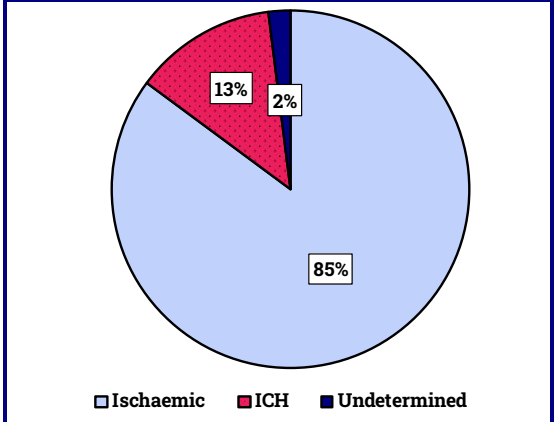
ACUTE CARE DATA

TELEMEDICINE IN ACUTE STROKE CARE

Telemedicine consultations were provided for 29 regional hospitals (17 VIC; 7 QLD; 3 TAS; 2 SA; 63% of regional episodes in VIC, 34% in TAS, 32% in QLD, and 13% in SA).

There were a total of 1,716 episodes involving a telemedicine consult at regional hospitals, 1,461 being for ischaemic stroke (Figure 3). Provision of thrombolytic therapy was more common in patients with telemedicine (18% vs without 5%; p<0.001). The median door-to-needle time for these patients was 95 (Q1 to Q3: 71 to 123) minutes.

FIGURE 3: TELEMEDICINE USE AT REGIONAL HOSPITALS, BY CLINICAL DIAGNOSIS



ICH: intracerebral haemorrhage.

PATIENT TRANSFERS

There were 4,217 episodes (22%) where patients were transferred from another hospital. Of these, 1,220 (29%) were transferred from another hospital participating in the AuSCR, and both episodes were recorded in the AuSCR and were able to be linked. The majority (77%) of patients who were transferred from another hospital arrived by ambulance.

A total of 2,598 episodes were transferred to comprehensive stroke centres where information on the reason for transfer was collected. Of these episodes, transfer for thrombolytic therapy was indicated for 1%. Of these, 43% received thrombolytic therapy. Transfer for EVT was indicated for 44% (n=481 VIC; n=210 QLD; n=135 SA; n=33 ACT; n=43 TAS; and n=98 WA) of episodes. Of these, 79% received EVT. Other major reasons for transfer accounted for 53%, including the need for stroke unit care, rehabilitation, intensive care unit (ICU) admission, diagnostic tests, and further medical assessment.

DOOR-IN-DOOR-OUT TIMES

A total of 633 adult episodes from 43 hospitals were captured in the optional ED program. Of these episodes, 587 were transferred to another hospital for EVT. The median door-in-door-out time for these episodes was 127 (Q1 to Q3: 91 to 174) minutes.

Mike's stroke experience

The Power of Timely Stroke Care

Mike, a 77-year-old retired teacher, was sitting on his bed one Tuesday morning in 2024 when he suddenly fell to the floor. Unable to move his right arm or get up, he pressed his medical alert bracelet with his left hand. An ambulance arrived and the paramedics quickly recognised that Mike was having a stroke. He was taken to the Royal Adelaide Hospital, where he met Dr Jackson Harvey, stroke neurologist.

A brain scan confirmed an ischaemic stroke caused by a blockage in a blood vessel within Mike's brain. He was transferred immediately for an endovascular thrombectomy. During the procedure, the doctors used a small wire to remove the clot from his artery. Remarkably, the procedure began only 44 minutes after Mike's arrival to hospital – well ahead of the national median of over 80 minutes.

The clot was cleared almost immediately, restoring blood flow to the affected area.

> "[The next] morning I was sitting up in bed, I was talking to people and it was as though nothing had ever happened"
>
> - Mike

Mike recalls waking up in recovery and being transferred to the Stroke Unit. The next day, he was reviewed by the allied health team, including an occupational therapist and physiotherapist.

Two days later, Mike walked out of hospital with no neurological symptoms. He counts himself lucky and is grateful for the care he received from the entire team at the Royal Adelaide Hospital.

Dr Harvey reflects on the importance of rapid treatment:

> "[It] goes to show the importance of getting to hospital quickly when a stroke begins, and also how powerful these treatments are if we can get them to people within a quick timeframe."
>
> - Dr Jackson Harvey

Mike Lugg with Dr Jackson Harvey

> "It is really helpful having the AuSCR for monitoring stroke performance... we can monitor care to make sure that these powerful treatments are being applied appropriately to the right patients and within the right timeframe."
>
> - Dr Jackson Harvey

ADHERENCE TO THE ACUTE STROKE CLINICAL CARE STANDARD

The Acute Stroke Clinical Care Standard supports the delivery of appropriate care and shared decision-making between patients, carers and clinicians.[1] The standard includes quality statements describing the clinical care that patients should be offered and indicators that can be used by health services to monitor alignment with the standard. Table 4 outlines quality indicators collected in the AuSCR aligned with the Standard.[1]

In the National Safety and Quality Health Service Standards (2nd ed.), health service organisations are expected to support clinicians in using the best available evidence, including clinical care standards such as the Acute Stroke Clinical Care Standard.[1]

Table 4: Adherence to the Acute Stroke Clinical Care Standard

Indicator	Achievable Benchmark*	Adherence in the AuSCR in 2024								
		All hospitals	Metropolitan hospitals	Regional hospitals‡	ACT	QLD	SA	TAS	VIC	WA
2a Proportion provided thrombolytic therapy if an ischaemic stroke†	20	13	12	14	11	12	16	13	14	7
2b Proportion provided endovascular thrombectomy† if an ischaemic stroke is treated in a capable hospital	-	18	18	16	12	23	23	13	14	15
Overall *proportion provided endovascular thrombectomy if an ischaemic stroke*	-	12	14	5	12	12	15	13	11	11
2c Proportion with a door-to-needle time under 60 minutes† (if an ischaemic stroke provided thrombolytic therapy)	81	43	51	17	55	25	74	31	44	45
2d Time from arrival to hospital to endovascular thrombectomy, median minutes†	106^	106	105	134	117	126	75	148	112	91
3a Proportion managed in a stroke unit	96	79	84	63	82	79	80	53	79	88
5a Proportion provided antihypertensive medication at discharge§	98	86	88	82	88	85	83	87	90	79
5b Proportion provided lipid-lowering medication at discharge§#	99	94	94	91	97	92	91	91	96	90
5d Proportion provided antithrombotic medication at discharge§#	100	98	99	96	98	96	98	99	99	99
7a Proportion provided a care plan§	100	73	79	50	98	49	100	24	80	84

** Modified ABC™ benchmark using data from sites with ›50 episodes. Benchmark for indicator 2d based on international targets.*

† Excludes episodes transferred from another hospital and in-hospital strokes.

‡ Includes hospitals located in 'Inner Regional' or 'Outer Regional' areas according to the Australian Statistical Geography Standard Remoteness Standard 2021.[11]

§ Excludes ED episodes, episodes with documented contraindications, episodes remaining in a hospital setting and patients who left hospital against medical advice.

 # Excludes episodes of intracerebral haemorrhage. ^ National median used in lieu of an Achievable Benchmark.

NATIONAL STROKE TARGETS

Table 5: National Stroke Targets breakdowns in 2024

Indicator	National Target	Stroke Service Type¶			Regionality		SU certified		Jurisdiction					
		Comprehensive Centre	Primary Stroke Centre	Stroke Capable Regional General	Metropolitan	Regional	Yes	No	ACT	QLD	SA	TAS	VIC	WA
		N=14	N=34	N=13	N=34	N=28	N=19	N=43	N=2	N=19	N=4	N=3	N=29	N=5
Thrombolytic therapy door-to-needle time*†	<60 mins	58	75	85	60	89	56	85	60	86	42	72	66	64
Endovascular therapy door-in-door-out time* *(optional ED dataset)*	<60 mins (Metropolitan)	73**	95	#	96	N/A	94	100	N/A	134	98	N/A	92	108
	<75 mins (Regional)§	N/A	128	128	N/A	128	122	128	N/A	188	N/A	N/A	128	N/A
Endovascular therapy door-to-puncture time for transfers*	<30 mins	37	N/A	N/A	36	60	35	45	56	46	29	49	35	25
Endovascular therapy door-to-puncture time for primary presenters†*^	<90 mins	106	N/A	N/A	102	132	99	121	121	123	75	156	110	92
Patients with a stroke diagnosis receiving stroke unit care	>90%	80%	83%	52%	84%	63%	86%	74%	82%	79%	80%	53%	79%	88%

Includes adult episodes only. N refers to the number of hospitals. SU denotes stroke unit.

¶ One Telestroke Centre was excluded in the analysis of the Stroke Service Type (Total episodes=184).

** Includes only ischaemic stroke. † Excludes transfers, in-hospital strokes.*

§ Includes inner and outer regional hospitals and excludes hospitals that primarily transport via air.

‡ Of the eligible hospitals providing this indicator and excludes hospitals with <10 eligible episodes.

^ Patients who receive their first brain scan after transfer to an EVT-capable hospital are considered direct presenters.

*# Suppressed as the median represented fewer than 5 episodes from a single hospital. ** 17 episodes from 2 hospitals (VIC, n=8 and WA, n=9) that do not have 24-hour EVT service.*

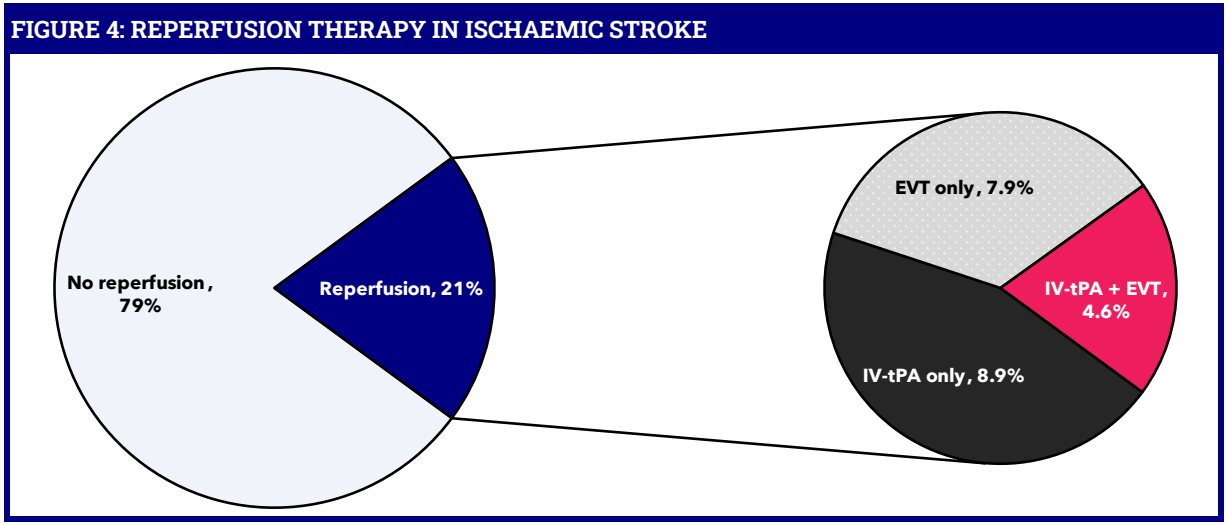
OVERALL ADHERENCE TO QUALITY INDICATORS

REPERFUSION THERAPY

Of the 15,371 ischaemic events recorded, 3,284 (21%) received a type of reperfusion therapy (intravenous thrombolytic therapy and/or EVT; Figure 4). This includes 14 patients who were provided thrombolytic therapy at a hospital not contributing to the AuSCR before arrival at an EVT-capable hospital. In the following sections, we detail information for patients who received either type of reperfusion therapy, acknowledging that patients may be eligible to receive both therapies.

Among the patients who received EVT (n=1,928), 701 (36%) were also treated with an intravenous thrombolytic. For patients who presented directly to EVT-capable hospitals, (excluding in-hospital strokes [N=945]) 36% were also treated with intravenous thrombolytics. Among those who were transferred and received EVT, 355 (39%) also received thrombolytic therapy.

FIGURE 4: REPERFUSION THERAPY IN ISCHAEMIC STROKE



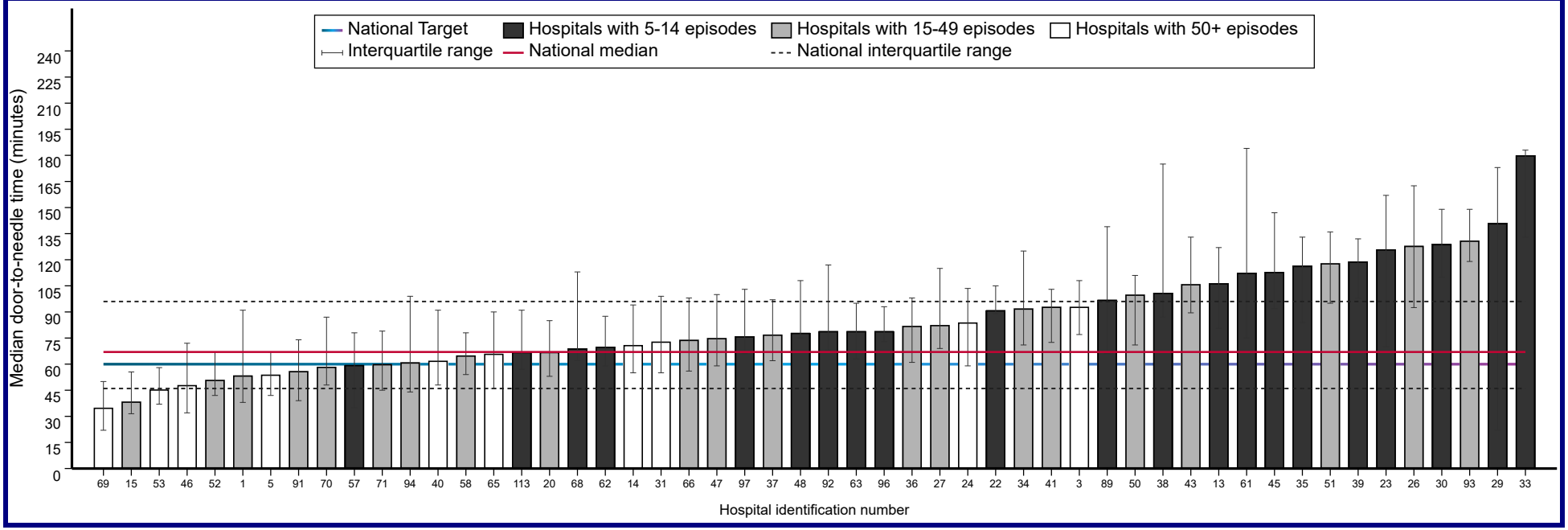
EVT: endovascular therapy; IV-tPA: intravenous thrombolytic therapy. Includes episodes provided thrombolysis at a non-AuSCR hospital before arrival.

TIMELINESS OF THROMBOLYTIC THERAPY

Of the 1,572 episodes with valid dates and time of intravenous thrombolytic therapy provision (i.e., excluding negative times, transfers, and in-hospital strokes), 43% had a door-to-needle time less than 60 minutes. The median door-to-needle time was 67 minutes, and median onset-to-needle time was 151 minutes.

At the individual hospital level, 11 hospitals had a median door-to-needle time of 60 minutes or less in 2024 (Figure 5). Median door-to-needle were 29 minutes slower in regional vs metropolitan hospitals (89 minutes in regional hospitals vs 60 minutes in metropolitan hospitals). It is also noted that most hospitals with faster door-to-needle times tended to treat a greater volume of patients.

FIGURE 5: DOOR-TO-NEEDLE TIMES, BY HOSPITAL



Excludes episodes where thrombolytic therapy was provided prior to arrival or after 4.5 hours of arrival.
Number of episodes with door-to-needle times by hospital range from 5 to 152.
Excludes data from 10 hospitals with <5 episodes receiving thrombolytic therapy and episodes with invalid door-to-needle times (i.e., negative or >270)

Hospital Case Study 1

Using AuSCR data to Improve Door-to-Needle Times

The problem

Latrobe Regional Health is a regional hospital in Victoria with 150-200 acute stroke admissions per year. The AuSCR Performance Report and Scorecards highlighted a key area for improvement: the median time from hospital arrival to administration of thrombolytic therapy was 74 minutes, exceeding the recommended benchmark of 60 minutes. This prompted the prioritisation of targeted improvement initiatives. Challenges in improving this metric included high staff turnover due to rotational placements, and limited experience in code stroke, leading to inconsistent adherence to established processes and protocols.

The solution

All relevant AuSCR metrics were reviewed with additional data collected to pinpoint process breakdowns. AuSCR data dashboards supported ongoing performance monitoring.

To accelerate identification and resolution of delays in stroke care, weekly stroke audits were conducted with support from a return-to- practice rehabilitation nurse. These audits enabled faster feedback and targeted interventions. A 'Code Stroke' timestamp record was created to capture each stage of the code stroke process, identifying points of delay. While initially intended to track delays, this initiative also heightened staff awareness of the need for process adherence and need for speed.

The code stroke time stamp metrics were then integrated into the Electronic Medical Record (EMR) system as an acronym-based checklist, standardising critical time points. This embedded the stroke care process and improved consistency in practice. Nurses began taking the lead in Code Strokes to ensure adherence to key processes – such as direct transfer to CT on arrival. To address staff turnover and limited experience, stroke simulations and training were conducted with plans to implement mandatory video training of rotating staff prior to their placement at LRH.

Additional strategies included:

- Performing the NIHSS post scan when a stroke was clinically evident on arrival
- Educating staff that a full NIHSS is not required to initiate a Code Stroke
- Converting an existing stroke medical registrar flow sheet to a tick check list, accessible via a QR code on a lanyard, to guide timely care.

The outcome

The quality improvement activities have ***reduced median door-to-needle time by 16 minutes***, from 74 to 58 minutes in 2025. Latrobe Regional Health recently received a Platinum World Stroke Organization award for quarter one 2025, and an Australian Stroke Coalition National award for most improved number of admissions to their Stroke Unit in September 2025.

Sustained improvement has been underpinned by regular review of the AuSCR data, structured team feedback, and ongoing staff training. Engagement of return-to-practice personnel has enhanced data timeliness and supported more responsive, case-specific feedback to clinicians, promoting faster identification and implementation of improvement opportunities.

Latrobe Regional Health Stroke Team

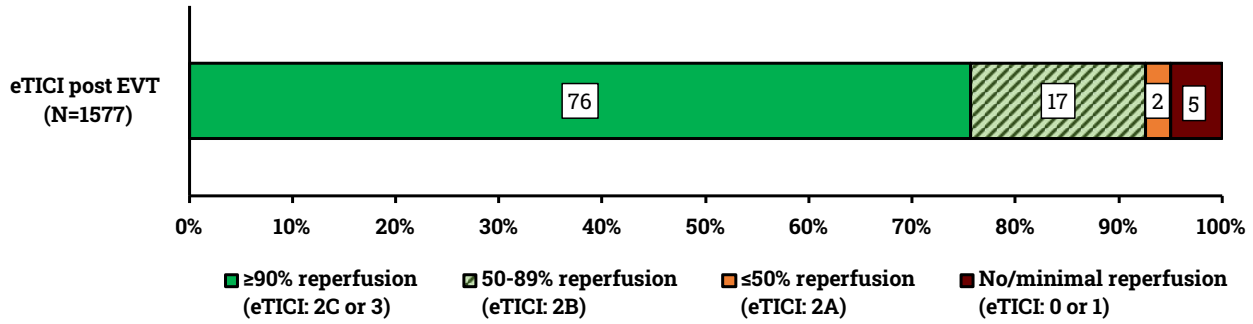
ENDOVASCULAR THERAPY

Overall, endovascular therapy (EVT) was provided in 1,928 episodes in 2024 (12% of all ischaemic strokes). Endovascular therapy was performed in 14 hospitals (5 VIC; 4 QLD; 2 WA; 1 ACT; 1 SA; 1 TAS), which represented 18% of all ischaemic strokes presenting directly to these hospitals. The top-performing hospital provided EVT to 28% of their episodes of ischaemic stroke, in a state where the model of care is for suspected large-vessel occlusion strokes to be transferred directly to this hospital.

Twelve of the fourteen hospitals capable of providing EVT are located within major cities, and 91% of EVT was undertaken in these hospitals.

The expanded treatment in cerebral infarction (eTICI) score is an indication of blood flow restored after thrombectomy and an indication of success. Figure 6 shows eTICI outcomes following EVT, where 2C or 3 is considered successful (i.e., >90% reperfusion).

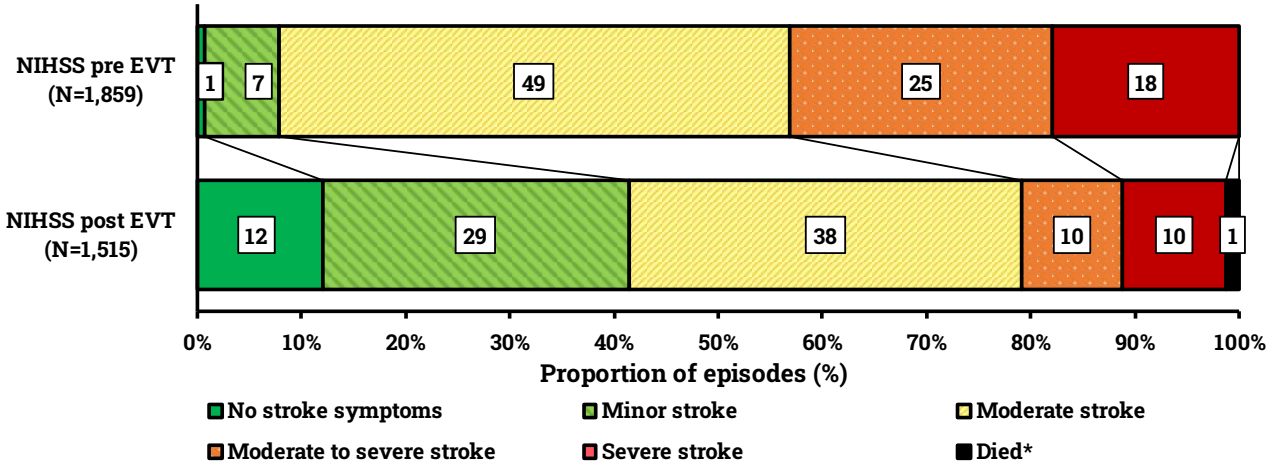
FIGURE 6: REPERFUSION SCORES AFTER EVT



EVT: endovascular therapy; eTICI: expanded treatment in cerebral infarction score.

In addition to the NIHSS score obtained at hospital arrival, hospitals also collect a NIHSS score before EVT and 24 hours after EVT. Of the 1,928 patients provided with EVT, 1,859 had a NIHSS score recorded at hospital presentation or before EVT (96% complete) and 1,515 had a NIHSS score post-EVT recorded or were recorded as having died on the same day or day after EVT (79% complete). Of those with a missing NIHSS score post-EVT, 62% were discharged to another hospital for further acute care, 16% were discharged directly home, and 20% were discharged to rehabilitation. A summary of NIHSS scores before and after EVT is shown in Figure 7.

FIGURE 7: NIHSS SCORES BEFORE AND AFTER EVT

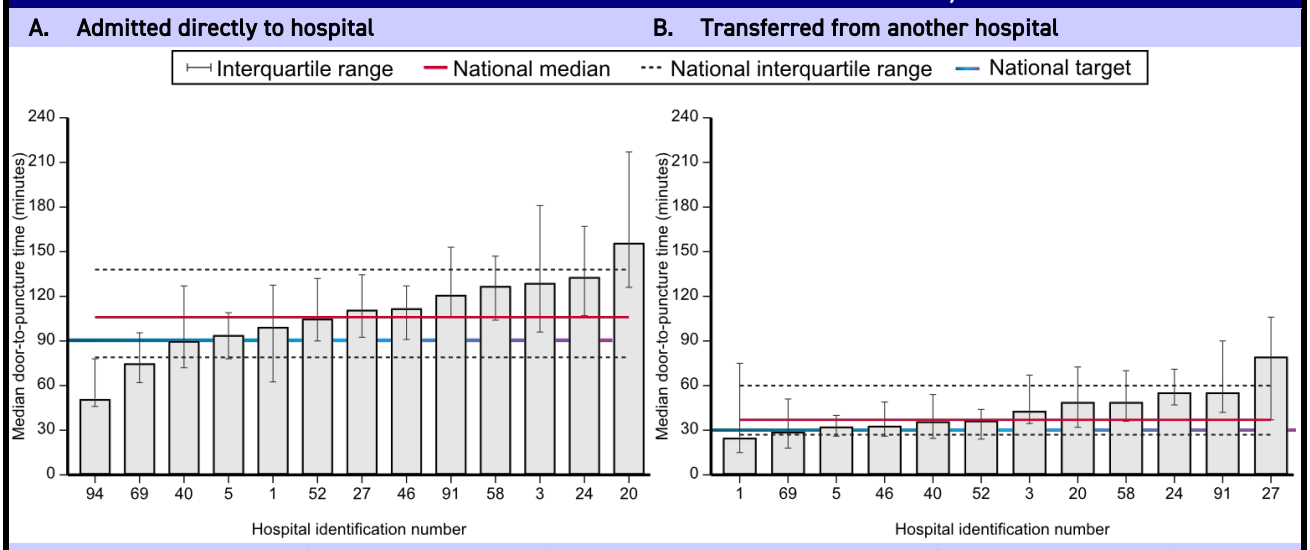


NIHSS: National Institutes of Health Stroke Scale. NIHSS classification are as follows: No symptoms (0); Minor stroke (1-4); Moderate Stroke (5-15); Moderate to severe stroke (16-20); Severe stroke (21-42).EVT: endovascular therapy
** Died on the same day or the day after endovascular therapy and a post-procedure NIHSS score was missing.*

TIMELINESS OF ENDOVASCULAR THERAPY

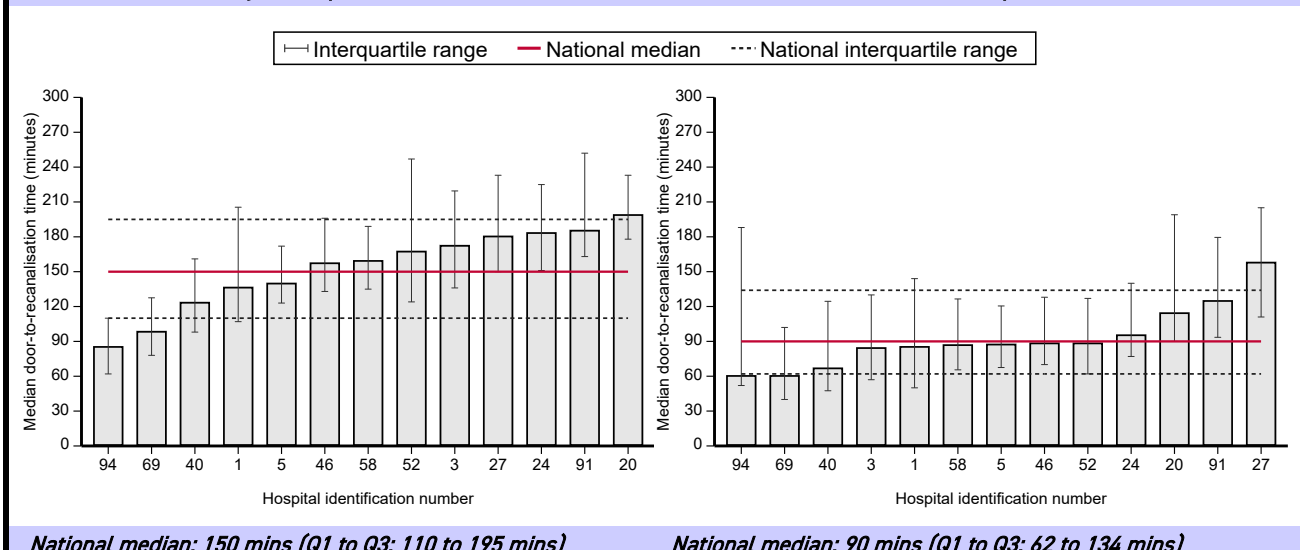
For episodes where times of both arrival and treatment were collected, the median time from arrival to arterial puncture was 80 minutes (Q1 to Q3: 41 to 122 minutes) and the median time from arrival to recanalisation was 124 minutes (Q1 to Q3: 83 to 178 minutes). For episodes transferred from another hospital, the median time from arrival to arterial puncture was 40 minutes. For direct presentations, the median time from arrival to arterial puncture was 106 minutes (66 minutes more compared to direct admissions; $p<0.001$; Figure 8). The median time from arrival to recanalisation time was also significantly faster for transferred patients than for those admitted directly (Figure 9; $p<0.001$). The median onset to arterial puncture time was significantly longer for transferred patients at 340 minutes (Q1 to Q3: 235 to 456 minutes) compared to 217 minutes (Q1 to Q3: 162 to 328 minutes) for direct admissions ($p<0.001$).

FIGURE 8: DOOR-TO-PUNCTURE TIME FOR DIRECT VS TRANSFERRED EPISODES, BY HOSPITAL



Excludes data from hospitals with <5 episodes and episodes with invalid door-to-puncture times (i.e., negative or >720 minutes). Sample sizes at each hospital range from 24 to 168 episodes in panel A; and from 6 to 241 episodes in panel B. Note: Hospital 94 does not offer a 24/7 endovascular therapy service.

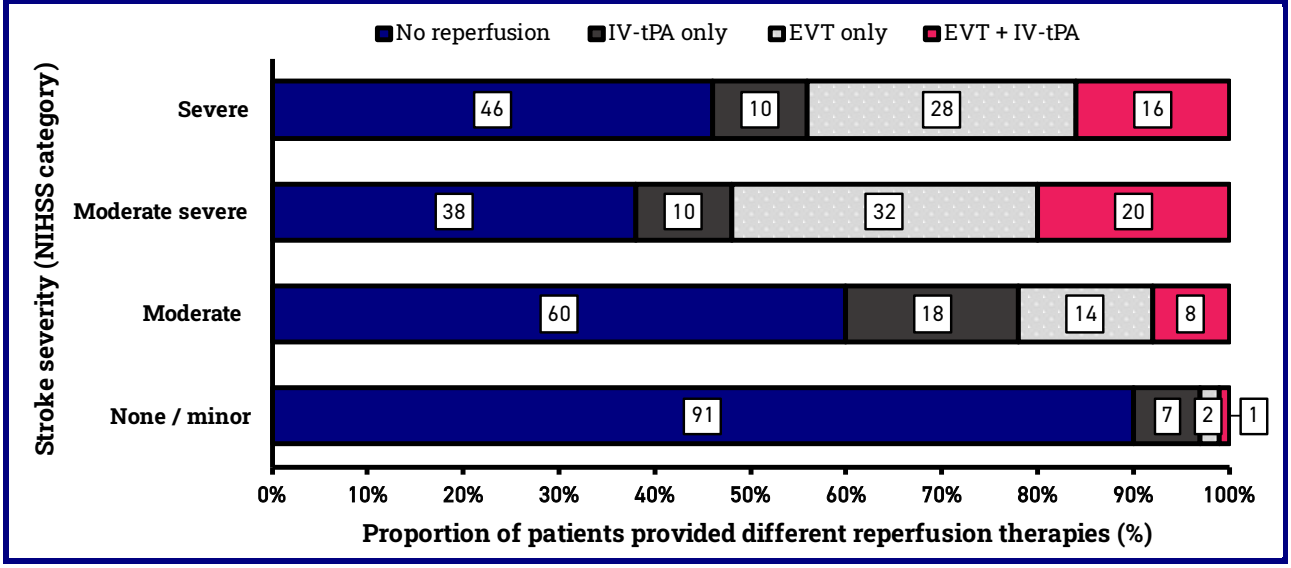
FIGURE 9: DOOR-TO-RECANALISATION TIME FOR DIRECT VS TRANSFERRED EPISODES, BY HOSPITAL



Excludes data from hospitals with <5 episodes and episodes with invalid door-to-recanalisation times (i.e., negative or >720 minutes). Sample sizes at each hospital range from 14 to 162 episodes in panel A; and from 14 to 163 episodes in panel B. Note: Hospital 94 does not offer a 24/7 endovascular therapy service.

Access to reperfusion therapy was more frequent with ischaemic strokes that were considered moderately severe to severe based on the NIHSS categories (Figure 10).

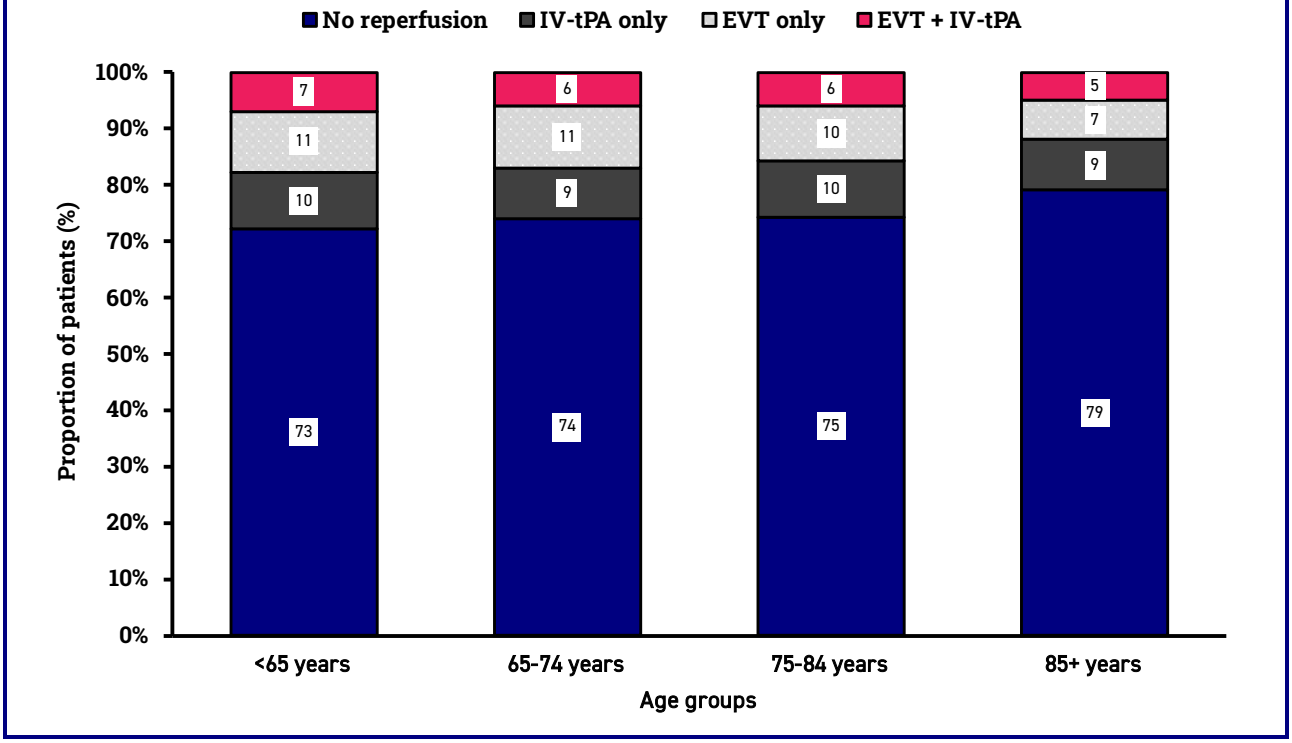
FIGURE 10: ACCESS TO REPERFUSION, BY NIHSS CATEGORY



NIHSS: National Institutes of Health Stroke Scale. NIHSS classification are as follows: No symptom (0); Minor stroke (1-4); Moderate Stroke (5-15); Moderate to severe stroke (16-20); Severe stroke (21-42). EVT: Endovascular therapy; IV-tPA, intravenous thrombolytic therapy.

The proportion of patients provided reperfusion therapy differed slightly across age groups, with reduced access among those aged 85+ years than younger age groups (p<0.001; Figure 11). There was no difference in the provision of reperfusion therapy between men and women overall (p=0.39) or when stratified by age group.

FIGURE 11: REPERFUSION THERAPY, BY AGE

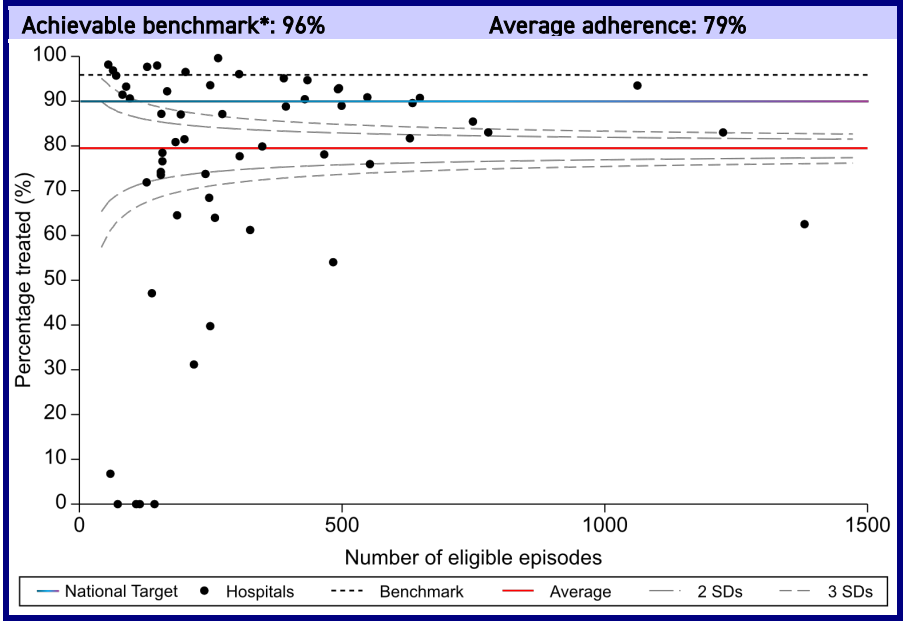


EVT: Endovascular therapy; tPA, intravenous thrombolytic therapy.

STROKE UNIT CARE

In 2024, 59 hospitals reported providing stroke unit care, of which 19 (32%) were formally certified by the Australian Stroke Coalition. Of the 63 adult hospitals, four regional hospitals did not report treating patients in a stroke unit, three in Victoria and one in Tasmania. Overall, 79% of episodes in 2024 were treated in a stroke unit. Patients who experienced a stroke while already in hospital for a different condition were less likely to receive stroke unit care than those who presented from the community (51% vs 81%; *p*<0.001).

FIGURE 12: MANAGEMENT IN A STROKE UNIT, BY HOSPITAL



Each dot represents adherence for an individual hospital. Excludes ED episodes.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*

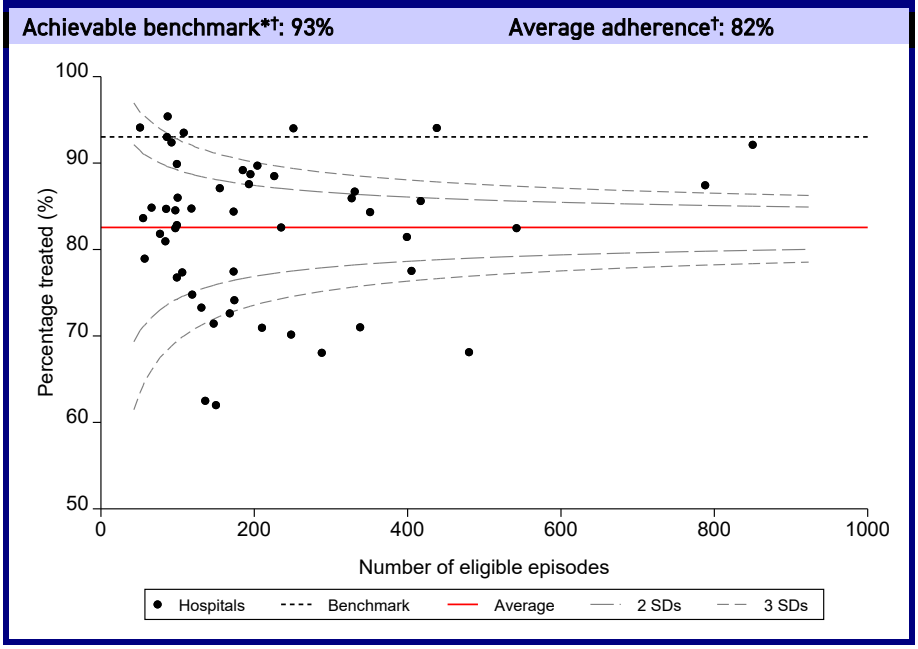
Twenty-three hospitals provided stroke unit care to patients in >90% of their episodes in 2024 (Figure 12) demonstrating excellent care provision.

After accounting for patient characteristics (such as age, sex, type of stroke, ability to walk on admission), patients in regional hospitals were 76% less likely to receive treatment in a stroke unit compared to those in metropolitan hospitals (OR: 0.24; 95% CI: 0.08-0.75, *p*=0.014; Figure 14).

HYPERACUTE ANTIPLATELET THERAPY

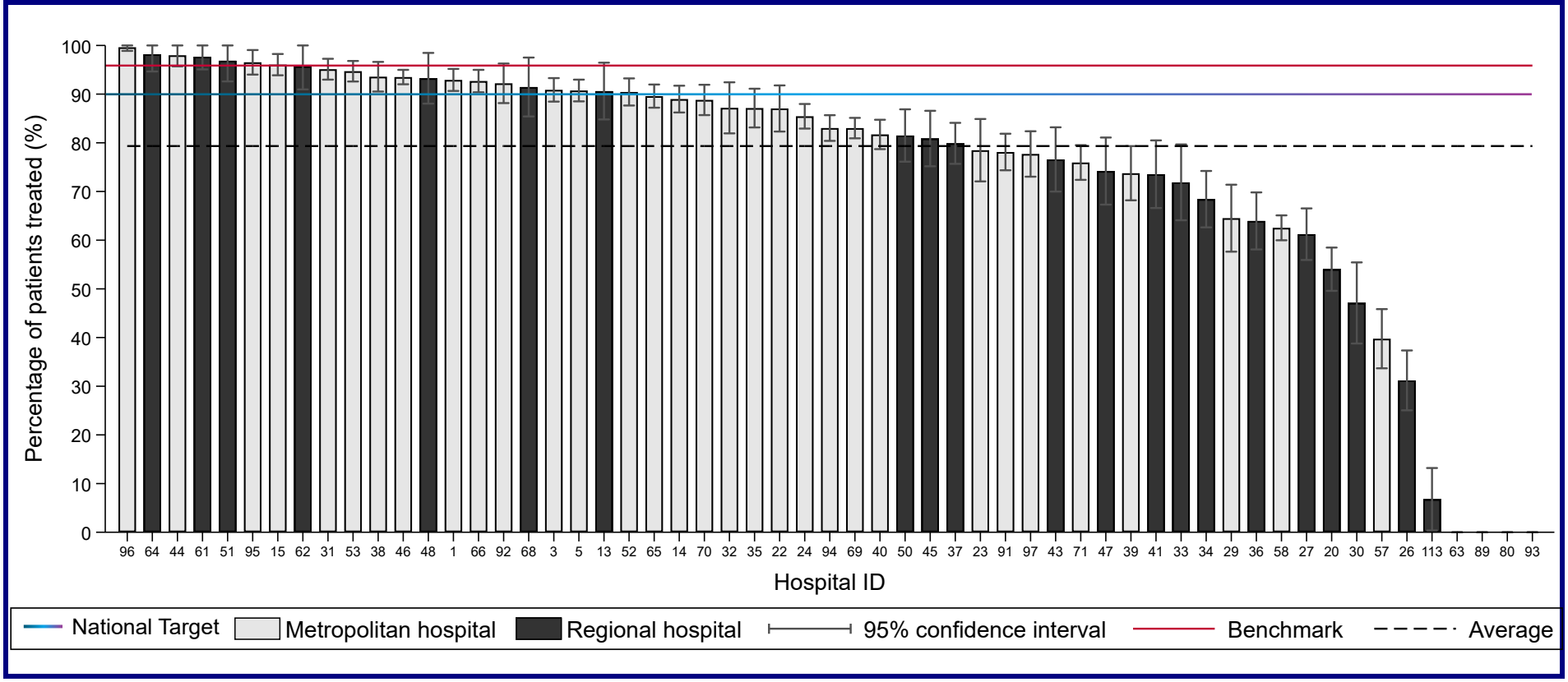
After excluding episodes of ICH, episodes with documented contraindications, and those with delayed arrival to hospital (i.e., >48 hours post-onset), hyperacute antiplatelet therapy was provided within 48 hours of stroke onset in 82% of episodes (Figure 13).

FIGURE 13: HYPERACUTE ANTIPLATELET THERAPY, BY HOSPITAL



Each dot represents adherence for an individual hospital. Excludes ED episodes.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*
† Excludes episodes of intracerebral haemorrhage, episodes with contraindications, ED episodes, episodes arriving to hospital after 48 hours from stroke onset.

FIGURE 14: STROKE UNIT CARE IN METROPOLITAN AND REGIONAL HOSPITALS



Excludes hospitals with <50 episodes.

Michelle's stroke experience

Timely Care and Rehabilitation: A Patient's Perspective

Michelle was just 45 years old when, one Friday night after being out for dinner with her family, she experienced a severe headache and distortion of her vision. Her husband noticed slurred speech and facial droop, recognised these were possible stroke symptoms, and called an ambulance.

Michelle was transported urgently to a metropolitan hospital, arriving just after midnight. Unfortunately, it was a busy night in the Emergency Department, and her symptoms were initially attributed to migraine. It was seven hours before Michelle had her first brain scan, which confirmed an ischaemic stroke. By then, it was too late for clot-busting medication. She was admitted to a stroke unit and discharged two days later with limited information and no rehabilitation plan.

She had ongoing vision problems, fatigue and little information about her prognosis. At her six-week outpatient appointment, the neurologist was surprised that rehabilitation had not been arranged. Michelle subsequently accessed inpatient rehabilitation through her GP, spending a valuable three weeks receiving intensive physiotherapy and speech therapy. It was nine months before she could return to full-time work as an academic, supported by a flexible employer.

> *"People know their bodies and should be listened to."*
>
> - Michelle

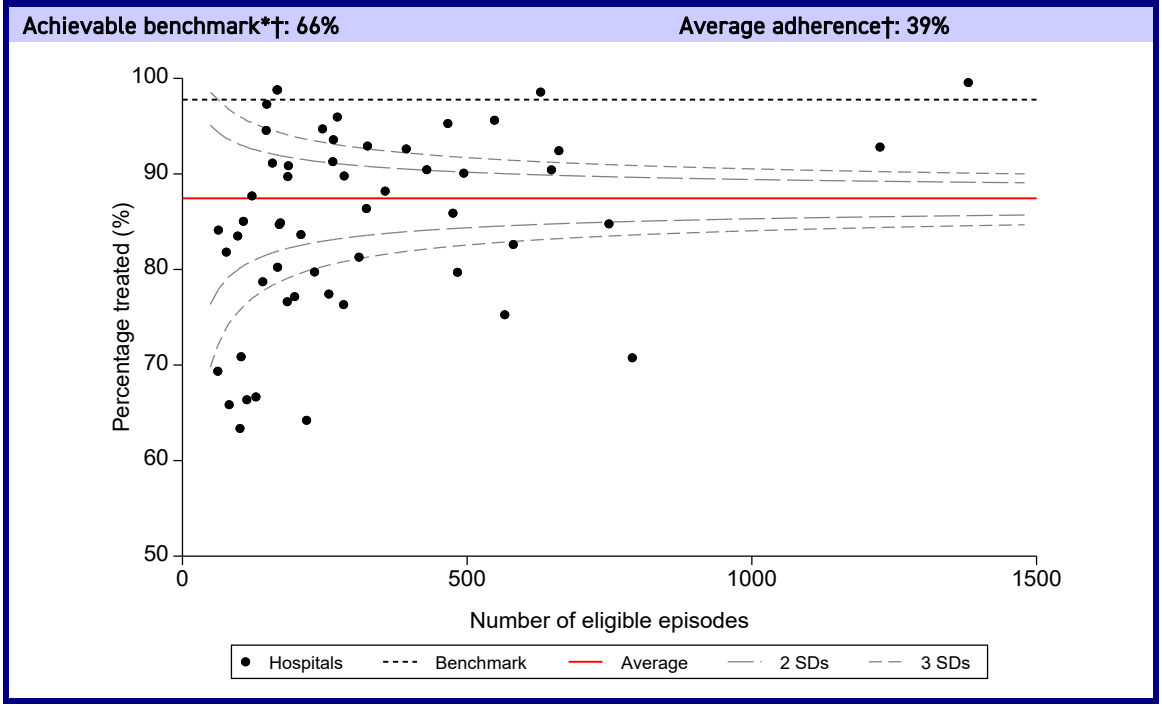
Her experience highlights the importance of timely diagnosis, listening to patients, and ensuring appropriate post-acute care. Her rehabilitation doctor raised concerns with the hospital to help improve future care, particularly for younger people and women presenting with stroke symptoms.

AUSTRALIAN STROKE CLINICAL REGISTRY
FACILITATING QUALITY

SWALLOW SCREEN AND ASSESSMENT

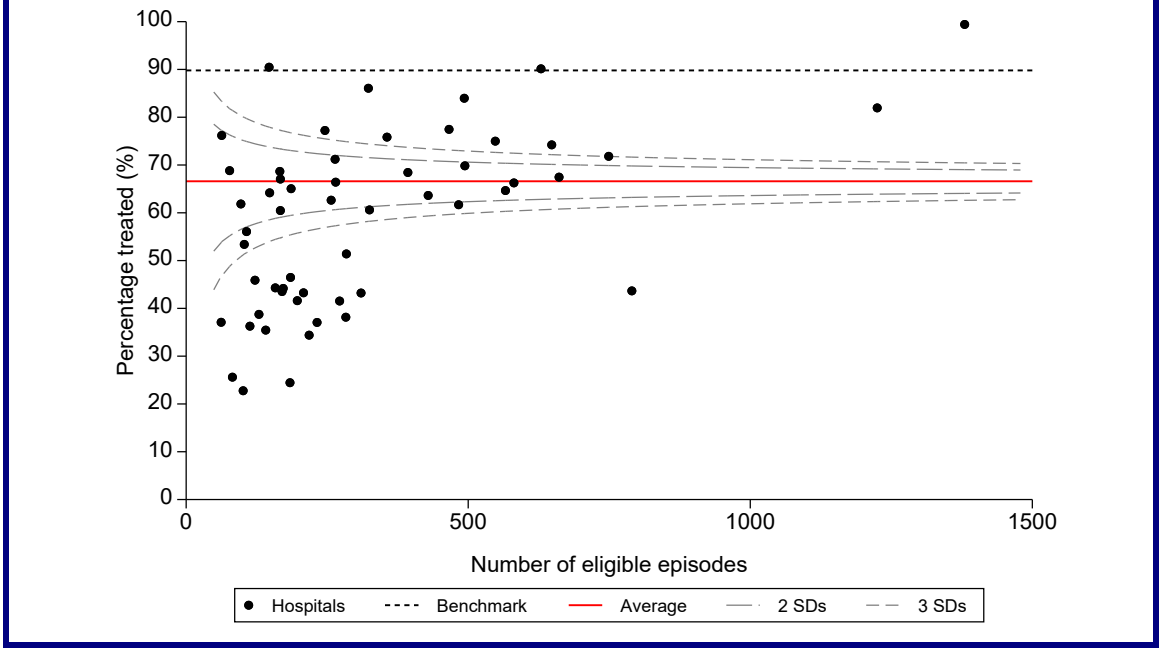
A swallow screen was undertaken in two-thirds (69%) of all episodes, and a formal swallow assessment was conducted by a speech pathologist in 72% of episodes. A swallow screen or assessment was undertaken in 87% of episodes, of which 39% occurred within 4 hours (Figure 15), and 77% within 24 hours. A swallow screen or assessment occurred prior to oral intake in 66% of episodes (Figure 16).

FIGURE 15: SWALLOW SCREEN OR ASSESSMENT WITHIN 4 HOURS OF ARRIVAL, BY HOSPITAL



Each dot represents adherence for an individual hospital. Excludes ED episodes.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*
† Excludes episodes transferred from another hospital.

FIGURE 16: SCREEN OR ASSESSMENT PRIOR TO ORAL INTAKE, BY HOSPITAL



Each dot represents adherence for an individual hospital. Excludes ED episodes.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*

MANAGEMENT OF FEVER AND BLOOD GLUCOSE

There were 26 hospitals that contributed optional Fever, Sugar and Swallow (FeSS) data for 5,318 episodes (median of 163 episodes per hospital; min–max: 1–778). The FeSS dataset includes the documentation of fever and hyperglycaemia in addition to the swallow screen/assessment variables (see previous section). Temperatures were recorded ›4 times on the day of admission for 88% of episodes (Table 6). Of the 556 eligible episodes with a fever (temperature ›37.5°C) recorded within 72 hours of admission, 43% were administered paracetamol.

The majority (67%) of the 5,318 episodes with FeSS data available had blood glucose levels recorded at least four times on the first day of the ward admission. A total of 1,202 episodes (23%) recorded blood glucose levels above 10mmol/L within 48 hours of admission. Of these, 26% were administered insulin within the first hour of the measured elevation.

Table 6: Monitoring and management of fever and blood glucose

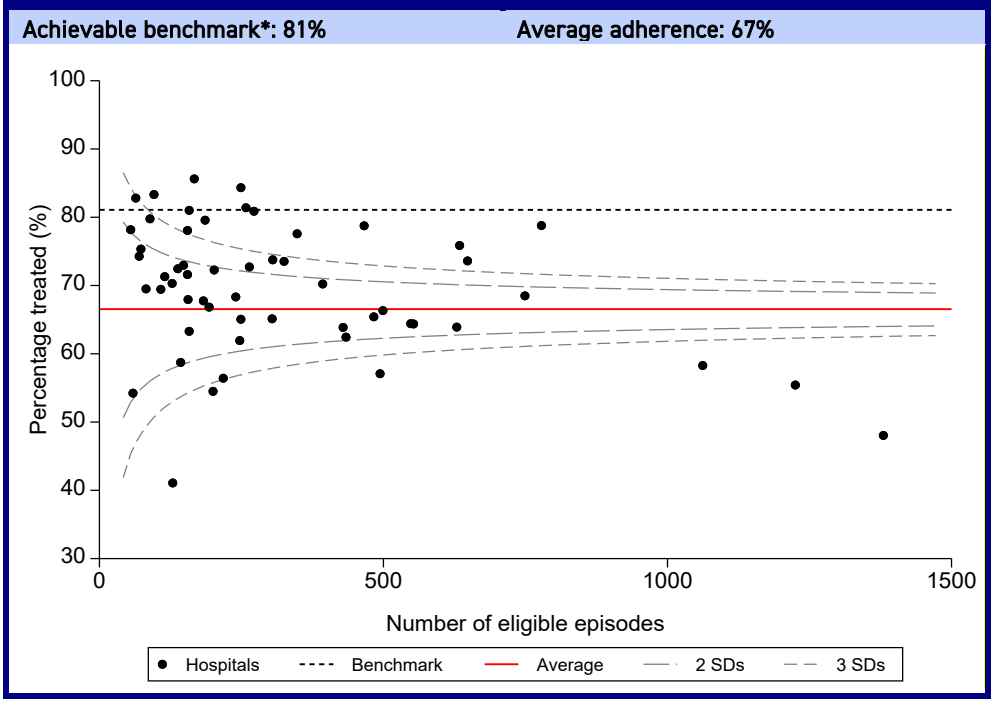
Fever and blood glucose	All episodes N=5,318
Temperature recorded ›4 times on day one of ward admission	88%
Patient developed a fever of ›37.5C in the first 72 hours following admission	10%
Where fever was present, paracetamol was administered within 1 hour of the first elevated temperature measurement*	43%
Finger prick blood glucose documented ›4 times on day 1 of ward admission	67%
Patient developed blood glucose level above 10mmol/L within 48 hours of admission	23%
Where patient developed blood glucose level above 10mmol/L, insulin was administered within the first hour of elevated blood glucose measurement	26%

** Excludes episodes with contraindications (or if paracetamol was previously administered).*

MOBILISATION IN HOSPITAL

Among episodes with available data (n=18,228), 87% were mobilised during their admission, with most patients (67%) mobilised on the same day, or the day after, arrival to hospital (Table 7). Variation in the proportion of patients mobilised varies by hospital (Figure 17).

FIGURE 17: MOBILISATION SAME DAY OR DAY AFTER, BY HOSPITAL



Each dot represents adherence for an individual hospital. Excludes ED episodes.
**Modified ABC™ benchmark using data from sites with ›50 episodes.*

The most common method of mobilisation on day of arrival was walking (55%), followed by standing (40%), and sitting (14%). Similarly, the most common method of mobilisation day after was walking (54%), followed by standing (26%), followed by sitting (20%). Those mobilised the day or day after arrival were younger on average by two years, less likely to be female and were more often treated in a stroke unit (see Table 7). Those not mobilised were more frequently treated with reperfusion therapies (29%). Length of stay was shorter for those mobilised early during their admission, and those not mobilised were more often discharged to rehabilitation.

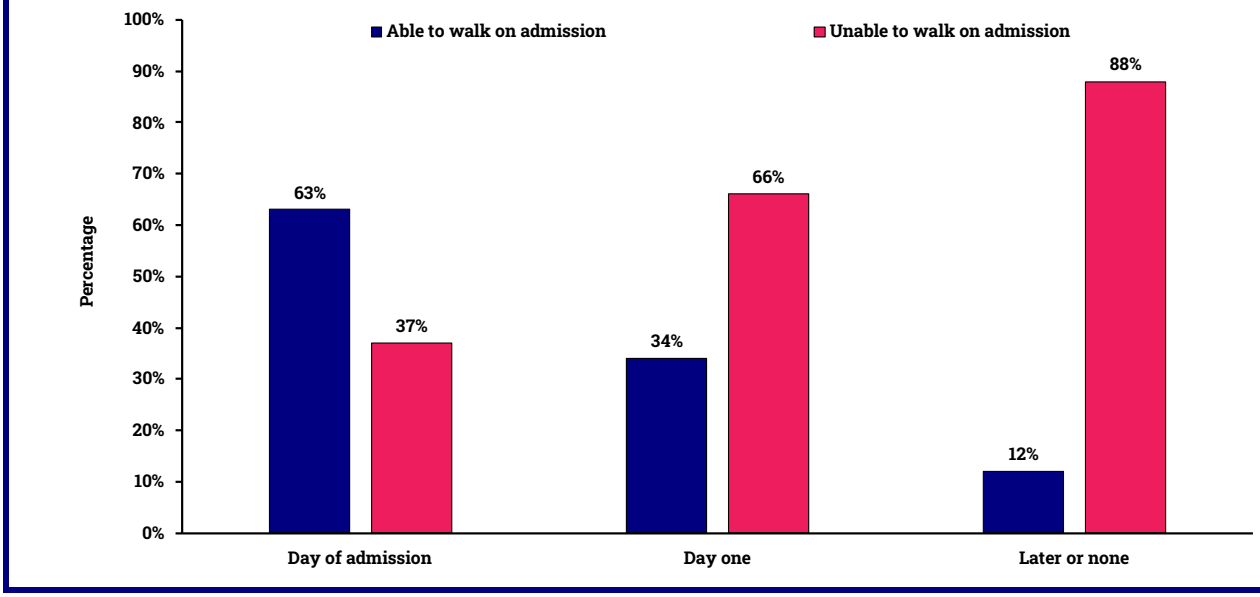
Table 7: Characteristics of adult patients mobilised same day or day after arrival

	Mobilised same day or day after		
	Yes N=12,138	No¶ N=6,090	*p*
Age in years, mean (SD)	72 (14)	74 (14)	<0.001
Age in years, median (Q1–Q3)	74 (64, 82)	77 (66, 85)	
Young stroke, n (%)	1,463 (12)	667 (11)	0.02
Female, n (%)	4,884 (41)	2,886 (48)	<0.001
Regional hospitals, n (%)	2,784 (23)	1,241 (20)	<0.001
Transported by Ambulance, n (%)	8,673 (73)	4,915 (89)	<0.001
Clinical diagnosis, n (%) *Ischaemic* *Intracerebral haemorrhage* *Undetermined*	10,813 (89) 1,198 (10) 124 (1)	4,397 (73) 1,569 (26) 64 (1)	<0.001
Treated in a stroke unit, n (%)	10,120 (83)	4,213 (69)	<0.001
Able to walk on admission, n (%)	5,162 (45)	708 (12)	<0.001
Severity of stroke, n (%) (NIHSS) *No stroke symptoms* *Minor stroke* *Moderate stroke* *Moderate to severe stroke* *Severe stroke* *Missing*	1,147 (9) 4,517 (37) 2,948 (24) 417 (3) 239 (2) 2,870 (24)	214 (4) 908 (15) 1684 (28) 661 (11) 870 (14) 1,753 (29)	<0.001
Received any reperfusion therapy, n (%) §	1,713 (16)	1,293 (29)	<0.001
Length of hospital admission in days, median (Q1–Q3)	4 (2, 7)	6 (3, 13)	<0.001
Discharged to usual residence	6,601 (55)	1,315 (28)	<0.001
Discharged to inpatient rehabilitation	2,660 (22)	1,325 (28)	<0.001

SD: standard deviation; Q1: 25th percentile; Q3: 75th percentile.
Note: No symptom (0); Minor stroke (1-4); Moderate Stroke (5-15); Moderate to Severe stroke (16-20); Severe stroke (21-42)
Includes adult episodes only.
Reperfusion therapy includes tPA and EVT
¶Includes patients who were never mobilised (n=2,394) and those who were mobilised after the second day of their stroke (n=3,696) admission.
*Includes only ischaemic stroke

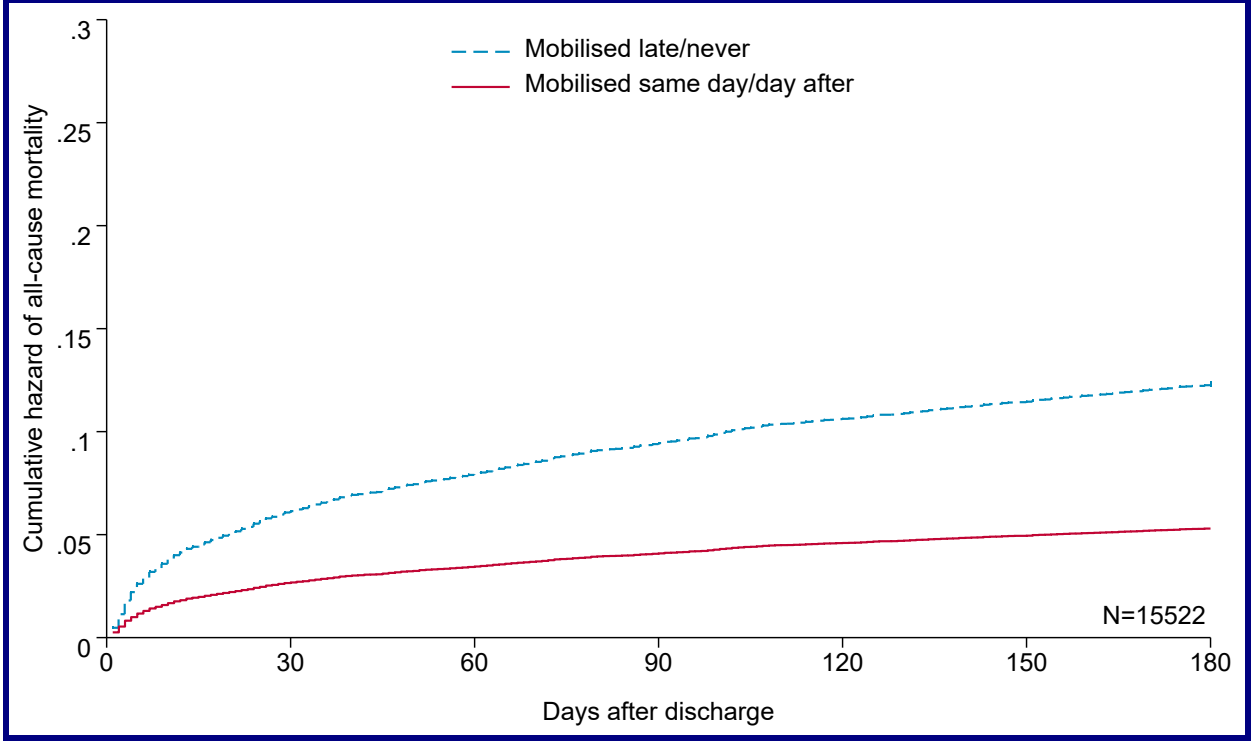
Mobilisation was more likely to occur earlier for patients who were able to walk independently on admission compared with patients who were unable to walk independently on admission (p<0.001; Figure 18).

FIGURE 18: TIMING OF INITIAL MOBILISATION, BY ABILITY TO WALK INDEPENDENTLY ON ADMISSION



The cumulative incidence of all-cause mortality up to 180 days post-admission was 13.7% lower among patients who were mobilised on the same day or day after admission compared with patients who were mobilised late or never (6.9% vs 20.6%). After adjusting for differences in patient case mix (Figure 19), early mobilisation same day or day after arrival was associated with a 57% lower hazard of death at 180 days after discharge (hazard ratio 0.43, 95% confidence interval [CI] 0.39-0.47, p<0.001).

FIGURE 19: CUMULATIVE HAZARD OF DEATH, BY TIMING OF MOBILISATION



Adjusted for age, sex, socioeconomic position, type of stroke, stroke unit care, previous history of stroke, and measure of stroke severity.

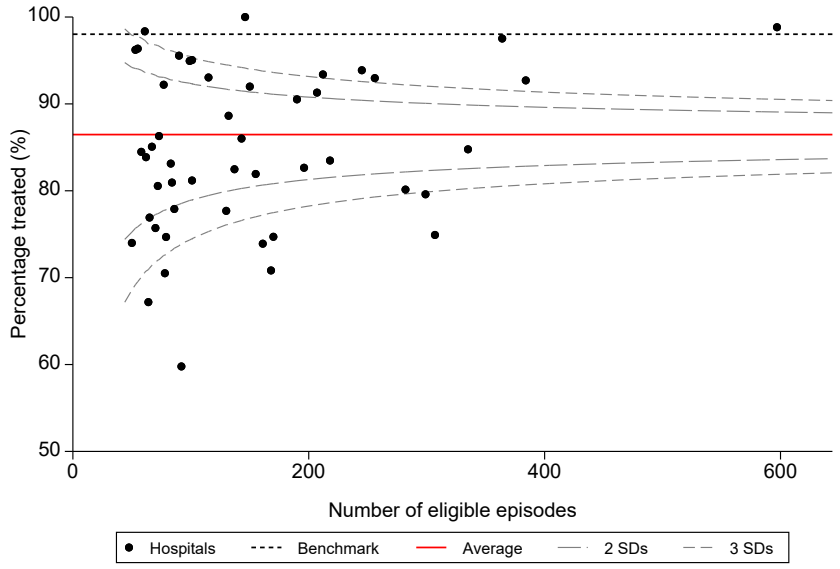
DISCHARGE MEDICATIONS

Among the episodes of stroke discharged to the community setting (i.e., home, residential aged care, transitional care or other), 86% were prescribed antihypertensive medication (Figure 20). Excluding episodes of ICH, antithrombotic medications were prescribed for 98% of all episodes discharged to the community (Figure 21), and lipid-lowering medications were prescribed for 94% (Figure 22).

Of those with ischaemic stroke, 82% were discharged on a combination of antihypertensive, antithrombotic and lipid-lowering medications. Men were more likely to receive this combination than women (83% vs 80%; $p<0.001$).

FIGURE 20: DISCHARGED ON ANTIHYPERTENSIVE MEDICATIONS, BY HOSPITAL

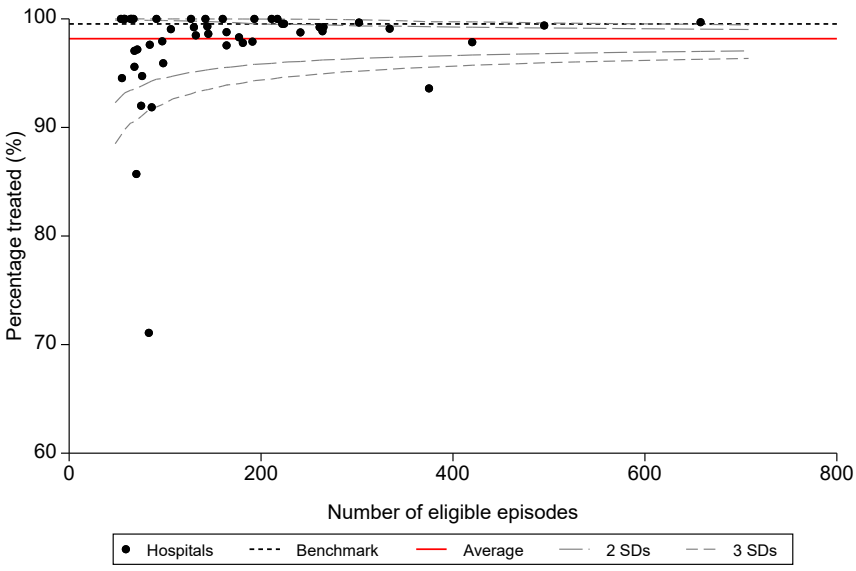
Achievable benchmark*†: 98% **Average adherence†: 86%**



Each dot represents the percentage adherence for an individual hospital.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*
† Excludes episodes with documented contraindications, in-hospital deaths and episodes recorded in the ED dataset.

FIGURE 21: DISCHARGED ON ANTITHROMBOTIC MEDICATIONS, BY HOSPITAL

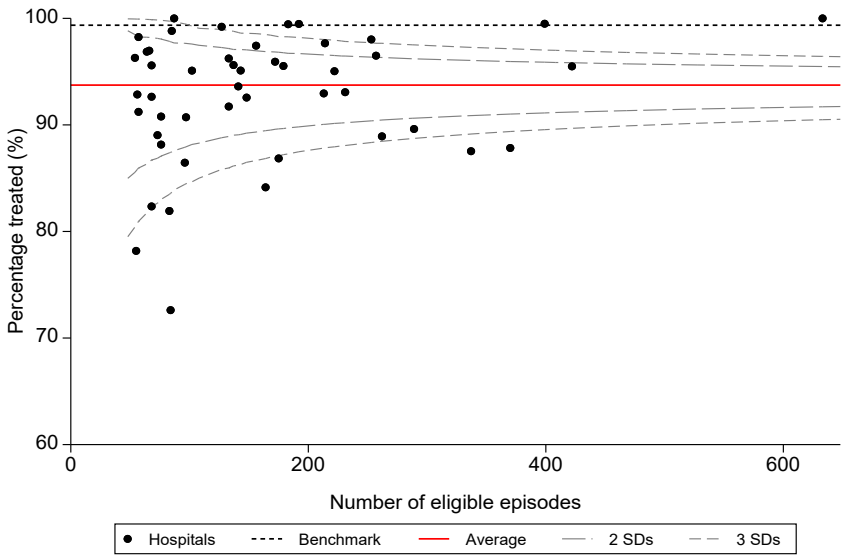
Achievable benchmark*†: 100% **Average adherence†: 98%**



Each dot represents the percentage adherence for an individual hospital.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*
† Excludes episodes of intracerebral haemorrhage, episodes with documented contraindications, in-hospital deaths and episodes recorded in the ED dataset.

FIGURE 22: DISCHARGED ON LIPID-LOWERING MEDICATIONS, BY HOSPITAL

Achievable benchmark*†: 99% **Average adherence†: 94%**



Each dot represents the percentage adherence for an individual hospital.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*
† Excludes episodes of intracerebral haemorrhage, episodes with documented contraindications, in-hospital deaths and episodes recorded in the ED dataset.

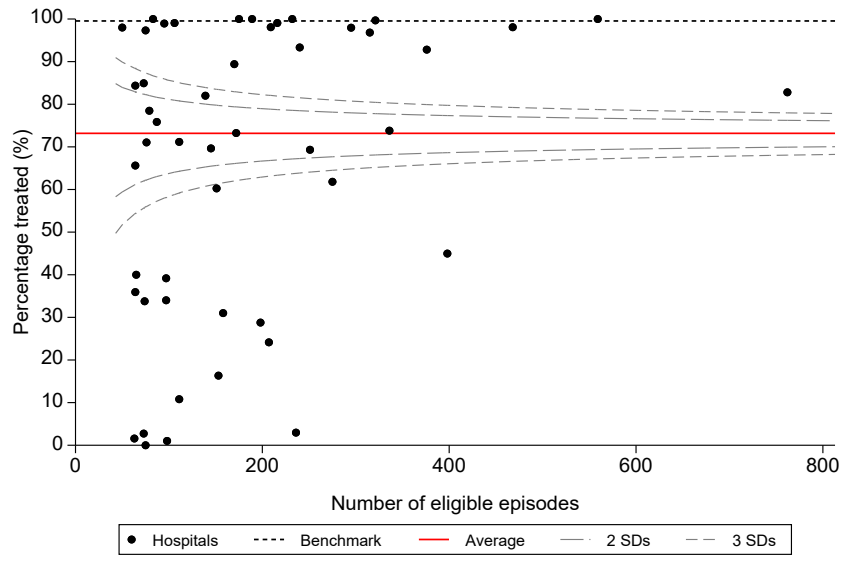
TRANSITION FROM HOSPITAL CARE

Of the 9,480 episodes resulting in discharge to the community, 73% of patients received a care plan outlining post-discharge care in the community, which was developed in consultation with the patient or their family (Figure 23). This is slightly lower than the proportion discharged with a care plan in 2023 (75%; p<0.001).

Patients discharged from a metropolitan hospital were more likely to receive a care plan than those discharged from a regional hospital (79% vs 50%; *p*<0.001; Figure 24), and there was wide variation by state (SA 100% compared to TAS 24%). There is significant variation between hospitals in performance on this indicator.

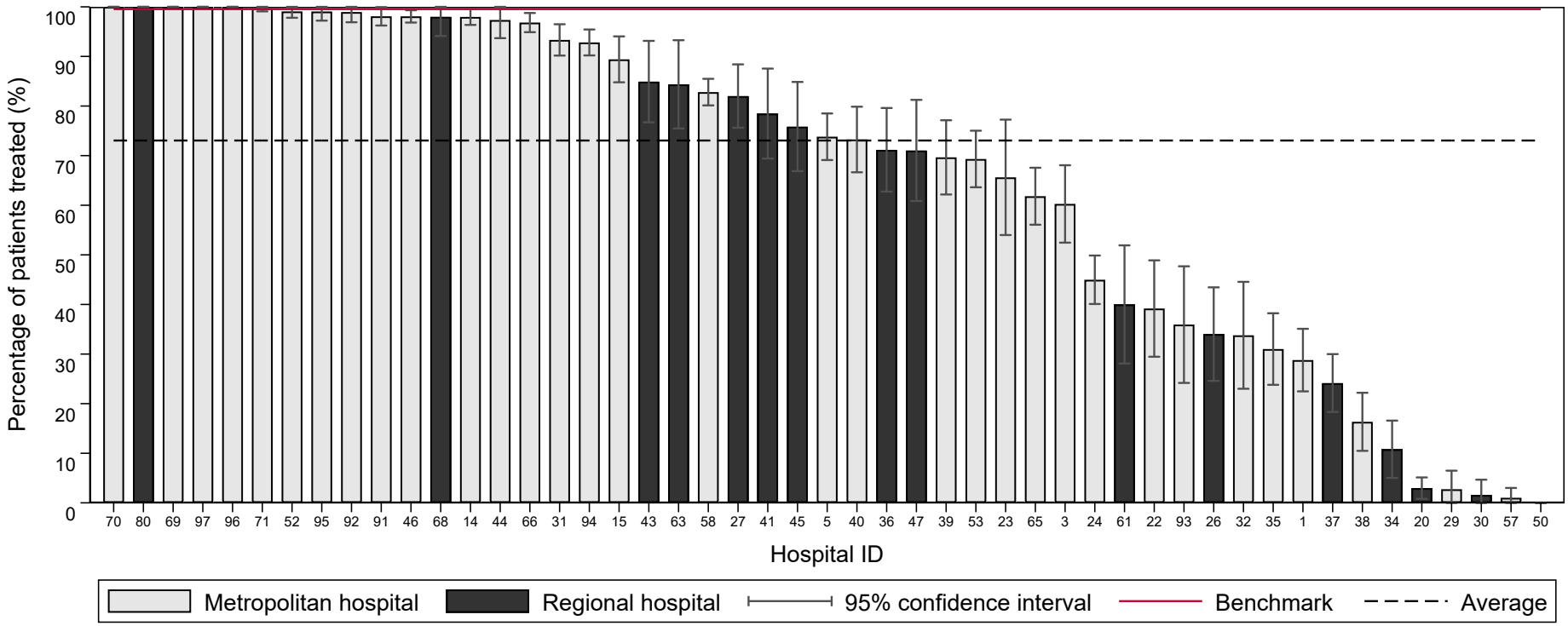
FIGURE 23: CARE PLAN PROVIDED ON DISCHARGE, BY HOSPITAL

Achievable benchmark*†: 100% **Average adherence†: 73%**



Each dot represents the percentage adherence for an individual hospital.
** Modified ABC™ benchmark using data from sites with ›50 episodes.*
† Calculated for episodes discharged directly to the community setting.

FIGURE 24: DISCHARGE CARE PLAN IN METROPOLITAN AND REGIONAL HOSPITALS



Includes patients discharged directly to the community setting.
Excludes hospitals with <50 episodes.

Hospital Case Study 2

Using AuSCR data to Improve Discharge Care Planning

The problem

Logan Hospital is a metropolitan hospital in Brisbane with approximately 250 acute stroke admissions per year. AuSCR data from 2022 indicated that only 18% of patients with stroke who were discharged to the community had received a discharge care plan. After reviewing the data, collaborative quality improvement activities were implemented to improve adherence to this indicator.

The solution

The Stroke Clinical Nurse Consultant (CNC) led the stroke team in improving this indicator in the following ways:

- A new Discharge Care Plan template was developed and tailored to suit site-specific needs.
- A StrokeLink* workshop was held at the hospital, to show key staff the AuSCR data and work as a team to develop an action plan to implement the new template.
- The team first trialled having allied health staff complete the Discharge Care Plan but found that this didn't work as expected.
- Following this, the team agreed that the Stroke CNC would complete the Discharge Care Plan in-hours, and the Resident Medical Officer (RMO) would be responsible out-of-hours or when the CNC was absent. The Stroke CNC and RMO would communicate about out-of-hours discharges.
- Adherence to the indicator was monitored via AuSCR data, and the Stroke CNC met with StrokeLink staff at 3-, 6-, 9-, and 12-months post-workshop to discuss and adjust plans as necessary.

The outcome

These activities have proven successful in increasing the hospital's performance on provision of a Discharge Care Plan. AuSCR data from the 2024 Stroke Performance Scorecard shows that 70% of patients who were discharged to the community received a Discharge Care Plan.

Logan Hospital Stroke Team

**StrokeLink is a collaborative program between the Queensland Stroke Clinical Network (Queensland Health), AuSCR and Stroke Foundation to improve quality of stroke care in Queensland hospitals.*

QUALITY OF CARE BY STROKE TYPE

Clinical care in hospital may vary by the type of stroke. In Table 8, we present information to describe the adherence to various clinical assessment and treatment quality indicators by stroke type. Some of the variance between ischaemic stroke and ICH could be related to stroke severity and requires further investigation (e.g., mobilisation). With the exception of swallow screen or assessments prior to oral intake and discharge care plans, patients with ICH were less likely to receive all other processes of care than patients with ischaemic stroke. In contrast, patients with ICH were more likely to be discharged on antihypertensive medications than patients with ischaemic stroke.

Table 8: Stroke clinical assessment and treatment, overall and by stroke type

	All episodes (%)	Ischaemic (%)	ICH (%)	*P* value
Stroke unit care	80	81	72	<0.001
Mobilised during episode	87	90	70	<0.001
Mobilised same day or day after arrival	67	71	43	<0.001
Swallow screen conducted	69	71	59	<0.001
Swallow assessment conducted	72	74	64	<0.001
Swallow screen or assessment conducted	87	89	79	<0.001
Swallow screen or assessment within 4 hours†	39	40	36	0.002
Swallow screen or assessment within 24 hours†	77	79	70	<0.001
Swallow screen or assessment prior to oral intake	67	67	68	0.17
Discharged to the community with:				
Antihypertensive medication‡	86	86	89	0.020
Care plan outlining post-discharge care	73	74	71	0.10

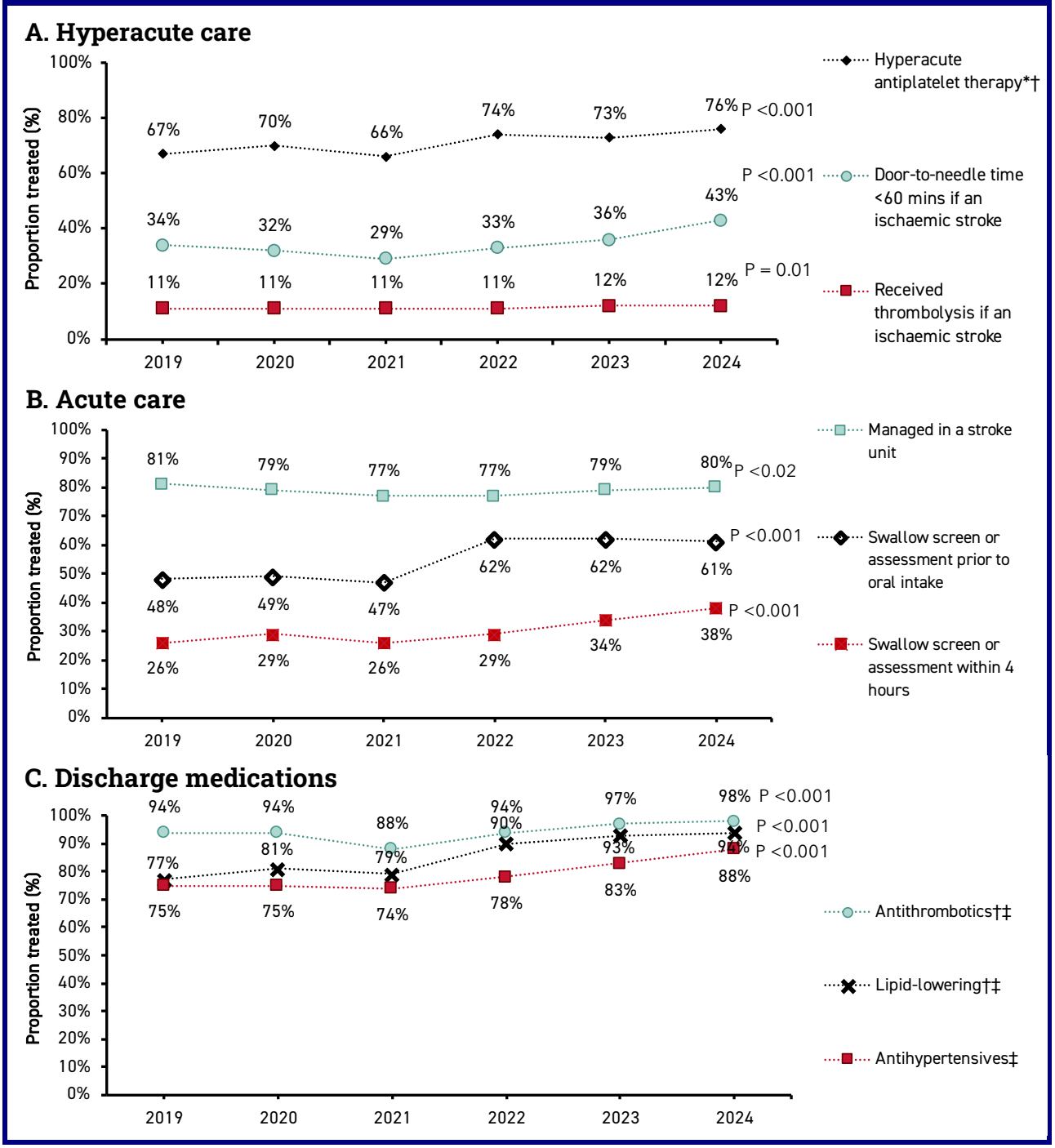
ICH: intracerebral haemorrhage.
Undetermined stroke types are excluded in this analysis (n=205).
† *Excludes episodes transferred from another hospital.*
‡ *Excludes episodes with documented contraindications.*

In early 2025 the AuSCR reached the milestone of having 200,000 episodes recorded in the registry. The AuSCR team celebrated with Monash University and Stroke Foundation colleagues.

CHANGES OVER TIME

To assess changes over time, we use data from the same hospitals to provide greater certainty in the findings. In total, 48 hospitals have participated continuously in the AuSCR since 2019, with at least 30 episodes of stroke entered each year. This provided an important opportunity to assess the influence of participation in the AuSCR for these hospitals over time (Figure 25). Notable improvements were observed in the proportion of patients being treated with thrombolytic therapy within 60 minutes of arrival, provision of discharge medications and timely swallow screens or assessments. The percentages in Figure 25 differ from those in the other sections of this report due to the variations in the number of hospitals and episodes analysed for these time periods.

FIGURE 25: CHANGES IN ADHERENCE TO SELECTED QUALITY INDICATORS FOR HOSPITALS WITH ONGOING PARTICIPATION SINCE 2019



Includes 45 hospitals that have contributed data for all six years.
** Excludes episodes arriving to hospital after 48 hours from onset and those with contraindications.*
† Excludes episodes of intracerebral haemorrhage.
‡ Includes episodes discharged to the community without contraindications.

YOUNG ADULTS WITH STROKE

In the context of adult stroke, people aged 18-55 years are considered young, having different needs based on their life roles and responsibilities, and being of working age.[19] Young adults with stroke were less likely to arrive by ambulance (67% vs 79% in people over 55 years, $p<0.001$), were more frequently treated with reperfusion therapy (23% vs 20% in people over 55 years, $p=0.01$) – see Table 9. Young adults with stroke were more often discharged to their usual residence (55% vs 47%, $p<0.001$) and less often discharged to rehabilitation (21% vs 25%, $p<0.001$). They were less likely to receive antihypertensive and lipid-lowering medication on discharge, or a combination of the three guideline-recommended preventative medicines for ischaemic stroke (65% vs 84%, $p<0.001$).

Table 9: Stroke care among for adults aged 18-55 years vs >55 years

	Aged 18-55 years	Aged >55 years	*P* value
	N=2,351	N=17,056	
	n (%)	n (%)	
Female	951 (40)	7,428 (44)	0.01
Transported by ambulance	1,524 (67)	12,882 (79)	<0.001
Clinical diagnosis *Ischaemic* *Intracerebral haemorrhage* *Undetermined*	 1,938 (83) 385 (16) 19 (1)	 14,248 (84) 2,571 (15) 182 (1)	0.14
Treated in stroke unit care	79	79	0.80
Severity of stroke (NIHSS) *No stroke symptoms* *Minor stroke* *Moderate stroke* *Moderate to severe stroke* *Severe stroke* *Missing*	 244 (10) 659 (28) 549 (23) 127 (5) 131 (6) 641 (27)	 1,176 (7) 5,085 (30) 4,507 (26) 1,074 (6) 1,045 (6) 4,169 (24)	<0.001
Received any reperfusion therapy	437 (23)	2,821 (20)	0.01
Swallow screen or assessment conducted	1,746 (84)	13,469 (88)	<0.001
Swallow screen or assessment within 4 hours†	484 (36)	670 (39)	0.02
Swallow screen or assessment prior to oral intake	1,294 (62)	10,317 (67)	<0.001
Length of hospital admission in days, median (Q1–Q3)	4 (2, 8)	4 (2, 8)	0.79
Discharged to usual residence	1,167 (55)	7,022 (47)	<0.001
Discharged to inpatient rehabilitation	440 (21)	3,683 (25)	<0.001
Discharge care plan	952 (76)	5,812 (72)	0.01
Discharged to the community with:			
Antihypertensive medication‡	577 (72)	6,004 (88)	<0.001
Antithrombotic medication‡§	1,123 (98)	6,990 (98)	0.39
Lipid-lowering medication‡§	932 (89)	6,552 (94)	<0.001
Combination of prevention medications‡§#	453 (65)	4,998 (84)	<0.001

ICH: intracerebral haemorrhage; UND: undetermined stroke type.
Note: No symptom (0); Minor stroke (1-4); Moderate Stroke (5-15); Moderate to Severe stroke (16-20); Severe stroke (21-42).
** Excludes episodes arriving to the hospital after 48 hours from onset.*
† Excludes episodes transferred from another hospital.
‡ Excludes episodes with documented contraindications.
§ Excludes episodes of intracerebral haemorrhage.
 # A combination of antihypertensive, antithrombotic and lipid-lowering medications.

DISCHARGE INFORMATION

LENGTH OF STAY

Of the 17,453 admissions where the patient was known to be alive at the time of hospital discharge, 17,309 had valid dates to calculate the length of stay. The median length of stay was four days (Q1 to Q3: 2 to 8 days) and 963 (6%) stayed 21 days or longer in acute hospital care.

Table 10: Median length of stay

	Median length of stay in days (Q1, Q3)
All episodes	4 (2, 8)
Ischaemic (n=14,904)	4 (2, 8)
Intracerebral haemorrhage (n=2193)	6 (3, 12)
Undetermined (n=166)	2 (1, 5)

IN-HOSPITAL DEATHS

Among the 17,916 adult patients with stroke, 1,560 patients (9%) died while in hospital. Patient mortality was similar between men and women after adjustment for age, stroke type and ability to walk on admission (p=0.17). Case fatality was greater for episodes of ICH (24%) than ischaemic (6%) or undetermined stroke type (9%; p<0.001).

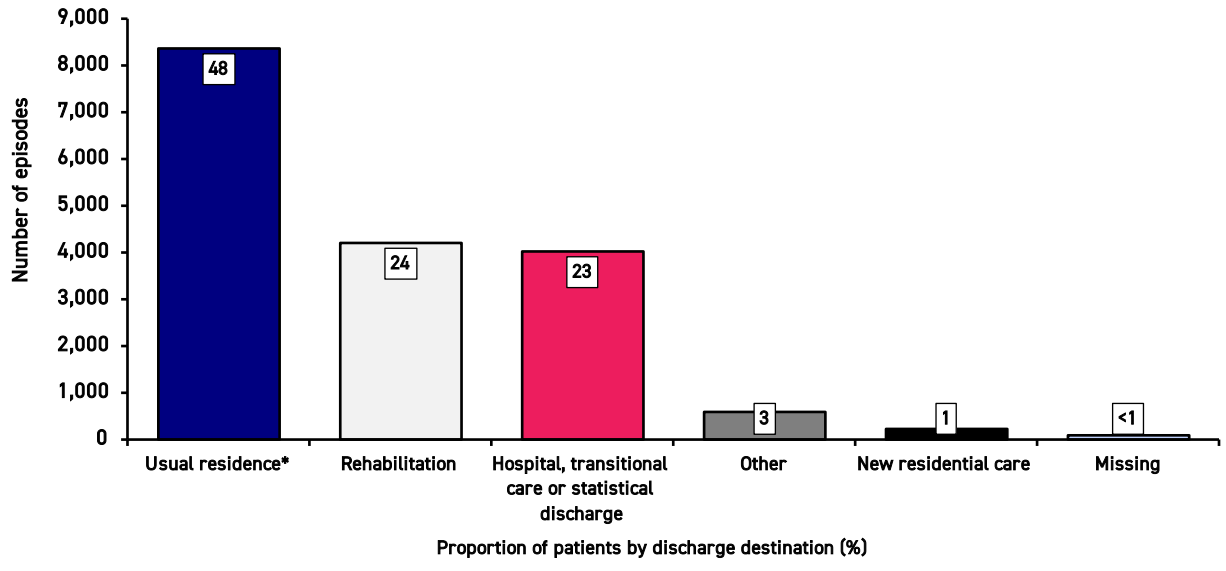
DISCHARGE DESTINATION

Excluding in-hospital deaths, 48% (n=8,362) of the admitted episodes of care resulted in patients being discharged to their usual residence (Figure 26). This proportion was similar between regional (n=1,767; 47%) and metropolitan hospitals (n=6,595; 48%, p=0.51). The majority of these patients (69%) have support from family members or care services on discharged, compared to those discharged without support (31%).

Patients managed in a stroke unit were two times more likely to be discharged to inpatient rehabilitation than those managed in an alternate ward (odds ratio 2.18, 95% CI 1.94–2.45, p<0.001) when adjusted for age, sex, type of stroke, ability to walk on admission, inpatient or community-onset stroke, and whether the patient was transferred from another hospital.

While the proportion of patients discharged to rehabilitation was similar between metropolitan and regional hospitals (n=3293 [24%] vs n=907 [24%]; p=0.65), patients treated in a stroke unit in a regional hospital were more likely to be discharged to rehabilitation than patients treated in a stroke unit in a metropolitan hospital (odds ratio 1.21, 95% CI 1.10-1.34, p<0.001).

FIGURE 26: DISCHARGE DESTINATION



N=15,878 episodes.
Excludes ED episodes and in-hospital deaths.
** Usual residence includes both those with or without support.*
The definition of support provided within a usual residence may include regular care and assistance by health professionals, council services or volunteers including spouse or family members who may or may not be living in the same residence.

POST-DISCHARGE HEALTH INFORMATION

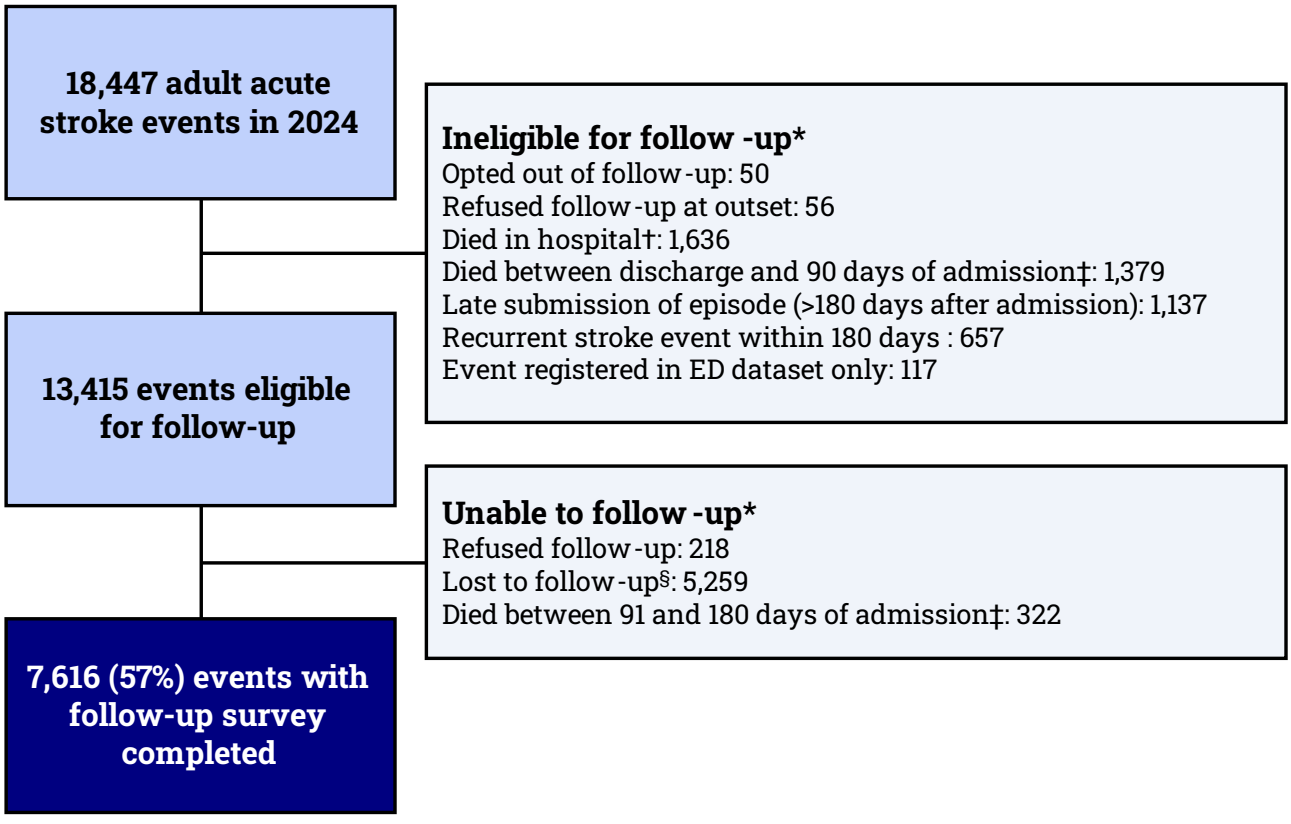
RESPONSE RATES

There were 13,415 unique stroke events eligible to complete a follow-up survey among 13,365 adult patients (i.e., there were 50 recurrent events eligible for follow-up in the same calendar year, more than 180 days apart). Of these, 7,616 (57%) registrants living with stroke, or their proxies (next of kin or nominated contact person), provided information about their health status (Figure 27).

There were small but statistically significant differences between respondents and non-respondents with respondents slightly older in age, admitted for a less severe stroke, and were more often managed in a stroke unit (Table 11). The median time to completion of follow-up for adult responders was 112 days following admission (Q1 to Q3: 104 to 146 days).

There were also 55 events occurring in patients under the age of 18 years, of which 38 were eligible for follow-up. Follow-up surveys were completed by 17 (45%) of the eligible patients, or their proxies

FIGURE 27: FOLLOW-UP OF PATIENT EVENTS IN 2024 (EXCLUDING PAEDIATRIC EPISODES)



** Reasons for ineligibility are not mutually exclusive (i.e., a patient may be ineligible for follow-up for more than one reason).*
† In-hospital deaths were reported by AuSCR hospitals and validated using linked data from the National Death Index.
‡ Post-discharge death information was determined using linked data from the National Death Index.
§ Contact unable to be made using our follow-up protocol (2 posted surveys and 1-2 SMS attempts)

Table 11: Characteristics of adult patients with and without post discharge information

	Completed N=7,599	Not completed N=5,766	*P* value
Age in years, mean (SD)	73 (13)	70 (15)	<0.001
Age in years, median (Q1–Q3)	75 (65, 82)	72 (60, 81)	
Female, n (%)	3,132 (42)	2,344 (41)	0.502
Clinical diagnosis, n (%) *Ischaemic* *Intracerebral haemorrhage* *Undetermined*	6,706 (88) 819 (11) 57 (1)	4,965 (86) 726 (13) 54 (1)	0.002
Able to walk on admission, n (%)	2,966 (42)	1,989 (37)	<0.001
Length of hospital admission in days, median (Q1–Q3)	4 (2, 7)	5 (3, 9)	<0.001
Treated in a stroke unit, n (%)	6,423 (84)	4,785 (83)	0.008

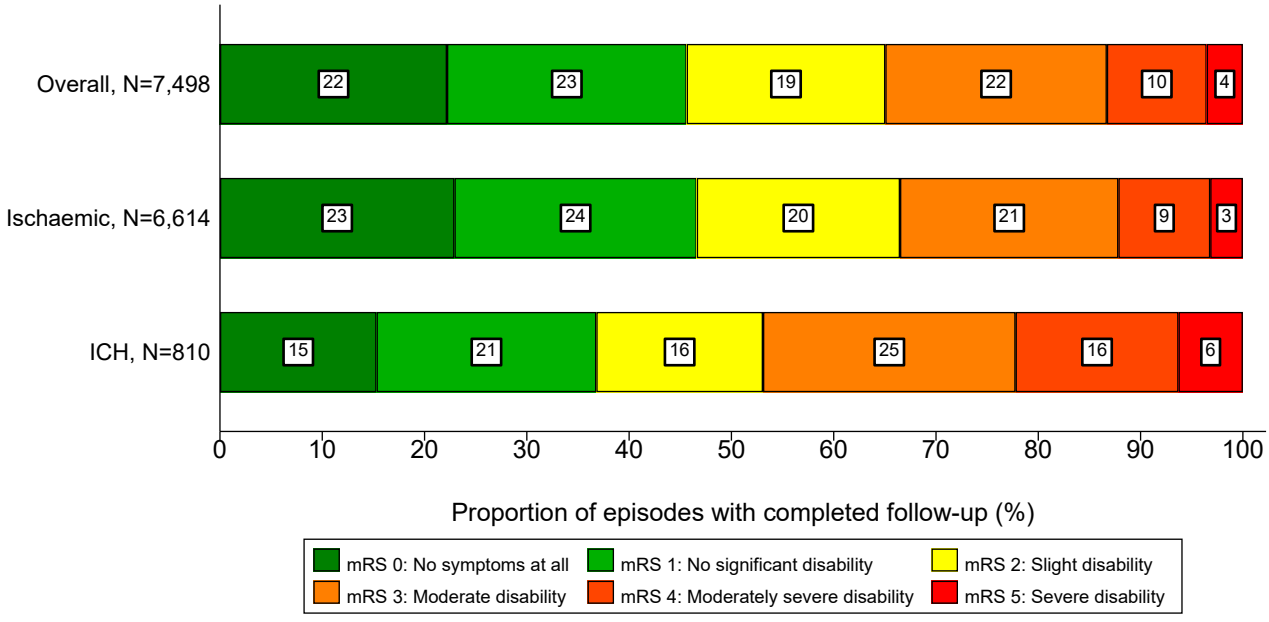
SD: standard deviation; Q1: 25th percentile; Q3: 75th percentile.

DISABILITY – MODIFIED RANKIN SCALE

The modified Rankin Scale (mRS) is used widely in stroke studies to describe person-centred global disability outcomes in terms of the degree of disability, or dependence, in daily activities. Of those providing responses to the mRS at follow-up, 22% were free from disability (mRS=0) and 23% had no significant disability despite symptoms (mRS=1; Figure 28).

Patients who were residing at home at the time of follow-up had lower levels of disability compared to those not residing at home (median mRS 1 vs 4; p<0.001).

FIGURE 28: UNADJUSTED MODIFIED RANKIN SCALE SCORE BY CLINICAL DIAGNOSIS AT FOLLOW-UP



mRS: modified Rankin Scale; ICH: intracerebral haemorrhage.

READMISSIONS AND LIVING ARRANGEMENTS

At follow-up, approximately one in five adult patients reported hospital readmission (Table 12), with cardiovascular disease the most common reason. Most patients who provided follow-up information were living at home (85%), 24% of whom were living alone. There were 615 (8%) patients who reported living in low- or high-level care.

Table 12: Recurrent strokes, readmissions and living arrangements

	N=7,517 n (%)
Had a recurrent stroke	357 (5)
Readmitted to hospital	1,490 (20)
Time to readmission (days), median (Q1–Q3)	73 (33, 105)
Reason for readmission	N=1,477
Stroke or transient ischaemic attack	229 (16)
Cardiovascular disease	237 (16)
Injury	136 (9)
Elective surgery	126 (9)
Infection	104 (7)
Gastrointestinal disease	61 (4)
Other neurological condition	123 (8)
Respiratory disease	43 (3)
Other	418 (28)
Location at time of follow-up interview	N=7,391
Home	6,253 (85)
Living alone *Living with others*	1,457 (24) 4,742 (77)
With care support *Without care support*	2,917 (47) 3,336 (53)
Institutional care or other setting	1,138 (15)
In hospital *Transitional care services* *Low level care (hostel care)* *High level care (nursing home)* *Inpatient rehabilitation* *Other*	85 (7) 122 (11) 22 (2) 593 (52) 83 (7) 233 (20)

Q1: 25th percentile; Q3: 75th percentile.

HEALTH-RELATED QUALITY OF LIFE

For health-related quality of life, 48% of respondents reported problems with mobility, 29% with self-care, 59% for usual activities, 49% for pain or discomfort, and 48% for anxiety or depression. Three out of four (75%) respondents reported problems with ⩾1 dimension of the EQ-5D-3L. When adjusted for age, women were significantly more likely to report problems on all five domains than men (p<0.001; Figure 29).

Patients with ICH reported problems in all dimensions of the EQ-5D-3L more commonly than those with ischaemic stroke (Table 13). The mean Visual Analogue Scale (VAS) score, which represents patients' self-reported overall health, was 68 (median: 73; min–max: 0–100). Compared to the mean VAS of the normative population (83 in the UK)[14] the VAS scores of AuSCR registrants were >8 points worse, representing a clinically meaningful difference.[20] The overall minimum and maximum mean VAS scores differed between the AuSCR hospitals by eight points after adjustment for patient demographics and stroke clinical characteristics (Figure 30)

FIGURE 29: ADJUSTED PROPORTION OF PATIENTS REPORTING PROBLEMS WITH EQ-5D-3L,

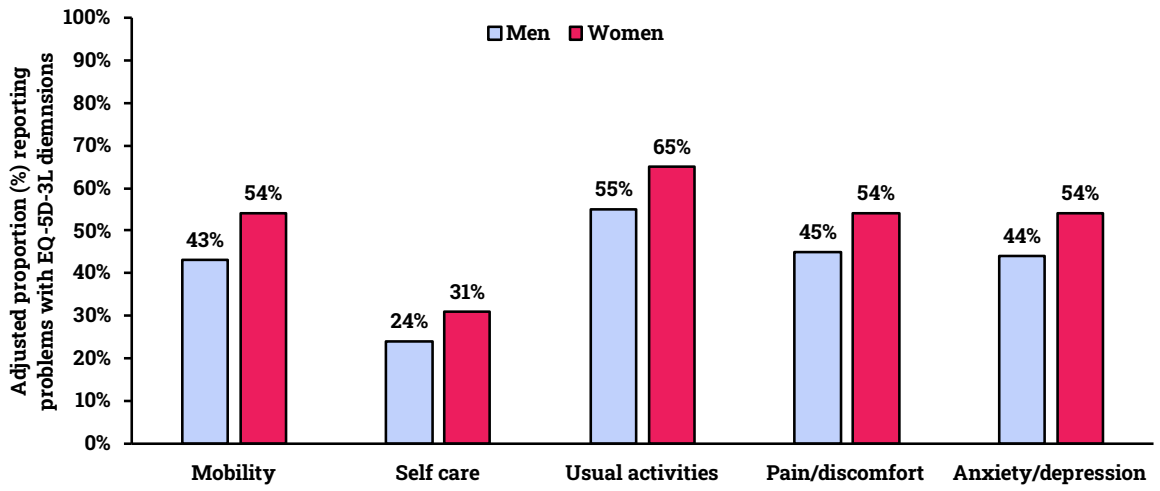
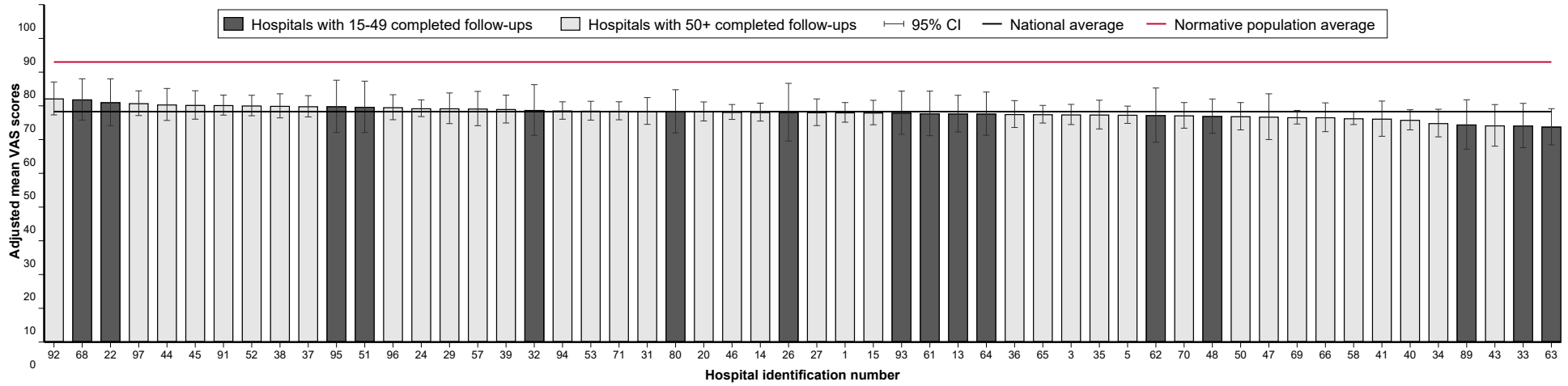


Table 13: Unadjusted health-related quality of life, by diagnosis

Reported problems with EQ-5D-3L dimension:	Ischaemic N=6,720	ICH N=821
Mobility	3,147 (47)	435 (54)
Self-care	1,853 (28)	314 (39)
Usual activities	3,863 (58)	535 (66)
Pain/Discomfort	3,174 (48)	428 (53)
Anxiety/Depression	3,147 (48)	440 (55)
VAS mean (SD)	69 (22)	65 (24)
VAS median (Q1–Q3)	75 (50, 85)	70 (50, 84)

ICH: intracerebral haemorrhage; VAS: visual analogue scale; SD: standard deviation.
Missing responses (<2%) were excluded from denominators.

FIGURE 30: HEALTH-RELATED QUALITY OF LIFE SCORES ACCORDING TO THE ADJUSTED VAS AT FOLLOW-UP, BY HOSPITAL



Excludes hospitals with <15 episodes with completed follow-up data. Normative population average of 83 is for the United Kingdom, as Australia-specific estimates are unavailable.[14]

PARTICIPATION IN RESEARCH

Among the 7,217 adult patients with stroke who answered the question about whether they would be willing to be contacted to participate in future research, 4,518 (63%) replied affirmatively, similar to previous years. Compared to those who did not reply in the affirmative, these patients were younger (median age 74 vs 76 years, $p<0.001$) and more often male (61% vs 39%, $p<0.001$).

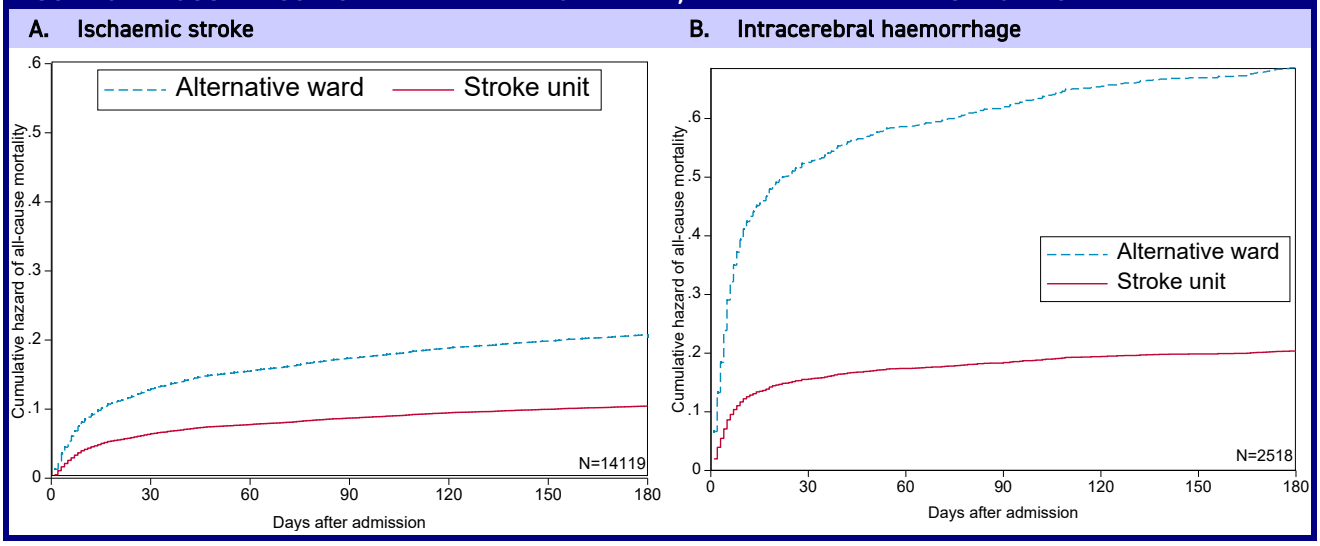
UNMET INFORMATION NEEDS

Stroke can be a devastating and life-changing event for people, and there is a possibility that stroke survivors and their care providers have unmet care and information needs. Similar to 2023, 52% (n=3,722) of the 7,165 adult patients who answered this question in 2024 indicated that they would like to receive more information about stroke from Stroke Foundation.

SURVIVAL

Most people survived their stroke. Nine percent died while in hospital, 8% died between leaving the hospital and 90 days post-admission, and 2% died between 91 and 180 days of admission. Among patients with ischaemic stroke, treatment in a stroke unit was associated with a 49% lower risk adjusted hazard of death at 180 days after admission than treatment on an alternate ward (hazard ratio 0.51, 95% CI 0.46–0.56, $p<0.001$; see Figure 31). The observed effect of stroke unit care on survival was greater for patients with ICH (hazard ratio 0.30, 95% CI 0.26–0.34, $p<0.001$). These analyses were adjusted for age, sex, ability to walk on admission, in-hospital stroke and transfer from another hospital.

FIGURE 31: ADJUSTED CUMULATIVE HAZARD OF DEATH, BY TREATMENT IN A STROKE UNIT

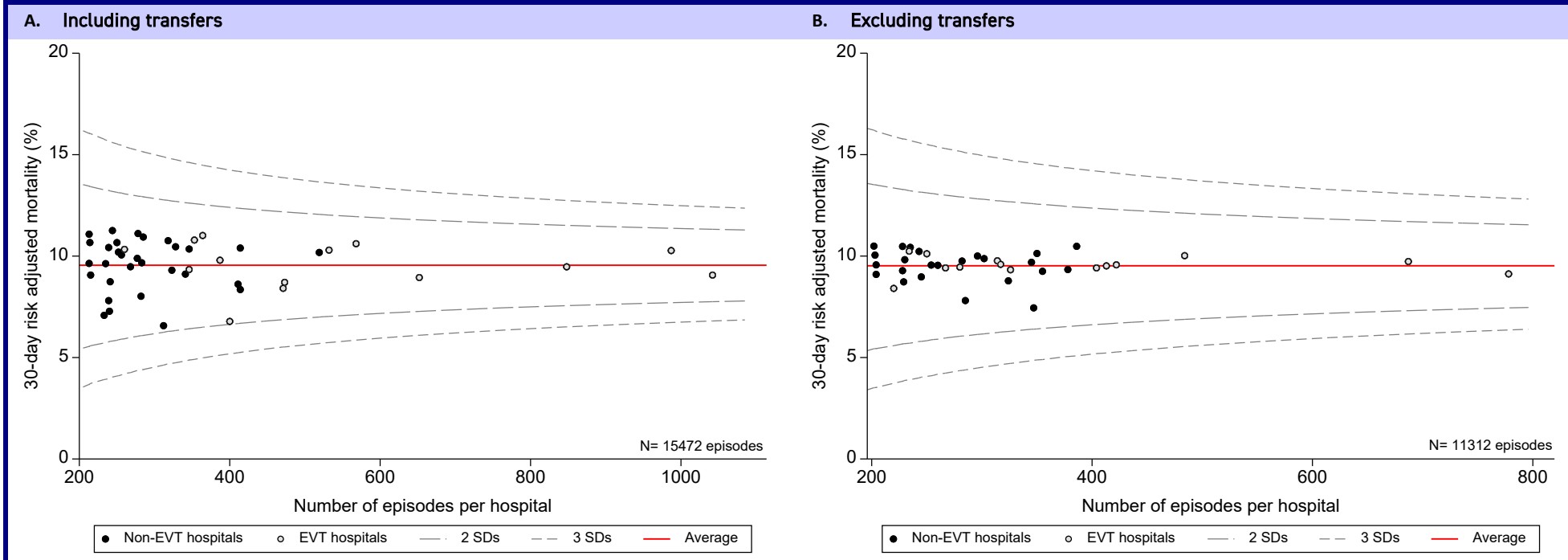


Adjusted for age, sex, ability to walk on admission, in-hospital stroke and transfer from another hospital.

RISK-ADJUSTED MORTALITY

Risk-adjusted mortality rate (RAMR) comparisons at 30 days following admission for ischaemic stroke and ICH have been plotted for tertiary referral hospitals that offer EVT services (grey open circles) and for other hospitals that do not offer EVT services (black closed circles; Figure 32, Figure 33). Further information on the RAMR method is outlined on page 9.

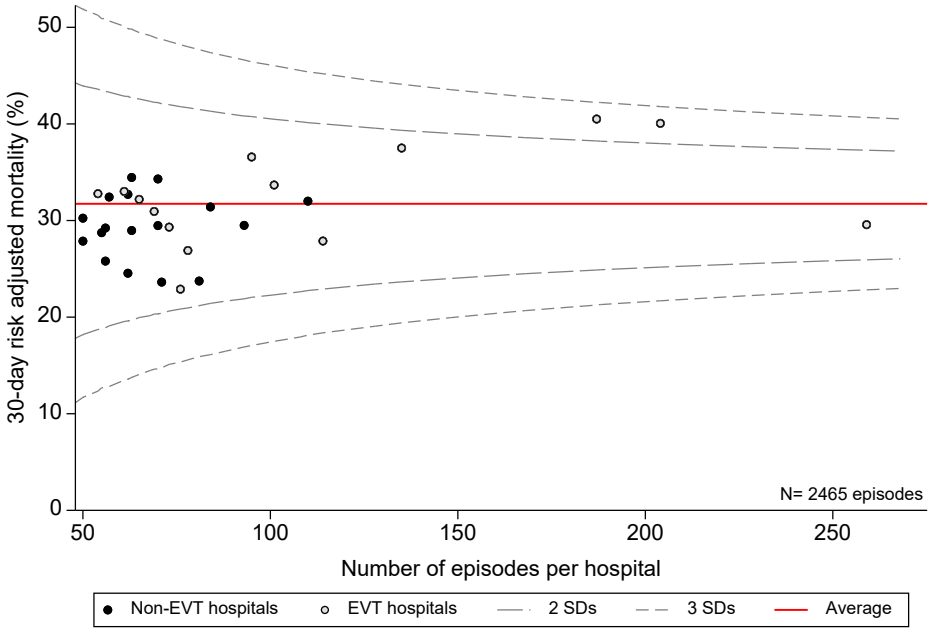
FIGURE 32: 30-DAY RISK ADJUSTED MORTALITY FOR ISCHAEMIC STROKE



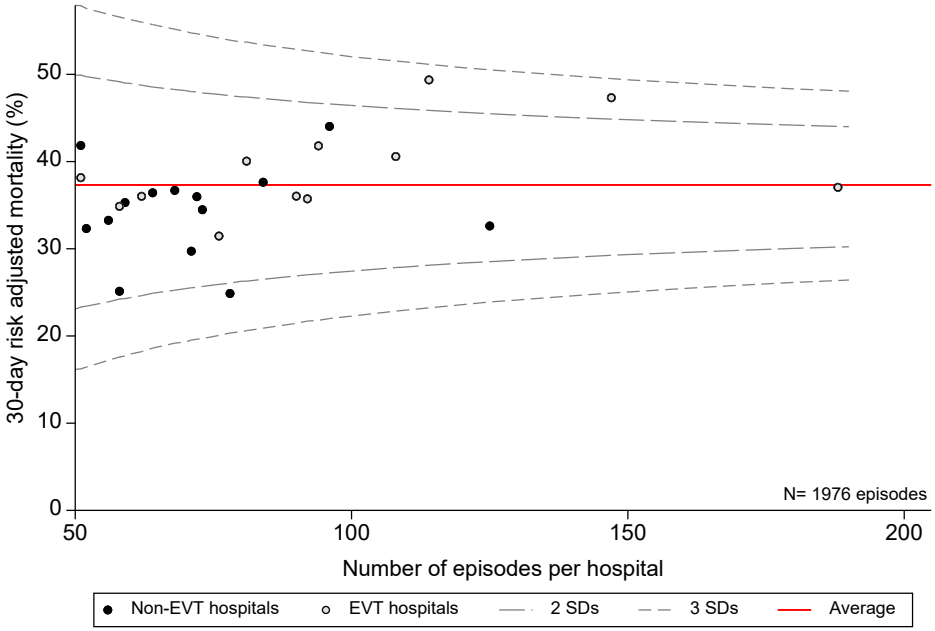
Each dot represents the risk-adjusted percentage of patients who were deceased within 30 days of admission at each hospital.
Excludes in-hospital strokes and hospitals with <200 episodes of ischaemic stroke.
EVT (endovascular therapy) hospitals are usually larger, well-resourced hospitals.

FIGURE 33: 30-DAY RISK ADJUSTED MORTALITY FOR INTRACEREBRAL HAEMORRHAGE

A. Including transfers



B. Excluding transfers

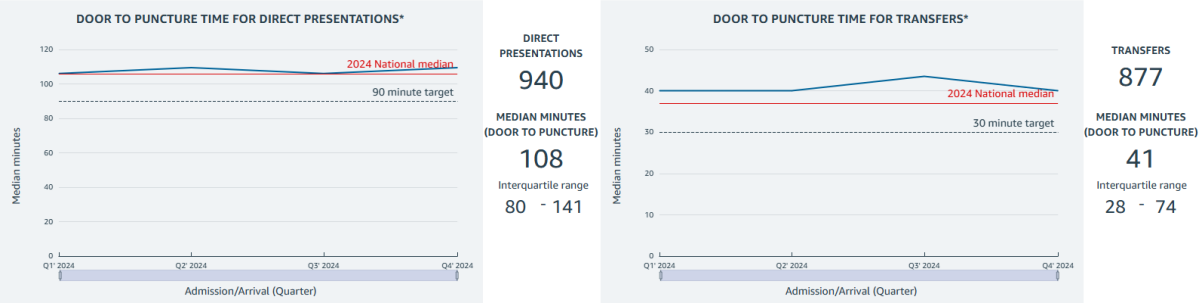


Each dot represents the risk-adjusted percentage of patients who were deceased within 30 days of admission at each hospital.
Excludes in-hospital strokes and hospitals with <50 episodes for intracerebral haemorrhage.
EVT (endovascular therapy) hospitals are usually larger, well-resourced hospitals.

INTERACTIVE DATA DASHBOARDS

In 2024, four new interactive dashboards were launched in Amazon Web Services (AWS) Quick Suite (formerly QuickSight), updated daily at midnight for near real-time hospital performance tracking.

March: Endovascular therapy (EVT) dashboard for thrombectomy hospitals, showing door-to-puncture times, EVT rates, NIHSS scores, and data quality checks.



August: Clinical Care Standard dashboard for ACSQHC indicator adherence and benchmarks; Hospital stroke targets dashboard for 30/60/90 National Stroke Targets over three years.

30 60 90 National Stroke Targets

Quality indicator	National Stroke Target	2024 National Performance (Provisional)	Your Hospital Performance 2023 Median (IQR)	2023 N	2024 Median (IQR)	2024 N	2025 Median (IQR)	2025 N
Thrombolysis door-to-needle time*^	<60 mins	67 mins	64 mins (46 - 84)	304	47 mins (30 - 71)	370	40 mins (27 - 58)	243
Endovascular therapy door-in-door out time* *(optional ED dataset)*	<60 mins (Metropolitan)	96 mins	138 mins (106 - 142)	18	122 mins (110 - 141)	12	123 mins (94 - 149)	7
	<75 mins (Regional)**	128 mins						

December: Patient-reported outcomes dashboard with completion statistics, readmission reasons, recurrent stroke, EQ-5D-3L, and modified Rankin Scale, with filters for stroke type, demographics, and treatments

All dashboards were co-designed with clinicians and refined based on feedback. Updates added filters, visuals, interquartile ranges, and data quality tables.

Additional dashboards were released in 2025, including:

- **A National Stroke Targets dashboard,** where hospitals can view live national performance on the Targets metrics, and compare by state, stroke service type, whether stroke unit certified and metro/regional.
- **Safer Care Victoria bespoke dashboards** have been developed for 17 hospitals participating in their *Enhancing Stroke Care Collaborative*. These enable hospital-level data sharing to facilitate the exchange of insights and strategies for improving stroke care.

Dashboards currently available:

- Patient episode totals/characteristics
- Hyperacute interventions
- Endovascular therapy
- Quality indicators for acute stroke care
- Clinical Care Standard for acute stroke
- National Stroke Targets x 2
- World Stroke Organization Angels Awards
- Episode data table
- Discharge Information
- Patient-reported outcomes
- Safer Care Victoria project dashboards

DISCUSSION

In this Annual Report, we present information from patients with stroke in 2024 based on 19,819 episodes of stroke collected at 69 hospitals across seven states and territories. Self-reported outcomes data were received from over 7,600 survivors of stroke between 90-180 days from their admission. We also provided some preliminary summary data from 2025. We have been gratified to see positive shifts since 2023 from the hard work and focus of the sector, now galvanised by setting National Acute Stroke Targets. The AuSCR has been fundamental to providing the standardised data to monitor progress. Further information can be found on the Australian Stroke Coalition website.

To ensure representative data from patients we require the information to be reliable and as complete as possible. The registry continues to be well accepted by people who have experienced stroke, with only 1.7% (n=331) choosing to opt-out of having their information stored in the registry. The AuSCR continues working with hospitals to ensure accurate, complete data, with a full Data Quality Report published separately. Our State Coordinators continue to support hospitals in interpreting their data including special formats that include Scorecards (Appendix I: Stroke performance scorecards) and Hospital Performance Reports. In collaboration with state clinical networks, 2024 reports were shared with hospital CEOs to promote executive engagement and initiatives that improve stroke care.

QUALITY IMPROVEMENT AND ENGAGEMENT ACTIVITIES

Throughout 2024, AuSCR undertook a range of quality improvement initiatives with individual hospitals and across the network through educational webinars and targeted support. Summarised data were provided to state governments upon request, and three meetings were held with state stroke clinical leads to discuss updates to the Acute Stroke Clinical Care Standard Indicators and reporting against the 30/60/90 National Stroke Targets.

AuSCR co-convened and presented at the National Stroke Quality Improvement Workshop and hosted an AuSCR Contributor Workshop alongside the National Stroke Conference. Two AuSCR-led webinars and a joint webinar with Stroke Foundation focused on strategies to improve stroke care. Pre-conference workshops were also delivered at the Asia Pacific Stroke Conference (2024) and the ANZSO Conference (2025), providing forums for clinicians, researchers, and people with lived experience to share insights and success stories.

By the end of 2024, hospital users and government representatives had access to nine interactive dashboards which are updated daily, including reporting against the Acute Stroke Clinical Care Standard, National Stroke Targets, and patient-reported outcomes. These dashboards allow hospitals to interrogate their data, track trends over time, and identify data quality issues. In 2025, five additional dashboards were released, including an episode-level data table and bespoke dashboards for 17 hospitals participating in Safer Care Victoria's *Enhancing Stroke Care Collaborative*—the first instance of hospital-level data sharing via dashboards to support collaborative improvement. Feedback has been overwhelmingly positive, with enhancements made based on user input.

> "The dashboards are excellent. Well done – it's much easier to find information"
>
> *— Survey respondent, March 2024*

Participating hospitals were assessed for two major award programs: the Australian Stroke Coalition Quality of Stroke Care and National Stroke Targets awards (annual), and the World Stroke Organization (WSO) Angels Awards (quarterly). In 2024, 15 hospitals received 30 WSO awards, including Royal Adelaide Hospital, which achieved awards each quarter, and two hospitals—Royal Adelaide Hospital and Austin Health—attained Diamond Status. Hospitals can monitor their performance against award criteria in real time via dashboards and tailored reports. These awards celebrate excellence and inspire ongoing quality improvement.

In 2025, AuSCR strengthened engagement by exhibiting at the ANZSO and Smart Strokes conferences with Commonwealth support, connecting with existing stroke teams and recruiting new hospitals. Additionally, Monash University secured an Australian Stroke and Heart Research Accelerator (ASHRA) grant to support Alice Springs Hospital in establishing AuSCR databases, with data collection expected to commence in 2026.

In 2024 we welcomed participation from two paediatric hospitals, Women's and Children's Hospital (SA) and Perth Children's Hospital (WA) and two hospitals in Victoria recommenced their participation in 2024 (Northeast Health Wangaratta and Maroondah Hospital).

In 2025, six additional hospitals joined the registry, including Royal Darwin Hospital—the first site in the Northern Territory—and Kingaroy Hospital, which is the first to contribute solely to the Emergency Department Dataset. This expansion reflects both their clinical practice and the increased flexibility of AuSCR.

Twenty-six hospitals contributed to the optional Fever Sugar Swallow dataset in 2024, two more than in 2023. These hospitals recorded 5,318 episodes care, 2,000 more than those recorded in 2023. This increase may have been driven by the Quality in Acute Stroke Care (QASC) trial that also measures these variables.[21] The QASC trial used the AuSDaT platform, enabling data sharing between AuSCR and QASC programs.

DRIVERS FOR CHANGE

National Stroke Targets

The AuSCR was part of a national taskforce that developed and endorsed the 30/60/90 National Stroke Targets in August 2023.[2] In 2024 we released co-designed interactive data dashboards, with data updated daily, so hospitals could track their performance towards these Targets. In 2025, we introduced a national dashboard providing live data for hospital staff and government representatives, with filters for region, state, and stroke service type. This report summarises current national performance against these Targets.

There have been positive trends towards meeting the Targets. After little change over the past five years, door-to-needle time improved from 73 minutes in 2023 to 67 minutes in 2024. Based on published evidence, reducing door-to-needle time by six minutes provides an estimated 10.8 additional healthy days per patient. For the 2024 cohort, this equates to approximately 47 extra years of healthy life.[22] Furthermore, with this improvement an estimated 25 patients annually have avoided significant disability.[23] This trend looks to continue in 2025 with a provisional door-to-needle time of 62 minutes for 2025 data (as of 29 November 2025). Significant improvements following the implementation of national targets is consisted with the experience in the United States Get with the Guidelines-Stroke Program.[24]

There remains further room for improvement with stark variation between hospitals, states and stroke service types. Additionally, no regional hospitals are currently meeting the 75-minute Target for door-in-door-out times – a metric that is challenging and relies on availability of ambulance services. With 13 additional health services contributing to the Emergency Department dataset in 2024, we expect improved tracking of this Target in future. As well as overall performance, we report here for the first time a breakdown by stroke service type, regionality, and stroke unit certification. Metropolitan hospitals, comprehensive centres and those with stroke unit certification all showed lower door-to-needle-times than their comparators (see Table 5). We welcome the opportunity for hospitals to receive 'Uplift funding' provided by the Australian Stroke Alliance through the Australian Stroke Coalition.[2] Hospitals could apply for this funding in 2025 and will support a number of hospitals in 2026 to improve care towards meeting the Targets including for data capture, stroke coordinator and/or project coordinator.

In 2025, the AuSCR continued to work with Stroke Foundation on their StrokeLink Program in Queensland and Tasmania, and the new Safer Care Victoria *Enhancing Stroke Care Collaborative* to support these projects and hospitals in monitoring and improving their stroke care.

Stroke Unit Certification

International evidence shows that formal national certification of stroke units leads to superior care compared to self-attested status.[25]

Following a successful pilot program,[18] the Australian Stroke Coalition Stroke Unit Certification program continued in 2024 and was an important driver for hospitals to monitor and improve their stroke care. Hospitals seeking certification must actively monitor their stroke care (predominantly captured in the AuSCR) and cannot achieve certification if their stroke unit care or door-to-needle times fall outside national control limits reported by AuSCR. Certified hospitals can be found here: ASC Stroke Unit Certification Project – Australian Stroke Coalition. For the first time, this report includes a breakdown of hospitals by certification status. Certified hospital demonstrated better performance with a higher proportion of patients receiving stroke unit care (86% compared to 74% in those not certified) and had significantly faster door-to-needle times (median 56 vs 85 minutes).

HOSPITAL CARE

Reperfusion therapies

Among patients with ischaemic stroke, 21% received reperfusion therapy. Of those with the NIHSS score recorded (n=5,825) nearly half of patients with moderate to severe stroke (NIHSS score 5 to 45) received reperfusion treatment (47%).

In 2024, 13% of patients with ischaemic stroke presenting directly from the community received intravenous thrombolytic therapy. Rates varied by state, with South Australia the highest at 16%, but rates were similar between metropolitan and regional hospitals. Among patients arriving to hospital within 4.5 hours of onset, one in four received thrombolytic therapy. Median door-to-needle times were significantly slower in regional hospitals compared to metropolitan hospitals (89 vs 60 minutes). There are positive examples of improvement in regional hospitals, including Latrobe Regional Health (see Hospital Case Study 1) and the use of digital communication apps for early stroke notification by paramedic or ED teams.[26] Initiatives such as Safer Care Victoria's *Enhancing Stroke Care Collaborative* help stroke teams and paramedics to share strategies and successes to drive broader improvement.[27]

There is room for improvement in Comprehensive Centres also with only three hospitals meeting the EVT national target for a door-to-treatment time under 90 minutes for primary presenters and two meeting the door-to-treatment time under 30 minutes for transferred patients. However, over 3 in 4 EVT procedures were considered successful with blood flow to the brain restored. The proportion of patients with none to minor stroke symptoms improved from 8% pre-procedure to 41% post-procedure.

The proportion of patients with ischaemic stroke receiving thrombolytic therapy at regional hospitals was significantly higher in those who received a telemedicine consultation compared to those without a telemedicine consultation (18% vs 5%, p<0.001). We welcome the launch of the Queensland Telestroke service in 2024, the last state to implement this service.[28] Through AuSCR, we will be able to monitor and report on the quality of care delivered at these hospitals.

Stroke unit care

The benefits of stroke unit care are well-documented with patients treated in a stroke unit more likely to be alive and living at home one year after stroke than those treated in other wards, regardless of patient characteristics or stroke type.[29] This aligns with findings in this report with stroke unit care associated with a lower risk adjusted hazard of death at 180 days after admission for both ischaemic stroke (hazard ratio 0.51) and ICH (hazard ratio 0.30). One in five patients were not treated in a stroke unit in 2024, similar to 2023 (79% vs 78%), and well below the National Stroke Target of 90%. Access to stroke units can be impacted by system factors such as number of beds on the unit, and access to stroke units in regional areas. The ASC Stroke Unit Certification may help address these challenges and improve access.[18]

Patients who experienced a stroke while in hospital for another condition were less likely to receive care in a stroke unit (51% compared to 81% from the community). After adjusting for age, sex, type of stroke, ability to walk on admission, inpatient or community-onset stroke, and whether the patient was transferred from another hospital, patients managed in a stroke unit were two times more likely to be discharged to inpatient rehabilitation than those managed in an alternate ward (odds ratio 2.18, 95% CI 1.94–2.45, p<0.001).

Secondary prevention medication

Three medications are usually recommended following a stroke; antihypertensive medications, lipid-lowering medications and antithrombotic medications. Antithrombotic medications were prescribed for 98%, and lipid-lowering medications for 94% of patients with ischaemic stroke discharged to the community. Variation in secondary prevention was highest for the prescription of antihypertensive medications on discharge. Of those being discharged to the community, 86% were prescribed these medications, an improvement from 82% in 2023. One in five patients with ischaemic stroke did not receive all three recommended medications, and consistent with previous years, men were more likely to receive all three medications (83% vs 80% for females). Provision of each medication has improved significantly over time – of hospitals that have contributed continuously since 2019, antithrombotic medication provision has improved from 94% to 98%, lipid-lowering medication from 77% to 94% and antihypertensive medication from 75% to 88%.

Young Adults with Stroke

We identified several areas where people aged 18 to 55 years were treated differently to older people with stroke when admitted to hospital. They were also less likely to come to hospital by ambulance and this may indicate the needed for targeted campaigns for this age group. Concerningly, secondary prevention medications were less often prescribed and the reasons for this should be investigated further. Young people with stroke appeared to have milder symptoms on admission and this could explain the 3 % difference in accessing inpatient rehabilitation services. Alternative rehabilitation options (centre-based community rehabilitation) may have been offered.

Mobilisation

In this report we provide detailed information on people with stroke who are mobilised in hospital, whereby 2 in 3 are mobilised on the same day, or the day after, arrival to hospital. Mobilisation included sitting on the edge of the bed, sitting in a chair, standing or walking. There are many advantages to getting people out of bed after stroke including avoiding complications such as deep vein thrombosis, pneumonia and deconditioning.[30] Australian guidelines strongly recommend all stroke patients should be mobilised within 48 hours of stroke onset, where not contraindicated, but intensive activities are not recommended within the first 24 hours.[31] There are ongoing studies into the optimal timing and intensity of mobilisation. We found a lower hazard of death 180 days after discharge for those mobilised the day or day after arrival (hazard ratio 0.43, 95% CI 0.39-0.47, p<0.001).

Outcomes of Hospital Care

Consistent with previous years, mortality in hospital after stroke was less than 10%. When compared to other countries Australia has one of the lowest in-hospital mortality rates for people with stroke.[32] We also found that there was no significant variation in risk-adjusted 30-day mortality between hospitals. Case fatality was greater for episodes of ICH (24%) than ischaemic (6%) stroke.

Almost half of patients were discharged to their usual residence following admission (48%), and this proportion was similar between metropolitan and regional hospitals (47%). One in four patients was discharged to rehabilitation regardless of where the hospital was located.

Rehabilitation is essential to supporting recovery from the wide-ranging impacts of stroke. While the proportion of patients discharged to inpatient rehabilitation is low, rehabilitation provided in the community is not currently captured. Findings from the Stroke123 project (linking AuSCR with hospital administrative data),[33] show people who received inpatient rehabilitation (vs those discharged directly home) were less likely to have been readmitted and reported fewer problems with mobility between 90–180 days after stroke. These results are aligned with the Living Clinical Guidelines for Stroke Management, which recommend that the ongoing rehabilitation needs of all patients with stroke should be assessed and rehabilitation offered regardless of their discharge destination.[31] We aim to report more comprehensive rehabilitation data in future through updates to the updated minimum dataset and expanded data linkage.

LONGER-TERM OUTCOMES

For patients admitted in 2024, the proportion of follow-up completion for eligible patients was 57% – representing over 7,500 responses, and an improvement from 54% in 2023. In 2024, we implemented a second SMS with a link to complete the patient-reported outcomes survey electronically, in addition to two mail surveys. From July to December 2024, the proportion of patients who responded electronically was 24%. In early 2025, a QR code was added on the cover letter mailed to patients which may further improve this completion rate.

We found that three in four people reported problems in at least one domain of quality of life (e.g., usual activities, self-care, mobility, pain or discomfort, and anxiety or depression). Women were significantly more likely to report problems on all five domains than men. Our data illustrate the large proportion of people in the community living with the impacts of stroke and having ongoing health needs within the first six months of stroke.

In 2024, the number of people registered in the AuSCR who were alive and willing to receive invitations for research studies grew by 4,463 (63% of respondents asked this question). Over 39,000 people living with stroke in the registry are willing to be contacted for research studies. This provides an important national source of research infrastructure for stroke that allows approved third parties to access aggregated, anonymised data to address their research questions, or to recruit participants (Appendix H: Research applications). To date, there have been 28 research studies where the AuSCR Office sent an invitation to eligible AuSCR registrants to participate in a study on behalf of investigators for approved projects.[34]

FUTURE DIRECTIONS

The release of a new data platform in 2026 will ensure that the data collection burden is eased and that hospitals have greater insights into their stroke care and longer-term patient outcomes. We will revise the AuSCR minimum dataset in line with the revised Stroke Clinical Care Standard due for release in 2026 to ensure the data captured in the AuSCR remain relevant and useful for guiding improvements in stroke care.

In mid-2023 a team led by Professor Dominique Cadilhac, AuSCR Executive Director, was awarded a Medical Research Future Fund grant to advance learning health systems in stroke. Importantly for the AuSCR this includes the development of a bespoke online data platform to replace the Australian Stroke Data Tool which has been in use since 2016. This new platform will improve integration with hospital medical record systems, and be easier to use and link with administrative datasets for greater long-term insights into stroke care. A second important component of this four-year project is to contribute to establishing enduring national data assets for stroke in partnership with the Australian Institute of Health and Welfare and Monash University. Work has progressed in 2024 and 2025 and we expect to 'go live' with a new platform in 2026.

We recognise the importance of understanding how stroke care is tracking across Australia. To achieve this, we have partnered with the Australian Stroke Coalition to share data that can be combined with New South Wales data and other sources where AuSCR data is currently incomplete (such as SA and WA Telestroke). This collaboration will provide a more comprehensive national picture of stroke care and may be expanded in future.

We also look forward to more comprehensive reporting on data relating to First Nations peoples. In late 2025, the AuSCR convened the inaugural National Aboriginal and Torres Strait Islander Governance Assembly, chaired by Dr Angela Dos Santos, Australia's first Indigenous neurologist. The Assembly will provide guidance on reporting Indigenous data, and ensuring data collected are relevant, meaningful and useful.

SUMMARY

In our 15th year of reporting, there is much to celebrate and many opportunities to drive further quality improvement. In an era of advancing technology and digital health, the AuSCR remains a leader in innovation ensuring clinicians have the data they need to inform best practice. As a major partner in the National Stroke Targets and Stroke Unit Certification program we provide the essential infrastructure for hospitals and peak bodies to monitor and enhance the quality of stroke care in Australia.

REFERENCES

1. Australian Commission on Safety and Quality in Health Care (ACSQHC). Acute Stroke Clinical Care Standard. ACSQHC; 2019. Accessed Oct 10, 2025. www.safetyandquality.gov.au/our-work/clinical-care-standards/acute-stroke-clinical-care-standard
2. Australian Stroke Coalition. National Stroke Targets 30/60/90. Accessed Nov 19, 2025. https://australianstrokecoalition.org.au/portfolio/targets
3. Kleinig TJ, Murphy L, National Stroke Targets T. *Med J Aust*. 2024;221(8) doi:10.5694/mja2.52459
4. Australian Commission on Safety and Quality in Health Care (ACSQHC). *Framework for Australian clinical quality registries - a quality standard for clinical outcome data collections and reporting. Second edition: Summary paper and case studies*. 2022.
5. Evans SM, Scott IA, Johnson NP, et al. *Med J Aust*. 2011;194(7) doi:10.5694/j.1326-5377.2011.tb03007.x
6. Ryan O, Ghuliani J, Grabsch B, et al. *Health Inf Manag*. 2024;53(2) doi:10.1177/18333583221117184
7. Cadilhac DA, Lannin NA, Anderson CS, et al. *Int J Stroke*. 2010;5(3) doi:10.1111/j.1747-4949.2010.00430.x
8. Australian Stroke Coalition. National Stroke Data Dictionary (NSDD). Australian Stroke Coalition. Accessed Jan 6, 2025. https://australianstrokecoalition.org.au/portfolio/ausdat/
9. van Swieten JC, Koudstaal PJ, Visser MC, et al. *Stroke*. 1988;19(5) doi:10.1161/01.str.19.5.604
10. EuroQol G. *Health Policy*. 1990;16(3) doi:10.1016/0168-8510(90)90421-9
11. Australian Bureau of Statistics. Australian Statistical Geography Standard (ASGS): Edition 3 - Remoteness Areas. Australian Bureau of Statistics. Accessed Jul 4, 2025. www.abs.gov.au/statistics/standards/australian-statistical-geography-standard-asgs-edition-3/
12. Kiefe CI, Weissman NW, Allison JJ, et al. *Int J Qual Health Care*. 1998;10(5) doi:10.1093/intqhc/10.5.443
13. Hall RE, Khan F, Bayley MT, et al. *Int J Qual Health Care*. 2013;25(6) doi:10.1093/intqhc/mzt069
14. Kind P, Dolan P, Gudex C, et al. *BMJ*. 1998;316(7133) doi:10.1136/bmj.316.7133.736
15. Cadilhac DA, Kilkenny MF, Levi CR, et al. *Med J Aust*. 2017;206(8) doi:10.5694/mja16.00525
16. Counsell C, Dennis M, McDowall M, et al. *Stroke*. 2002;33(4) doi:10.1161/hs0402.105909
17. Stroke Foundation. National Acute Stroke Services Framework. Accessed Dec 1, 2025. https://strokefoundation.org.au/what-we-do/for-health-professionals/audits
18. Australian Stroke Coalition. ASC Stroke Unit Certification Project. Accessed Dec 10, 2025. https://australianstrokecoalition.org.au/portfolio/certification/
19. Keating J, Borschmann K, Johns H, et al. *Neurology*. 2021;96(13) doi:10.1212/WNL.0000000000011647
20. Kim SK, Kim SH, Jo MW, et al. *Health Qual Life Outcomes*. 2015;13doi:10.1186/s12955-015-0227-3
21. Middleton S, McElduff P, Ward J, et al. *Lancet*. 2011;378(9804) doi:10.1016/s0140-6736(11)61485-2
22. Meretoja A, Keshtkaran M, Saver JL, et al. *Stroke*. 2014;45(4) doi:10.1161/STROKEAHA.113.002910
23. Emberson J, Lees KR, Lyden P, et al. *Lancet*. 2014;384(9958) doi:10.1016/S0140-6736(14)60584-5
24. Schwamm LH, Fonarow GC, Reeves MJ, et al. *Circulation*. 2009;119(1) doi:10.1161/CIRCULATIONAHA.108.783688
25. Marulanda E, Bustillo A, Gutierrez CM, et al. *Stroke*. 2023;54(3) doi:10.1161/STROKEAHA.122.038869
26. Bladin CF, Bagot KL, Vu M, et al. *BMJ Open*. 2022;12(7) doi:10.1136/bmjopen-2021-052332
27. Safer Care Victoria. Enhancing Stroke Care Collaborative. Victoria State Government Accessed Dec 11, 2025. https://www.safercare.vic.gov.au/improvement/projects/enhancing-stroke-care-collaborative
28. Directory TQCaM. New lifesaving telestroke service for regional Queensland. Accessed Dec 2, 2025. https://statements.qld.gov.au/statements/98175
29. Langhorne P, Ramachandra S, Stroke Unit Trialists C. *Cochrane Database Syst Rev*. 2020;4(4) doi:10.1002/14651858.CD000197.pub4
30. Filipska-Blejder K, Jaracz K, Slusarz R. *J Clin Med*. 2025;14(5) doi:10.3390/jcm14051585
31. Stroke Foundation. Australian and New Zealand Living Clinical Guidelines for Stroke Management. Accessed Dec 17, 2025. https://informme.org.au/en/Guidelines/Clinical-Guidelines-for-Stroke-Management
32. OECD. Health at a Glance 2025: OECD Indicators.
33. Lynch EA, Labberton AS, Kim J, et al. *Disabil Rehabil*. 2022;44(12) doi:10.1080/09638288.2020.1852616
34. Cadilhac DA, Gibbs AK. *J Physiother*. 2024;70(2) doi:10.1016/j.jphys.2024.02.015

APPENDICES

APPENDIX A: GOVERNENCE AND COLLABORATION

In 2024, the AuSCR program was managed by a leading academic research institute, The Florey Institute of Neuroscience and Mental Health (Stroke and Critical Care Theme; AuSCR Data Custodian) with consortium partners including Monash University (consortium partner since 2023 who support for data analysis and data curation for approved research projects) and two leading non-government organisations, Stroke Foundation and the Australian and New Zealand Stroke Organisation. Collectively, these organisations represent a broad section of the Australian clinical and scientific stroke community. Consultation with clinicians and professional associations for the AuSCR also occurs through the Australian Stroke Coalition (ASC), including the provision of data to support hospitals to receive National Stroke Quality Awards or World Stroke Organisation Angels awards.

In 2024, the Steering Committee, Chaired by Professor Sandy Middleton, provided governance and strategic direction for the AuSCR and has inclusion from relevant stakeholders, including people with lived experience. The Management Committee, Chaired by Professor Helen Dewey and including representatives from the consortium partner organisations, and various clinicians with backgrounds in medicine, nursing or allied health was responsible for the day-to-day operation of the AuSCR. See Appendix B: Committee membership for full details.

In 2025, following an external review and implementation working group, a new governance structure was formed. Professor Richard Lindley was appointed as Chair of the AuSCR Advisory Board and Professor Rohan Grimley was appointed as Chair of the Operational and Quality Improvement Committee (see Appendix B: Committee membership or full details). The Advisory Board will provide strategic direction, risk management and financial oversight for the Registry, and includes representatives from consortium partners, state representatives, lived experience representatives. The Operational and Quality Improvement Committee provides direction and advice for the registry on core registry activities, ongoing input into registry enhancements and quality assurance, and implements the strategic direction set by the Board. Members of this committee include representatives from consortium partner organisations, representatives from each participating jurisdiction and those with lived experience.

Following a tender process, we were grateful to receive Commonwealth government Clinical Quality Registry Program funding in mid-2024 to expand and strengthen the AuSCR. We also highly value the support from Safer Care Victoria, Western Australian Department of Health, South Australian Government and Tasmanian Department of Health in sustaining hospital participation. Queensland Health and the ACT government have supported participation of their hospitals through joint projects with Stroke Foundation and The Florey.

Collaborations are continuing with the Australian Institute of Health and Welfare and the Australian Rehabilitation Outcomes Centre to enable the linkage of patient-level AuSCR data with other health datasets (e.g. admitted hospital data) to more efficiently ascertain long-term outcomes of all patients. Monash University also provided a secure analysis environment (SeRP) for approved users to access AuSCR data remotely from other institutions.

We co-convened the 12th (in November 2024) and 13th (in July/August 2025) National Stroke Quality Improvement workshops with Stroke Foundation and Monash University. We appreciated the sponsorship support from the Angels Initiative, Nicolab, Centre of Research Excellence to acceleration innovation and translation in stroke trials. In-kind support was also received from state government representatives and collaborators. Such events provide additional opportunities for clinicians and academics to be involved in translational activities and discussions to enhance stroke care and outcomes.

The AuSCR half-day contributor workshops were held at the Asia Pacific Stroke Conference in September 2024 and at the Australian and New Zealand Stroke Organisation Conference in September 2025. We thank Amazon Web Services for their support of these events, to enable attendees to attend at no cost.

In 2024, we continued to host on our webpage the National Stroke Data Linkage Interest Group (>75 members) and the Australian and New Zealand Stroke Coding Working Group (>20 members), being coordinated by consortium partner Monash University and led Prof Monique Kilkenny, who is a member of the Operational and Quality Improvement Committee, and colleagues. Peak bodies, including the Australian Cardiovascular Alliance, invited AuSCR leaders to present to their members or committees about the AuSCR and its progress as a leading exemplar of a national Clinical Quality Registry.

"I just found the event really inspiring – I recently started in a regional stroke coordinator role, so it was such a great overview of what is happening around the country and was really educational for me"
Feedback from attendee of the 13th National Stroke Quality Improvement Workshop

APPENDIX B: COMMITTEE MEMBERSHIP

AUSCR STEERING COMMITTEE 2024

Prof Sandy Middleton (Chair)	**Director, Nursing Research Institute, St Vincent's Health Australia (Sydney) & Australian Catholic University [NSW]**
Dr Tope Adepoyibi	Executive Director Stroke Services and Research, Stroke Foundation
Prof Christopher Bladin	Director, Victorian Stroke Telemedicine Program, The Florey Institute of Neuroscience and Mental Health & Neurologist Eastern Health [VIC]
Prof Dominique Cadilhac	Head, Public Health, Stroke Division, The Florey Institute of Neuroscience and Mental Health & Co-Director, Stroke and Ageing Research, Monash University [VIC]
Dr Helen Castley	Neurologist, Royal Hobart Hospital & Co-chair, Clinical Advisory Group (Neurology & Stroke) [TAS]
Dr Ross Clifton	Director, Australasian Rehabilitation Outcomes Centre, University of Wollongong [NSW]
Prof Geoffrey Donnan	Professor of Neurology, The University of Melbourne [VIC]
A/Prof Andrew Evans	Consultant Neurologist & Director Movement Disorders, Royal Melbourne Hospital [VIC]
Prof Rohan Grimley	Stroke Physician Sunshine Coast University Hospital Clinical Director Research, Sunshine Coast Hosptial Health Service Professor, Faculty of Medicine and Dentistry, Griffith University Chair, AuSCR Operational and Quality Improvement Committee.
Prof Tim Kleinig	Head, Neurology, Royal Adelaide Hospital [SA] & President, Australian and New Zealand Stroke Organisation
A/Prof Martin Krause	Head of the Neurology, Royal North Shore Hospital [NSW]
Prof Richard Lindley	Professorial Fellow, The George Institute for Global Health & Professor of Geriatric Medicine, Sydney Medical School, University of Sydney [NSW]
A/Prof Mark Mackay	Paediatric Neurologist, Royal Children's Hospital, Melbourne [VIC]
Prof John McNeil	Head, Department of Epidemiology and Preventive Medicine, Monash University [VIC]
Ms Jennifer Muller	Chair, Consumer Council, Stroke Foundation [QLD]
A/Prof Michael Pollack	Chair, Hunter Stroke Service [NSW]
Mark Simcocks	Consumer Representative
Dr Andrew Wesseldine	Geriatrician and Stroke Physician, St John of God Subiaco & State Stroke Director [WA]
Prof Bernard Yan	Endovascular Neurointerventionist and Neurologist, Royal Melbourne Hospital [VIC]
Prof Vincent Thijs	Head of Stroke Austin Health, Co-Head Stroke Theme, Florey
Prof Helen Dewey	Director of Neurosciences, Eastern Health & Professor, Eastern Health Clinical School, Monash University [VIC]

AUSCR MANAGEMENT COMMITTEE 2024

Prof Helen Dewey (Chair)	**Director of Neurosciences, Eastern Health & Professor, Eastern Health Clinical School, Monash University [VIC]**
Prof Dominique Cadilhac	Head, Public Health, Stroke Division, The Florey Institute of Neuroscience and Mental Health & Co-Director, Stroke and Ageing Research, Monash University [VIC]
Prof Bruce Campbell	Head, Hyperacute Stroke, Royal Melbourne Hospital [VIC]
Prof Geoffrey Cloud	Director of Stroke Services, Alfred Health [VIC]
Prof Steven Faux	Director, Department of Pain Medicine, St Vincent's Hospital, Sydney [NSW]
Prof Rohan Grimley	Stroke Physician Sunshine Coast University Hospital Clinical Director Research, Sunshine Coast Hosptial Health Service Professor, Faculty of Medicine and Dentistry, Griffith University Chair, AuSCR Operational and Quality Improvement Committee.
Mr Kelvin Hill	National Manager, Stroke Treatment, Stroke Foundation [NSW]
Prof Monique Kilkenny	Head, Big Data, Epidemiology and Prevention, Stroke and Ageing Research, Monash University [VIC]
Prof Natasha Lannin	Group Leader, Brain Recovery and Rehabilitation Group, Department of Neuroscience, Central Clinical School, Monash University [VIC]
Ms Belinda Stojanovski	Stroke Nurse Consultant, Royal Children's Hospital [VIC]

AUSCR REPERFUSION AND TELEMEDICINE SUBCOMMITTEE 2024

Prof Bruce Campbell (Co-Chair)	**Head, Hyperacute Stroke, Royal Melbourne Hospital [VIC]**
Dr Kate Mahady (Co-Chair)	**Interventional Neuroradiologist, Royal Brisbane and Women's Hospital [QLD]**
A/Prof Hamed Asadi	Consultant Interventional Neuroradiologist, Austin & Monash Health [VIC]
Dr Martin Banez	Interventional Neuroradiologist, Royal Hobart Hospital [TAS]
Dr Mark Brooks	Interventional Radiologist, Austin Hospital [VIC]
Prof Christopher Bladin	Director, Victorian Stroke Telemedicine Program, The Florey Institute of Neuroscience and Mental Health & Neurologist Eastern Health [VIC]
Prof Dominique Cadilhac	Head, Public Health, Stroke Division, The Florey Institute of Neuroscience and Mental Health & Co-Director, Stroke and Ageing Research, Monash University [VIC]
A/ Prof Ronil Chandra	NeuroInterventional Radiologist, Monash Health & Monash University
Dr Andrew Cheung	Clinical Lead Neurointervention, Liverpool Hospital
Prof Alan Coulthard	Head, Discipline of Medical Imaging, The University of Queensland [QLD]
Prof Tim Kleinig	Head, Neurology, Royal Adelaide Hospital [SA]
Prof Henry Ma	Neurologist, Monash Medical Centre & Adjunct Senior Lecturer, Stroke and Ageing Research Group, Southern Clinical School, Monash University [VIC]
A/Prof Julian Maingard	Consultant Interventional Neuroradiologist, St Vincent's Hospital Melbourne [VIC]
Dr Ferdinand Miteff	Interventional Neurologist, John Hunter Hospital [NSW]
Dr Patrick Salvaris	General Physician & Stroke Physician, St John of God Midland Public and Private Hospitals [WA]
Dr Rebecca Scroop	Interventional Neuroradiologist, Royal Adelaide Hospital [SA]

Dr Brendan Steinfort	Interventional Neuroradiologist [NSW]
Dr Jason Wenderoth	Interventional Neuroradiologist [NSW]
Dr Cameron Williams	Neurointerventionist and Stroke Neurologist, Royal Melbourne Hospital & Alfred Hospital [VIC]
A/Prof Andrew Wong	Neurologist, Royal Brisbane and Women's Hospital & Co-chair, Queensland Statewide Stroke Clinical Network [QLD]
Prof Bernard Yan	Endovascular Neurointerventionist and Neurologist, Royal Melbourne Hospital [VIC]

AUSCR STATE CLINICAL LEADS AND REPRESENTATIVES 2024

Prof Geoffrey Cloud (Chair)	**Director of Stroke Services, Alfred Health [VIC]**
Prof Dominique Cadilhac	Head, Public Health, Stroke Division, The Florey Co-Director, Stroke and Ageing Research, Monash University [VIC]
A/Prof Ben Clissold	Stroke Clinical Lead, Safer Care Victoria & Head, In-patient Services (Neurosciences), Barwon Health & Stroke Neurologist, University Hospital Geelong and Monash Medical Centre [VIC]
Prof Sandy Middleton	Director, Nursing Research Institute, St Vincent's Health Australia (Sydney) & Australian Catholic University [NSW]
Prof Rohan Grimley	Stroke Physician Sunshine Coast University Hospital Clinical Director Research, Sunshine Coast Hospital Health Service Professor, Faculty of Medicine and Dentistry, Griffith University Chair, AuSCR Operational and Quality Improvement Committee.
Prof Tim Kleinig	Head, Neurology, Royal Adelaide Hospital [SA]
Dr Andrew Wesseldine	Geriatrician and Stroke Physician, St John of God Subiaco & State Stroke Director [WA]
Prof Helen Dewey	Director of Neurosciences, Eastern Health & Professor, Eastern Health Clinical School, Monash University [VIC]
A/ Prof Bartlomiej Piechowski-Jozwiak	Unit Director, Neurology Department, Canberra Hospital & Clinical Associate Professor, The Australian National University [ACT]
Mr Joschka Strachan	Acting Stroke Nurse Navigator, Stroke Unit, Canberra Hospital
Dr Alvaro Cevera	Consultant Neurologist, Royal Darwin Hospital [NT]
A/Prof Andrew Wong	Neurologist, Royal Brisbane and Women's Hospital & Co-chair, Queensland Statewide Stroke Clinical Network [QLD]
Ms Aylissa Canning	Clinical Nurse Consultant, Princess Alexandra Hospital [QLD]
Prof Bruce Campbell	Head, Hyperacute Stroke, Royal Melbourne Hospital [VIC]
Dr Helen Castley	Neurologist, Royal Hobart Hospital & Co-chair, Clinical Advisory Group (Neurology & Stroke) [TAS]

AUSCR PAEDIATRIC SUBCOMMITTEE 2024

A/Prof Mark Mackay (Co-chair)	**Paediatric Neurologist, Royal Children's Hospital, Melbourne [VIC]**
Ms Louise Sparkes (Co-chair)	**Clinical Nurse Study Co-ordinator, Queensland Children's Hospital [QLD]**
Prof Dominique Cadilhac	Head, Public Health, Stroke Division, The Florey Institute of Neuroscience and Mental Health & Co-Director, Stroke and Ageing Research, Monash University [VIC]
Ms Belinda Stojanovski	Stroke Clinical Nurse Consultant, Royal Children's Hospital [VIC]
Dr Nicola Fearn	Neurologist, Royal Children's Hospital [VIC]
Dr Olivia Paris-Quinn	Neurology Fellow, Queensland Children's Hospital [QLD] / Royal Children's Hospital [VIC]
Ms Violet Marion	AuSCR Coordinator, Australian Stroke Clinical Registry [VIC]

AUSCR RESEARCH TASK GROUP 2024

The primary purpose of the Research Task Group is to ensure appropriate use and protection of the Australian Stroke Clinical Registry data when it is to be used for research purposes by third parties.

Dr Darshan Ghia (Co-Chair)	**Consultant Neurologist and Head of Stroke Unit, Fiona Stanley Hospital [WA]**
Prof Jacqueline Close (Co-Chair)	**Geriatrician, Prince of Wales Hospital & Clinical Director, NeuRA & Conjoint Professor, University of New South Wales [NSW]**
Prof John McNeil	Head, Department of Epidemiology and Preventive Medicine, Monash University [VIC]
A/Prof Erin Godecke	Senior Research Fellow (Speech Pathology), School of Medical & Health Sciences, Edith Cowan University [WA]
A/ Prof Benjamin Clissold	Stroke Clinical Lead, Safer Care Victoria & Head, In-patient Services (Neurosciences), Barwon Health & Stroke Neurologist, University Hospital Geelong and Monash Medical Centre [VIC]
A/Prof Philip Choi	Consultant Neurologist, Department of Neurosciences, Eastern Health [VIC]
Prof Suzanne Kuys	National Head, School of Physiotherapy, Australian Catholic University & Principal Research Fellow, Queensland Health [QLD]
Prof Bernard Yan	Endovascular Neurointerventionist and Neurologist, Royal Melbourne Hospital [VIC]
Dr Daniel Schweitzer	General Neurologist, Mater Hospital & The Wesley Hospital [QLD]
Dr Karim Mahawish	Consultant in General, Geriatric and Stroke Medicine, Mid Central District Health Board [NZ]
Dr Candice Delcourt	Program Lead, Neurological Program, The George Institute of Global Health & Clinical Associate Professor, Macquarie University & Conjunct Senior Lecturer, The University of New South Wales [NSW]
A/Prof Nadine Andrew	Senior Research Fellow, Peninsula Clinical School, Monash University [VIC]
A/Prof Caleb Ferguson	Adjunct Associate Professor, School of Nursing and Midwifery, Western Sydney University [NSW]
Dr Elizabeth Lynch	Senior Research Fellow, College of Nursing and Health Sciences, Flinders University [SA]

AUSCR ADVISORY BOARD 2025

Prof Richard Lindley (Chair)	**Deputy Head of School | Professor of Geriatric Medicine** **Director, NHMRC Centre of Research Excellence to Accelerate Stroke Trial Innovation and Translation** **Principal Investigator, Westmead Applied Research Centre**
Dr Lisa Murphy	Stroke Foundation Chief Executive Officer
Prof Timothy Kleinig	President, Australian and New Zealand Stroke Organisation Stroke Unit Head, Royal Adelaide Hospital
Prof Sophia Zoungas	Head, School of Public Health and Preventive Medicine Academic Director, Monash University Clinical Trials Centre
Prof Vincent Thijs	Group head, Stroke Research, The Florey Director of Neurology, Austin Health
Dr Chloe Mutimer	Stroke fellow, Royal Melbourne Hospital
Ms Letisha Living	Lived experience representative
Ms Julie Davey	Lived experience representative
A/Prof Andrew Wong	Director, Neurology and Stroke, Royal Brisbane and Women's Hospital Chair, Neurology and Stroke Substreams, Metro North Health Co-chair, Queensland Stroke Clinical Network Assoc Prof, Faculty of Medicine, University of Queensland Treasurer, Australian and New Zealand Stroke Organisation President, Australasian Stroke Academy
Dr Andrew Wesseldine	WA State Stroke Director (Clinical Excellence Division) SME Aged Care Network (Strategy and Governance Division) Consultant Physician and Geriatrician
Prof Helen Dewey	Consultant Neurologist and Senior Medical Advisor, Transformation Office, Eastern Health, Vic.
Prof Rohan Grimley	Stroke Physician Sunshine Coast University Hospital Clinical Director Research, Sunshine Coast Hospital Health Service Professor, Faculty of Medicine and Dentistry, Griffith University Chair, AuSCR Operational and Quality Improvement Committee.
Prof Dominique Cadilhac	Head, Public Health and Health Services Research, Stroke Theme, The Florey Head: Translational Public Health and Evaluation Division, Stroke and Ageing Research Co-Director (Research Lead): Stroke and Ageing Research, Monash University Director: Australian Stroke Clinical Registry
Prof Sandy Middleton	Director, Nursing Research Institute, St Vincent's Health Network Sydney & Australian Catholic University
Ms Faith Margrie	Clinical Quality Registry Section, Australian Government, Department of Health and Aged Care

AUSCR OPERATIONAL AND QUALITY IMPROVEMENT COMMITEE 2025

Prof Rohan Grimley (Chair)	**Stroke Physician Sunshine Coast University Hospital** **Clinical Director Research, Sunshine Coast Hospital Health Service** **Professor, Faculty of Medicine and Dentistry, Griffith University** **Chair, AuSCR Operational and Quality Improvement Committee.**
A/Prof Philip Choi (Deputy Chair)	Stroke Neurologist Eastern Health, Austin Health & Victorian Stroke Telemedicine - Ambulance Victoria Clinical Lead - Stroke, Deputy Clinical Director

	Department of Neuroscience, Eastern Health Adjunct Clinical Associate Professor Eastern Health Clinical School, Faculty of Medicine, Nursing and Health Sciences Monash University
Ms Melita Stirling	National Manager Evidence, Quality and Research, Stroke Foundation
Prof Seana Gall	Menzies Institute for Medical Research Treasurer, Australian and New Zealand Stroke Organisation
Prof Natasha Lannin	Group Leader, Brain Recovery and Rehabilitation Group, Department of Neuroscience, Central Clinical School, Monash University [VIC]
Dr Emily Ramage	Senior Research Officer – Stroke Theme, The Florey
Prof Monique Kilkenny	Big Data, Epidemiology and Prevention, Stroke and Ageing Research, Department of Medicine, School of Clinical Sciences at Monash Health, Monash University, Victoria, Australia Stroke and Critical Care Division, Florey Institute of Neuroscience and Mental Health, University of Melbourne, Victoria, Australia
A/Prof Ben Clissold	Stroke Clinical Lead, Safer Care Victoria & Head, In-patient Services (Neurosciences), Barwon Health & Stroke Neurologist, University Hospital Geelong and Monash Medical Centre [VIC]
Ms Aylissa Canning	Clinical Nurse Consultant /Co-chair, Queensland Stroke Clinical Network [QLD]
Ms Michelle Hutchinson	Stroke nurse, Flinders Medical Centre, [SA]
Dr Helen Castley	Neurologist, Royal Hobart Hospital & Co-chair, Clinical Advisory Group (Neurology & Stroke) [TAS]
Dr Ronak Patel	Acting Director of Acute Stroke, North Canberra Hospital [ACT]
Dr Alvaro Cevera	Consultant Neurologist, Royal Darwin Hospital [NT]
Mr Andrew Sotiriou	Principal Project Officer, WA Stroke Services Program, Department of Health [WA]
Ms Saran Chamberlain	Lived experience representative, Flinders University and Deakin University
Ms Amy Thompson	Lived experience representative
Dr Angela Dos Santos	Stroke Physician and Neurologist, Campbelltown and Royal Melbourne Hospitals Victorian Stroke Telehealth service Visiting Medical Officer, Alice Springs and Darwin Hospital, Pius X Aboriginal Corporation Moree Senior Clinical Research Fellow, Australian Stroke Alliance UNSW Scientia Fellow, Faculty of Medicine and Health
Ms Natalie Heriot	Centre Program Manager, Epworth Health
Prof Dominique Cadilhac	Head, Public Health and Health Services Research, Stroke Theme Head: Translational Public Health and Evaluation Division, Stroke and Ageing Research Co-Director (Research Lead): Stroke and Ageing Research, Monash University Director: Australian Stroke Clinical Registry

APPENDIX C: FINANCE REPORT 2024

In 2024, the AuSCR Office was supported by funding and in-kind support from the following sources:

- Commonwealth Government, Department of Health, Disability and Ageing via the National Clinical Quality Registry Program
- Safer Care Victoria and the Victorian Government
- South Australian, Western Australian and Tasmanian governments
- Joint initiatives with Stroke Foundation funded by Queensland Health and ACT Health, and contribution to the Australian Stroke Data Tool national coordination role
- The Florey Institute of Neuroscience and Mental Health
- Various researchers seeking to reuse the archived data or access registrants willing to participate in research for approved projects by the Research Task Group
- Members of the Management Committee and Steering Committee and Research Task Group provide their time 'in-kind'

INCOME SOURCES	AMOUNT
Carry forward	$118,274
Governments grants	$ 1,043,196
The Florey, Stroke Theme support	$ 27,474
Stroke Foundation*	$ 24,761
Commercial income†	$ 86,916
Available funds	**$ 1,300,622**
Expenses	**$ 1,042,518**

**There was also additional support for the Australian Stroke Data Tool in maintenance costs ($38,190) paid directly to Amazon Web Services or platform consultant by Stroke Foundation.*

† *Income from projects approved by the AuSCR Research Task Group.*

APPENDIX D: ACKNOWLEDGEMENTS

ONGOING CONTRIBUTION TO THE AUSCR IN 2024

We gratefully acknowledge the patients, their families and carers for their involvement in the registry, and particularly for those who contributed valuable information on their health and living arrangements following hospital discharge.

The Florey Institute of Neuroscience and Mental Health

AuSCR Office Staff

We gratefully acknowledge coordination of the AuSCR, support of contributing hospitals and collection of follow-up outcomes from registrants by the following AuSCR Office staff in 2024:

Julie Morrison (Program Manager), Kate Paice (Senior Data Manager), Mya Thandar (Senior Clinical Quality Registry Data Engineer), Violet Marion (State Coordinator), Jot Ghuliani (AuSDaT Program Manager), Elizabeth Gregory (State Coordinator), Nancy Pompeani (State Coordinator and Data Manager), Adele Gibbs (Research and Data Coordinator), Helen Carter (Administration and Data Officer), Abigail Dewiso (Registry Administration Officer), Emma Campbell (Research and Administrative Assistant) and Thao Tran (Data and Administration Officer).

We also acknowledge Sabnam Acharya Sigdel, Pamela Butt and Zaeem Rizan who began working with the AuSCR in 2025.

IT Support

We also acknowledge The Florey Institute Information Technology team in hosting the AuSCR server and supporting other technical processes.

Stroke and Ageing Research Group, School of Clinical Sciences, Monash University:

We acknowledge the support from the Monash University Stroke and Ageing Research Group in their development of statistical programs, analysis of the de-identified data, provision of reports and statistical support:

Prof Monique Kilkenny (Head, Big Data, Epidemiology and Prevention Division), Dr Lachlan Dalli (Research Fellow), Dr Joosup Kim (Research Fellow), Dr Mulugeta Birhanu (Research Fellow), and Eric Kuo (Data Scientist).

Analyses presented in this report were undertaken by Dr Mulugeta Birhanu, under the supervision of Prof Dominique Cadilhac. We acknowledge the support from Eric Kuo and Catherine Burns in data checking and proofing. Methods for the analysis of risk-adjusted mortality were initially developed by Prof Monique Kilkenny, in consultation with Professor Leonid Churilov (The Florey). Development of the Hospital Performance Reports and Scorecards was primarily undertaken by Dr Lachlan Dalli, with input from Monash University and AuSCR teams.

We also gratefully acknowledge:

- Stroke Foundation for providing registrants in the AuSCR with stroke information packages to patients requesting additional information when completing patient-reported outcomes surveys 90-180 days after admission.
- The Australian Institute of Health and Welfare for their role in linking the AuSCR data to the National Death Index
- Mike Lugg and Michelle McIntosh for sharing their stories about recovery after stroke for inclusion in this report, and the teams from Latrobe Regional Health and Logan Hospital for sharing their success stories using the data for quality improvement

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North Canberra Hospital	Ronak Patel; Vijay Mandhan; Anu Dhakal
NSW	
#John Hunter Children's Hospital	Christina Miteff; Melinda Simpson-Collins
QLD	
Bundaberg Hospital	Juliet Weicks; Kerri Buteux; Julie Spargo
Caboolture Hospital	Marnie Hollywood; Christine Douglas
Cairns Hospital	Ramesh Durairaj; Spencer Irvin; Elise Bertram; Nikhil Lali; Troy Elliott; Jiby Jacobs
Gold Coast University Hospital	Saman Heshmat; Haylee Berrill
Hervey Bay Hospital	Sarah Leak; Torrie Scott-Paku
Ipswich Hospital	Arshad Hussain; Linda Edwards
Logan Hospital	Alex Lau; Nicola Hall; Victoria Pullinger
Mackay Base Hospital	Helen Nengasha; Allysa Lawrence
Mater Hospital Brisbane	Rodrigo Tomazini Martins; Brendon Glenn
Prince Charles Hospital	Kathryn Colebourne; Caitlin Kearney
Princess Alexandra Hospital	Laura Clarke; Melissa Brooks; Amanda McKee
Queen Elizabeth II Jubilee Hospital	Amanda Siller; Jessica Wood; Jerry Wong; Jenny Kim
#Queensland Children's Hospital	Adriane Sinclair; Louise Sparkes
Redcliffe Hospital	Richard Geraghty; Vivian Kwok; Lee Moylan
Redland Hospital	Jenna Allen; Emma Butler; Kim Dick; Lisa Tewhatu
Rockhampton Hospital	Leanne Whiley
Royal Brisbane and Women's Hospital	Andrew Wong; Melissa Wood
Sunshine Coast University Hospital	Rohan Grimley; Donna Rowley; Bailey McNamara
Toowoomba Hospital	Nisal Gange; Timothy Richardson
Townsville University Hospital	Ravindra Urkude; Nerida Myers; Linda Norrie
SA	
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Lyell McEwin Hospital	Andrew Moey; Tej Chuwan
#Mount Gambier Hospital	Augustos Kigotho; Roshen Maharaj; Lisa Balkin; Melissa Felton, Bianca Piantedosi
#Riverland Regional Health Service - Berri Campus	Caroline Phegan; Anna Thomas, Bianca Piantedosi
Royal Adelaide Hospital	Tim Kleinig; Jackson Harvey; Lizzie Dodd; Laura Grimshaw; Allan Sabado; Kelly Hann; Matthew Gliddon; Leo Paul; Vincent Trinh
Women's and Children's Hospital	Clair Pridmore; Sheila Rosser
TAS	
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North West Regional Hospital	Nellie Cole
Royal Hobart Hospital	Helen Castley; Deirdre Broadby
VIC	
Albury Wodonga Health (Albury & Wodonga Campuses)	Vanessa Crosby; Emma Quirk; Kathryn Belford
Alfred Hospital	Tharani Chandran; Elaine Cheung; Danny Kinsella, Geoff Cloud; Estelle Hamson; John Lampa, Tran Hoang
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Bairnsdale Regional Health Service	Kushantha Gunarathne; Renee Herbstreit; Simone Gibbs
Bass Coast Health	Ella Roos; Cath Jones; Ben Shields; Luke Anstey; Lyn Corrigan
Bendigo Health	Roberts Atvars; Lucille Monahan; Tessa Coupland; Fiona Fitzpatrick
Box Hill Hospital	Tanya Frost; Karen Stephens; Philip Choi; Claire Rossi; Leanne Wilson
Central Gippsland Health Service	Anne van Berkel; Vittal Jadhav; Joanne Clutterbuck; Jessica Driscoll; Lisa Watson
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Goulburn Valley Health	Katie Connelly
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Hamilton Base Hospital	Courtney Rowe; Shamim Mahabeer
Latrobe Regional Health	Janet May; Hann Antony
Maroondah Hospital	Tanya Frost, Philip Choi; Claire Rossi
Mildura Base Public Hospital	Ros Roberts; Isabella Gove; Sarah Fisher; Bev Blanche
Monash Children's Hospital	Michael Fahey; Janet DeLange
Monash Medical Centre	Henry Ma; Berzenn Urbi; Parry Desai; Than Phan; Michael Valente; Jason Vuong; Salima Hussaini
#Northeast Health Wangaratta	Lauren Ross; Sarah Coles; Read Moreland
Northern Hospital	Douglas Crompton; Anne Rodda; Liz Mackey; Nadine Stowell
Peninsula Health - Frankston Hospital	Ernie Butler; Jodie Rabaut; Chloe Gough; Wen Wen Shang; Delaney Kupsch
Royal Children's Hospital	Mark Mackay; Belinda Stojanovski; Adam Rozsa, Nicola Fearn
Royal Melbourne Hospital	Bruce Campbell; Lauren Pesavento; Chloe Mutimer; Khairunnisa Alidin; Louise Weir; Gagan Sharma
St Vincent's Hospital Victoria	Lauren Sanders; Patrick Scarff
Sunshine Hospital - Western Health	Tissa Wijeratne; Jennifer Bergqvist
Swan Hill District Health	Kath Curran; Kelly Stanger; Emma Linssen; Cathy McLaughlin; Robyn Bailey
University Hospital Geelong	Ben Clissold; Michelle Clarke; Jade Mallia

Warrnambool Base Hospital	Anna Clissold; Patrick Groot; Lisa Stinchcombe; Melissa Ladhams
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West Gippsland Hospital	Mirza Baig; Nicole Caddy
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Joondalup Health Campus	Shivlal David; Glynis Porter; Cherie Ingvarson; Alison Murphy; Stephanie McKenna; Mercy Chimurambi
Royal Perth Hospital	Lay Kun Kho; Grace Cohn
Sir Charles Gairdner Hospital	Rebecca Ponnanna; Michelle Wilson
St John of God Midland Public Hospital	Tim Bates; Lynda Southwell; Simone Uetake
Perth Children's Hospital	Snehal Shah; Ashleigh Kenworthy; Victoria Hill

Sites on a data pause for a period in 2024 and incomplete data collection.

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NT	
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QLD	
Gympie Hospital	Rohan Grimley; Donna Rowley; Bailey McNamara
Kingaroy Hospital	Catherine Jurd
TAS	
Mersey Community Hospital	Sandra Fahmi
VIC	
Portland District Health	Cassie Jewell
Victorian Heart Hospital	Henry Ma; Berzenn Urbi; Parry Desai; Rami Shenouda

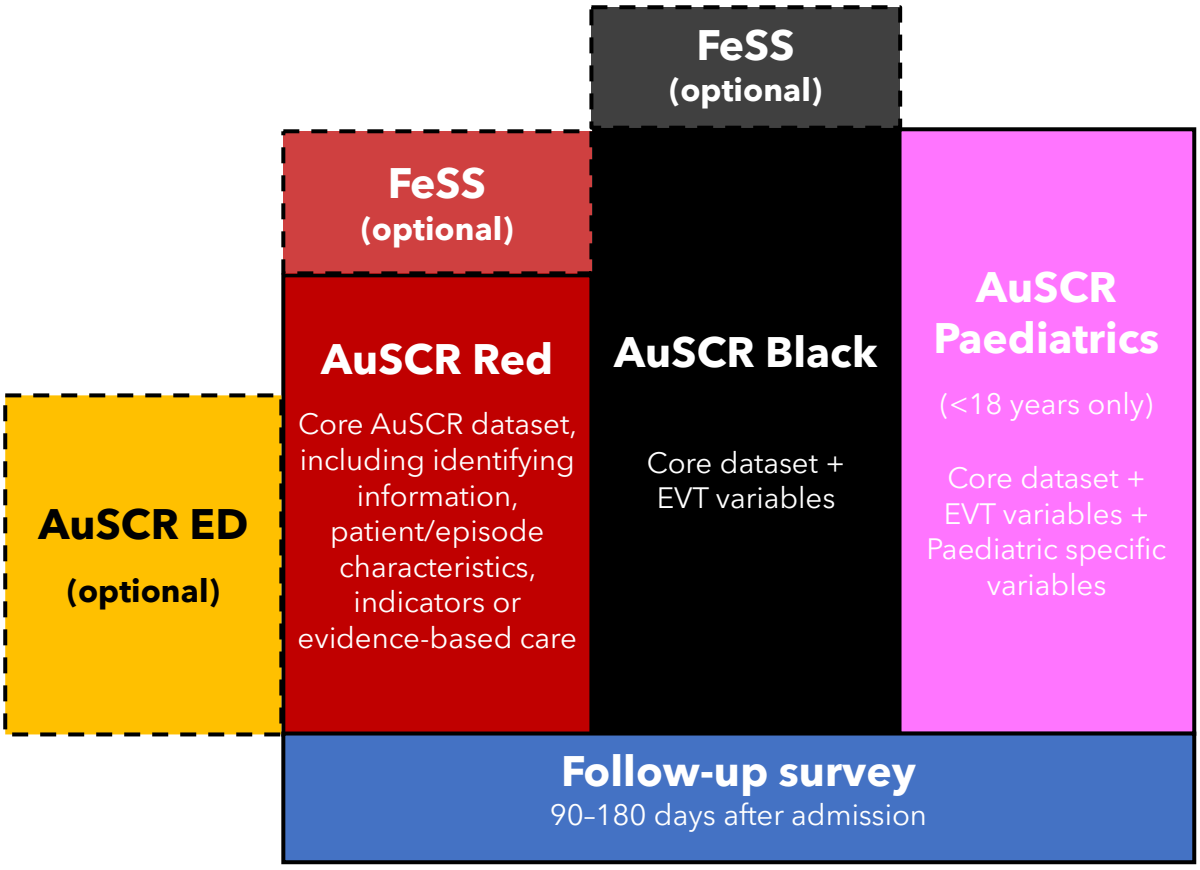
APPENDIX E: AUSCR DATA COLLECTION PROGRAMS

In 2024, hospitals participated in one of three core AuSCR programs:

- 49 hospitals contributed to the AuSCR Red program
- 14 hospitals performing endovascular therapy (EVT) contributed to the AuSCR Black program
- Six paediatric hospitals contributed to the AuSCR Paediatrics program

Hospitals could choose to also participate in the two optional programs:

- 44 hospitals contributed to the AuSCR ED (Emergency Department) program
- 26 hospitals contributed to the AuSCR FeSS (Fever Sugar Swallow) program



ED: Emergency Department **EVT:** Endovascular Therapy **FeSS:** Fever, Sugar, Swallow

Each colour represents a different amount or type of variables in which AuSCR hospitals choose to collect data based on their quality-of-care objectives. The follow-up survey is collected on behalf of hospitals by AuSCR Office.

APPENDIX F: AUSCR VARIABLES

VARIABLES COLLECTED IN THE AUSCR*

Identifying information

- Name
- Date of birth
- Sex
- Address
- Telephone number/s
- Hospital name
- Medicare number
- Hospital UR number
- Contact details for next of kin and alternative contact

Patient/episode characteristics

- Country of birth
- Language spoken
- Interpreter needed
- Aboriginal and Torres Strait Islander status
- Type and cause of stroke
- Mechanism of stroke (P)
- Date and time of stroke onset
- Date and time of arrival at ED
- Date and time of admission
- Inpatient stroke status
- Transferred from another hospital status
- Ability to walk independently on admission
- First-ever (incident) stroke event status
- National Institutes of Health Stroke Scale (NIHSS) Score on presentation
- Arrived by ambulance
- History of known risk factors

Indicators of evidence-based care

- Treatment in a stroke unit
- Imaging details
- Use of tPA if an ischaemic stroke
- Telemedicine consultation
- Date and time of thrombolysis
- Adverse event related to thrombolysis
- Swallow screen and formal speech pathologist assessment
- Hyperacute antithrombotic therapy
- Mobilisation during admission
- Discharged on antithrombotic medication
- Discharged on antihypertensive medication
- Discharged on lipid-lowering medication
- Care plan provided at discharge (documented in the medical record)

Endovascular therapy (EVT) variables

- Provision of EVT, including date and time
- NIHSS: before ECR and 24 hours after EVT
- Site of occlusion
- Final eTICI (expanded thrombolysis in central infarction) score
- Adverse event related to EVT

Hospital outcomes/discharge data

- In-hospital death
- Date of discharge/death
- Discharge destination
- ICD-10 diagnosis codes and procedures

Follow-up variables 90 to 180 days after admission

- Survivor status
- Place of residence
- Living alone status
- Subsequent stroke since discharge
- Readmission to hospital
- Paediatric stroke outcome measure (PSOM) (P)
- Quality of life
- Modified Rankin Scale
- Would like an information pack from Stroke Foundation
- Willingness to participate in future research

EMERGENCY DEPARTMENT DATASET (OPTIONAL DATASET FROM 2019 ONWARDS)

- Date and time of discovery
- Pre-hospital notification
- Date and time of transfer
- Triage category
- Advanced imaging
- Date and time stroke telemedicine consultation conducted
- Drug used for thrombolysis

FESS (FEVER, SUGAR, SWALLOW) DATASET (OPTIONAL DATASET FROM 2019 ONWARDS)#

- Was temperature recorded ›4 times on day one of ward admission?
- In the first 72 hours following admission did the patient develop a fever › 37.5 0C
- Was paracetamol for the first elevated temperature administered within 1 hour?
- Was a finger-prick blood glucose level recorded ›4 times on day one of ward admission?
- In the first 48 hrs following ward admission did the patient develop a finger-prick glucose level ›10 mmol/L?
- Was insulin administered within 1 hour of the first elevated finger-prick glucose (› 10 mmol/L)?

** AuSCR programs allow hospitals to collect a bundle of variables depending on hospital resources and priorities.*
(P) Collected only as part of the paediatric dataset.
 # Swallowing is captured in core AuSCR programs.

APPENDIX G: METHODS FOR DERIVING INDICATORS

Indicator*	Numerator	Denominator	Comments	Program B	Program R	Program E
Door-in-door-out time for endovascular stroke therapy	ED transfer date/time – ED arrival date/time		**Includes episodes transferred for endovascular therapy. Excludes negative times.**			✓
Endovascular stroke therapy (ischaemic strokes only)	Yes	Yes + No + Unknown + Missing	**Excludes in-hospital strokes and episodes transferred from another hospital except where their first brain scan occurred at EVT-capable hospital.** Excludes negative times or those >720 minutes.	✓		
Door-to-arterial puncture time	Arterial puncture date/time – ED arrival time/time (or date/time of admission if missing)		**Include ischaemic strokes. Excludes in-hospital strokes and episodes transferred from another hospital.** Excludes negative times or those >720 minutes.	✓		
Thrombolytic delivery (ischaemic strokes only) **(Indicator 2a)**	Yes	Yes + No + Unknown + Missing	**Excludes in-hospital strokes or episodes provided a thrombolytic before arrival to hospital, unless this occurred in Mobile Stroke Unit.**	✓	✓	✓
Door-to-needle time	Thrombolytic delivery date/time – ED arrival date/time (or date/time of stroke onset for in-hospital strokes)		**Excludes in-hospital strokes or episodes transferred from another hospital.** Excludes negative times or those >270 minutes.	✓	✓	✓
Received stroke unit care **(Indicator 3a)**	Yes	Yes + No + Unknown + Missing		✓	✓	
Antithrombotic therapy within 48 hours of stroke onset	Yes (antiplatelet or other antithrombotic provided)	Yes + No + Unknown + Missing	Excludes patients with intracerebral haemorrhage, missing stroke type, if contraindicated, **or those who arrived >48hrs from onset.**	✓	✓	
Mobilised during episode	Yes	Yes + No + Unknown + Missing		✓	✓	
Mobilised same day or day after arrival†	Yes	Yes + No + Unknown + Missing		✓	✓	
Swallow screen or assessment conducted	Yes	Yes + No + Unknown + Missing		✓	✓	
Swallow screen or assessment within 4 hours of arrival†	Yes	Yes + No + Unknown + Missing	Excludes episodes transferred from another hospital.	✓	✓	
Swallow screen or assessment prior to oral intake	Yes	Yes + No + Unknown + Missing	Must be yes for both oral medication and food/fluids	✓	✓	✓
Antihypertensive medications prescribed if discharged to the community **(Indicator 5a)**	Yes	Yes + No + Unknown + Missing	Includes patients without contraindications **discharged to home, aged care, transitional care or other**	✓	✓	
Antithrombotic medications prescribed if discharged to the community **(Indicator 5d)**	Yes	Yes + No + Unknown + Missing	Includes patients without intracerebral haemorrhage or contraindications **discharged to home, aged care, transitional care or other**	✓	✓	
Lipid-lowering medications prescribed if discharged to the community **(Indicator 5b)**	Yes	Yes + No + Unknown + Missing	Includes patients without intracerebral haemorrhage or contraindications **discharged to home, aged care, transitional care or other**	✓	✓	
Care plan provided if discharged to the community **(Indicator 7a)**	Yes	Yes + No + Unknown + Missing	Includes patients without contraindications **discharged to home, aged care, transitional care or other**	✓	✓	

** All indicators exclude data from hospitals where >30% of relevant data are missing.*

† Or from date of stroke onset for patients with in-hospital stroke.

***Bold** used to indicate new changes to calculation method in 2022.*

***Red** indicates relevant Acute Stroke Clinical Care Standard Indicator.*[1]

APPENDIX H: RESEARCH APPLICATIONS

In 2024, there were five external applications reviewed by the Research Task Group:

- Australian Stroke Clinical Registry – return on investment (PI: Dr Joosup Kim, AIs: Professor Dominique Cadilhac, Dr Tharshanah Thayabaranathan, Mr Kushal Saini, other: AuSCR Management/ Steering Committee members to be invited to contribute to a working group for this project; Monash University).
- Understanding the representativeness of the Recovery focused Community support to Avoid readmissions and improve Participation after Stroke (ReCAPS) trial cohort (PI: Associate Professor Monique Kilkenny, AIs: Professor Dominique Cadilhac, Professor Natasha Lannin, Professor Helen Dewey, Professor Ian Kneebone, Associate Professor Nadine Andrew, Professor Avril Drummond, Dr Jan Cameron; Monash University).
- Hospital care costs and long-term outcomes (PI: Dr Joosup Kim, Ais: Professor Dominique Cadilhac, Ms Emilia Nivelle; Monash University).
- Investigation of quality of care after stroke and impact on outcomes (PI: Dr Joosup Kim, AIs: Professor Dominique Cadilhac, Associate Professor Monique Kilkenny, Dr Lachlan Dalli, Dr Mulugeta Birhanu, Dr Tharshanah Thayabaranathan, Dr Muideen Olaiya; Monash University).
- The feasibility and therapeutic utility of a 12-week telehealth delivered environmental enrichment program for young stroke survivors experiencing cognitive impairment (PI: Dr Travis Cruickshank, Ais: Professor David Blacker, Dr Johnny Lo, Associate Professor Mandy Stanley, Professor Amanda Devine, Professor Simon Laws, Professor Natalie Ciccone, Dr Yvonne Learmonth, Dr Mitchell Turner, Mr Philipp Beranek, Ms Leah Dempsey, Ms Madeline Griffiths, Mrs Kate Turner; Edith Cowan University).

APPENDIX I: STROKE PERFORMANCE SCORECARDS

In 2024, we provided participating hospitals with the Stroke Performance Scorecard to provide hospitals with a simple colour-coded summary of their performance to AuSCR quality indicators over time, and against achievable benchmarks.

STROKE PERFORMANCE SCORECARD

AUSTRALIAN STROKE CLINICAL REGISTRY

Sample Hospital		**2023** N= 1056	**2024** N= 1092
Case ascertainment		100%	100%
Quality indicator	2022 Benchmark*	**% Adherence**	**% Adherence**
Endovascular stroke therapy (ischaemic strokes presenting directly only)†	23%	17	24
Median door-to-groin time, in minutes	115‡	96	93
Thrombolytic delivery (ischaemic strokes only)	17%	11	15
Median door-to-needle time, in minutes	75‡	65	59
Door-to-needle within 60 minutes	79%	50	55
Stroke unit care	95%	84	90
Antithrombotic therapy within 48 hours of stroke onset†	94%	64	82
Mobilised same day or day after arrival	80%	60	55
Swallow screen or assessment prior to oral intake	92%	65	85
Swallow screen or assessment within 4 hours	56%	44	50
Antihypertensive medications prescribed (if discharged to the community)†	94%	80	74
Antithrombotic medications prescribed (if discharged to the community)†	99%	96	99
Lipid-lowering medications prescribed (if discharged to the community)†	98%	45	90
Care plan provided (if discharged to the community)†	99%	97	99

Key to colour-coded scoring system §			
Low outlier in the relevant time period #	Below the national average in the relevant time period	Above the national average in the relevant time period	At, or above, the benchmark in the relevant time period

* Achievable benchmarks relate to the 2022 year and are derived using a modified ABC™ method for stroke episodes only.
† Updated calculation method in 2022 (see further details on the next page).
‡ 2022 national median presented in lieu of a benchmark.
§ Coloured circles are not shown if your hospital did not collect data on the quality indicator or >30% of data were missing.
# Red is also only assigned if >50 episodes contributed to the denominator and ≤30% of data were missing.

APPENDIX J: ASC AND WSO AWARDS

AUSTRALIAN STROKE COALITION (ASC) AWARDS

In 2024, there were two ASC award categories based on 1) the provision of eight quality of care indicators (in line with the Living Clinical Guidelines for Stroke Management and national Acute Stroke Clinical Care Standard); and 2) the 30/60/90 Targets (i.e., Top Performing Hospitals and Most Improved Hospitals; see: ASC 2025 Awards: Winners announced – Australian Stroke Coalition)

Category 1: Quality Stroke Service Awards

Participating hospitals were judged on eight processes of care within acute admissions during the period 01/01/2024 to 31/12/2024, as recorded in the AuSCR. These processes of care included:

- provision of stroke unit care
- treatment with thrombolytic therapy OR endovascular clot retrieval (if offered by hospital)
- treatment with thrombolytic therapy within 60 mins of hospital arrival
- treatment with endovascular clot retrieval within 90 minutes of hospital arrival
- provision of antihypertensive medication on discharge, if discharged to the community*
- provision of antithrombotic medications on discharge, if discharged to the community*#
- provision of lipid-lowering medication on discharge, if discharged to the community* #
- provision of a discharge care plan if discharged to the community

* where not contraindicated
# excluding haemorrhagic strokes

A composite score based on these eight processes of care was calculated by dividing the total number of relevant indicators met by the sum of eligible indicators for each patient. Indicators relating to endovascular therapy were only included in awards calculations for hospitals participating in the AuSCR Black program. To be eligible for an award, each hospital was required to have an overall composite score greater than or equal to 70%, an overall rate of case ascertainment greater than or equal to 80%, 30 or more episodes recorded during the period, and less than 10% missing data for award variables. Awards were possible in two categories:

- EXCELLENCE: composite score of greater than or equal to 80%
- DISTINCTION: composite score of greater than or equal to 70%

The following hospitals received awards:

EXCELLENCE AWARDS: Royal Melbourne Hospital (VIC), Sunshine Hospital – Western Health (VIC), Northern Hospital (VIC), Austin Hospital (VIC), Peninsula Health – Frankston Hospital (VIC), Alfred Hospital (VIC), University Hospital Geelong (VIC), Royal Adelaid Hospital (SA), St John of God Midland Public Hospital (WA).

DISTINCTION AWARDS: Royal Brisbane and Women's Hospital (QLD), Monash Medical Centre (VIC), Gold Coast University Hospital (QLD), Princess Alexandra Hospital (QLD), Lyell McEwin Hospital (SA), Joondalup Health Campus (WA), Grampians Health Horsham (VIC), Hamilton Base Hospital (VIC), Logan Hospital (QLD), Echuca Hospital (VIC), Central Gippsland Health Service (VIC), Sunshine Coast University Hospital (QLD), West Gippsland Hospital (VIC), Flinders Medical Centre (SA), Bairnsdale Regional Health Service (VIC).

Category 2: 30/60/90 National Stroke Targets Awards

A new award category was added in 2024 with a focus on the National Stroke Targets.

1. TOP PERFORMING HOSPITALS for each Target metric were awarded a 30/60/90 National Stroke Targets award. Hospitals reaching the Targets metric received an acknowledgement. To qualify for an award or acknowledgement, hospitals were required to have a case ascertainment of ⩾80% and <10% missing data for the relevant variables required for the calculation of that Target metric. The following hospitals received awards:

Thrombolysis door-to-needle time (National Target <60 minutes)

TOP PERFORMING HOSPITAL: Royal Adelaide Hospital (SA)

ACKNOWLEGEMENTS: University Hospital Geelong (VIC), Royal Melbourne Hospital (VIC), Alfred Hospital (VIC), Austin Hospital (VIC), Lyell McEwin Hospital (SA).

Door-in-door-out time for metropolitan hospitals (National Target <60 minutes)

TOP PERFORMING HOSPITAL: Peninsula Health – Frankston Hospital (VIC)

Door-in-door-out time for regional road retrievals (National Target <75 minutes)

TOP PERFORMING HOSPITAL: Bendigo Health (VIC)

EVT door-to-puncture time for transfers (National Target <30 minutes)

ACKNOLWEDGEMENTS: Royal Adelaide Hospital (SA)

EVT door-to-puncture time for direct presenters (National Target <90 minutes)

TOP PERFORMING HOSPITAL: Royal Adelaide Hospital (SA)

Stroke unit care (National Target >90%)

TOP PERFORMING HOSPITAL: Hamilton Base Hospital (VIC)

ACKNOLWEDGEMENTS: St John of God Midland Public Hospital (WA), Grampians Health Horsham (VIC), Echuca Hospital (VIC), Central Gippsland Health Service (VIC), Northern Hospital (VIC), University Hospital Geelong (VIC), Royal Melbourne Hospital (VIC), Sunshine Hospital – Western Health (VIC), Warrnambool Base Hospital (VIC), Royal Brisbane and Women's Hospital (QLD), Austin Hospital (VIC).

2. MOST IMPROVED HOSPITALS between 2023 and 2024 for each Target metric were given a 30/60/90 National Stroke Targets award. The top 5 to 10 most improved hospitals for each Target metric received an acknowledgement. To be eligible, ⩾15 episodes was required for each Target metric. In order to receive the most improved award for stroke unit care, hospitals were required to achieve a minimum threshold of designated* stroke unit care provided to ⩾70% of patients and a door to needle time of <105 minutes. To qualify for an award or acknowledgement, hospitals were required to have a case ascertainment of ⩾80% and <10% missing data for the relevant variables required for the calculation of that Target metric.

**Until all hospitals have had the opportunity to apply for stroke unit certification.*

The following hospitals received awards:

Thrombolysis door-to-needle time (National Target <60 minutes)

MOST IMPROVED HOSPITAL: Sunshine Hospital – Western Health (VIC)

ACKNOWLEGEMENTS: Hamilton Base Hospital (VIC), Bairnsdale Regional Health Service (VIC), Joondalup Health Campus (WA), Flinders Medical Centre (SA), Albury Wodonga Health – Albury Campus (VIC), Royal Hobart Hospital (TAS), Royal Adelaide Hospital (SA), Fiona Stanley Hospital (WA).

Door-in-door-out time for metropolitan hospitals (National Target <60 minutes)

MOST IMPROVED HOSPITAL: Northern Hospital (VIC)

ACKNOLWEDGEMENTS: Peninsula Health – Frankston Hospital (VIC)

Door-in-door-out time for regional road retrievals (National Target <75 minutes)

MOST IMPROVED HOSPITAL: Bendigo Health (VIC)

ACKNOLWEDGEMENTS: Grampians Health Horsham (VIC), Grampians Health Ballarat (VIC)

EVT door-to-puncture time for transfers (National Target <30 minutes)

MOST IMPROVED HOSPITAL: Gold Coast University Hospital (QLD)

ACKNOLWEDGEMENTS: Royal Hobart Hospital (TAS), Royal Adelaide Hospital (SA), Princess Alexandra Hospital (QLD)

EVT door-to-puncture time for direct presenters (National Target <90 minutes)

MOST IMPROVED HOSPITAL: Princess Alexandra Hospital (QLD)

ACKNOLWEDGEMENTS: St Vincent's Hospital Victoria (VIC), Fiona Stanley Hospital (WA), Royal Adelaide Hospital (SA), Royal Melbourne Hospital (VIC), Royal Brisbane and Women's Hospital (QLD)

Stroke Unit care (National Target >90%)

MOST IMPROVED HOSPITAL: Latrobe Regional Health (VIC)

ACKNOLWEDGEMENTS: Redcliffe Hospital (QLD), Albury Wodonga Health – Albury Campus (VIC), West Gippsland Hospital (VIC), Northern Hospital (VIC), Peninsula Health – Frankston Hospital (VIC)

WORLD STROKE ORGANISATION ANGELS AWARDS

In 2024, in partnership with the World Stroke Organization, hospitals that submitted ⩾30 consecutive admissions per quarter to the AuSCR were eligible for consideration in the WSO Angels Awards. The award categories were Gold status, Platinum status or Diamond status. Awards were calculated quarterly, to align with WSO award provision globally (WSO Angels Awards | World Stroke Organization). Award criteria included the proportion of:

- ischaemic strokes thrombolysed and with a door-to-needle time < 60 minutes*
- ischaemic strokes undergoing clot retrieval and with a door-to-arterial puncture time < 120 minutes*
- ischaemic strokes thrombolysed and with door-to-needle time < 45 minutes*
- ischaemic strokes undergoing clot retrieval and with a door-to-arterial puncture time < 90 minutes*
- ischaemic strokes receiving either thrombolysis or clot retrieval*
- all suspected stroke patients undergoing CT or MRI imaging procedure
- all stroke patients undergoing a swallow screen or assessment
- ischaemic stroke patients discharged with antiplatelet medication#
- stroke patients discharged with anticoagulant medication#
- stroke patients treated in a dedicated stroke unit during their hospital stay

* excluding transfers

where not contraindicated.

2024

Quarter 1 (January to March)

Diamond winner:
Royal Adelaide Hospital (SA)

Platinum winners:
Austin Hospital (VIC)
University Hospital Geelong (VIC)

Gold winners:
Alfred Hospital (VIC)
Box Hill Hospital (VIC)
Canberra Health Service (ACT)

Quarter 2 (April to June)

Diamond winner:
Royal Adelaide Hospital (SA)

Gold winners:
Austin Hospital (VIC)
Box Hill Hospital (VIC)
North Canberra Hospital (ACT)
Peninsula Health – Frankston Hospital (VIC)
University Hospital Geelong (VIC)

Quarter 3 (July to September)

Gold winners:
Austin Hospital (VIC)
Box Hill Hospital (VIC)
Canberra Health Service (ACT)
Lyell McEwin Hospital (SA)
Princess Alexandra Hospital (QLD)
Royal Adelaide Hospital (SA)
Royal Melbourne Hospital (VIC)

Quarter 4 (October to December)

Diamond winners:
Austin Hospital (VIC)
Royal Adelaide Hospital (SA)

Platinum winner:
Canberra Health Service (ACT)

Gold winners:
Alfred Hospital (VIC)
Central Gippsland Health Service (VIC)
Mater Hospital (QLD)
Queen Elizabeth II Jubilee Hospital (QLD)
Royal Melbourne Hospital (VIC)
Townsville University Hospital (QLD)
University Hospital Geelong (VIC)

2025

Quarter 1 (January to March)

Diamond winners:
Austin Hospital (VIC)
Royal Adelaide Hospital (SA)

Platinum winner:
Latrobe Regional Hospital (VIC)

Gold winners:
Alfred Hospital (VIC)
Canberra Hospital (ACT)
Princess Alexandra Hospital (QLD)
Royal Hobart Hospital (TAS)
Royal Melbourne Hospital (VIC)
Toowoomba General Hospital (QLD)
University Hospital Geelong (VIC)

Quarter 2 (April to June)

Platinum winners:
Box Hill Hospital (VIC)
Peninsula Health – Frankston Hospital (VIC)
Princess Alexandra Hospital (QLD)

Gold winners:
Alfred Hospital (VIC)
Royal Adelaide Hospital (SA)
Royal Hobart Hospital (TAS)
Royal Melbourne Hospital (VIC)
University Hospital Geelong (VIC)

Quarter 3 (July to September) 2025

Diamond winners:
Austin Hospital (VIC)
Royal Adelaide Hospital (SA)

Platinum winners:
Box Hill Hospital (VIC)
Princess Alexandra Hospital (QLD)
Royal Melbourne Hospital (VIC)
University Hospital Geelong (VIC)

Gold winners:
Albury Wodonga Health – Albury Campus (VIC)
Alfred Hospital (VIC)
Canberra Hospital (ACT)
Gold Coast University Hospital (QLD)
Logan Hospital (QLD)
Peninsula Health – Frankston Hospital (VIC)
Royal Hobart Hospital (TAS)

APPENDIX K: RESEARCH TRANSLATION

JOURNAL PUBLICATIONS 2024

1 Cadilhac, D. A., & Gibbs, A. K. (2024). Research note: registry-based randomised controlled trials with examples from the Australian Stroke Clinical Registry. *Journal of Physiotherapy*. https://doi.org/10.1016/j.jphys.2024.02.015

2 Cadilhac, D. A., Morrison, J., Birhanu, M., Dalli, L. L., Paice, K., Carter, H., Campbell, B. C. V., Cloud, G., Kilkenny, M. F., Kilkenny, M. F., Faux, S., Hill, K., Donnan, G., Grimley, R., Lannin, N., Mackay, M., Stojanovski, B., Cowans, S., Middleton, S., & Dewey, H. M. (2024). *The Australian Stroke Clinical Registry annual report 2023* [Report]. The University of Melbourne. https://doi.org/10.26188/28059638.v2

3 Cadilhac, D. A., Ross, A. G., Bagot, K. L., Blennerhassett, J. M., Kilkenny, M. F., Kim, J., Purvis, T., Barclay, K. M., Ellery, F., Morrison, J., Cranefield, J., Kleinig, T. J., Grimley, R., Jaques, K., Wong, D., Murphy, L., Russell, G., Nelson, M. R., Thijs, V., Middleton, S. (2024). Protocol for a feasibility registry-based randomised controlled trial investigating a tailored follow-up service for stroke (A-LISTS). *Pilot and Feasibility Studies*, *10*(1), 103. https://doi.org/10.1186/s40814-024-01527-y

4 Kilkenny, M. F., Olaiya, M. T., Cameron, J., Lannin, N. A., Andrew, N. E., Thrift, A. G., Hackett, M., Kneebone, I., Drummond, A., Thijs, V., Brancatisano, O., Kim, J., Reyneke, M., Hancock, S., Allan, L., Ellery, F., Cloud, G., Grimley, R. S., Middleton, S., … Dempsey, I. (2024). Statistical analysis plan for the Recovery-focused Community support to Avoid readmissions and improve Participation after Stroke randomised controlled clinical trial. *Trials*, *25*(1), 78. https://doi.org/10.1186/s13063-023-07864-2

5 Kim, J., Olaiya, M. T., De Silva, D. A., Norrving, B., Bosch, J., De Sousa, D. A., Christensen, H. K., Ranta, A., Donnan, G. A., Feigin, V., Martins, S., Schwamm, L. H., Werring, D. J., Howard, G., Owolabi, M., Pandian, J., Mikulik, R., Thayabaranathan, T., & Cadilhac, D. A. (2024). Global stroke statistics 2023: availability of reperfusion services around the world. *International Journal of Stroke*, *19*(3), 253–270. https://doi.org/10.1177/17474930231210448

6 McInnes, E., Dale, S., Bagot, K., Coughlan, K., Grimshaw, J., Pfeilschifter, W., Cadilhac, D. A., Fischer, T., Van Der Merwe, J., QASC Europe Steering Committee, QASC Europe Implementation Committee, & Middleton, S. (2024). The Quality in Acute Stroke Care (QASC) global scale-up using a cascading facilitation framework: a qualitative process evaluation. *BMC Health Services Research*, *24*(1), 144. https://doi.org/10.1186/s12913-024-10617-9

7 Allan, L., Cameron, J., Silvera-Tawil, D., Li, J., Varnfield, M., Smallbon, V., Bomke, J., Olaiya, M. T., Lannin, N. A., & Cadilhac, D. A. (2024). Feasibility and end-user perceptions of a novel digital care assistant and support program for people after stroke or transient ischemic attack (CAPS). *European Heart Journal*, *45*(Supplement_1), ehae666.3567. https://doi.org/10.1093/eurheartj/ehae666.3567

8 Allan, L. P., Silvera-Tawil, D., Cameron, J., Li, J., Varnfield, M., Smallbon, V., Bomke, J., Olaiya, M. T., Lannin, N. A., & Cadilhac, D. A. (2024). Novel multicomponent digital care assistant and support program for people after stroke or transient ischaemic attack: a pilot feasibility study. *Sensors*, *24*(22), 7253. https://doi.org/10.3390/s24227253

9 Kilkenny, M. F., Dalli, L. L., Sanders, A., Olaiya, M. T., Kim, J., Ung, D., & Andrew, N. E. (2024). Comparison of comorbidities of stroke collected in administrative data, surveys, clinical trials and cohort studies. *Health Information Management Journal*, *53*(2), 104–111. https://doi.org/10.1177/1833358322112437

10 Silvera-Tawil, D., Cameron, J., Li, J., Varnfield, M., Allan, L. P., Harris, M., Lannin, N. A., Redd, C., & Cadilhac, D. A. (2024). Multicomponent support program for secondary prevention of stroke using digital health technology: co-design study with people living with stroke or transient ischemic attack. *Journal of Medical Internet Research*, *26*, e54604. https://doi.org/10.2196/54604

11 Bam, K., Kilkenny, M. F., Kim, J., Cadilhac, D. A., Pearce, C., Andrew, N. E., Sanders, L., Thrift, A. G., Nelson, M. R., Gall, S., Daraganova, G., & Olaiya, M. T. (2024). Age and sex disparities in cardiovascular risk factor management prior to stroke: linked registry and general practice data. *Neuroepidemiology*, *58*(5), 342–350. https://doi.org/10.1159/000538067

12 Olaiya, M. T., Kim, J., Pearce, C., Bam, K., Cadilhac, D. A., Andrew, N. E., Sanders, L. M., Thrift, A. G., Nelson, M. R., Gall, S., & Kilkenny, M. F. (2024). Management of people after stroke in 383 Victorian general practices, 2014–2018: analysis of linked stroke registry and general practice data. *Medical Journal of Australia*, *221*(10), 546–553. https://doi.org/10.5694/mja2.52511

13 Orman, Z., Cadilhac, D. A., Andrew, N. E., Kilkenny, M. F., Olaiya, M. T., Thrift, A. G., Ung, D., Dalli, L. L., Churilov, L., Sundararajan, V., Lannin, N. A., Nelson, M. R., Srikanth, V., & Kim, J. (2024). Cost-effectiveness of a government policy to incentivise chronic disease management following stroke: a modelling study. *Neuroepidemiology*, *58*(3), 208–217. https://doi.org/10.1159/000536224

14 Thayabaranathan, T., Wallace, S. J., Kim, J., Kilkenny, M. F., Olaiya, M. T., Andrew, N. E., Brogan, E., Baker, C., Godecke, E., Copland, D. A., Rose, M. L., Birhanu, M. M., & Cadilhac, D. A. (2024). Impact of quality of care on

outcomes in survivors of stroke with aphasia: a linked registry and hospital data observational study. *Journal of the Neurological Sciences*, *466*, 123251. https://doi.org/10.1016/j.jns.2024.123251

15 Kleinig, T. J., & Murphy, L. (2024). 30/60/90 National stroke targets and stroke unit access for all Australians: it's about time. *Medical Journal of Australia*, *221*(8), 402–406. https://doi.org/10.5694/mja2.52459

16 Morrison, J., Pompeani, N., Birhanu, M., Kuo, E., Paice, K., Thandar, M., Dallil, L., Dewey, H., & Cadilhac, D. (2024). *The Australian Stroke Clinical Registry data quality report 2023*. The Florey Institute of Neuroscience and Mental Health.

17 Teede, H., Cadilhac, D. A., Purvis, T., Kilkenny, M. F., Campbell, B. C. V., English, C., Johnson, A., Callander, E., Grimley, R. S., Levi, C., Middleton, S., Hill, K., & Enticott, J. (2024). Learning together for better health using an evidence-based Learning Health System framework: a case study in stroke. *BMC Medicine*, *22*(1), 198. https://doi.org/10.1186/s12916-024-03416-w

PUBLISHED ABSTRACTS

1 Purvis, T., Thayabaranathan, T., Immink, M., Hillier, S., Hancock, S., Brancatisano, O., & Cadilhac, D. (2024). Participant perceptions of the Support After Stroke with group-based classeS (SASS) feasibility trial. *Cerebrovascular Diseases*, *53* (Suppl. 1), 5–297. https://doi.org/10.1159/000541320

2 Dalli, L., Kilkenny, M., Olaiya, M., Ung, D., Kim, J., Churilov, L., Cadilhac, D., Sundararajan, V., Nelson, M., & Andrew, N. (2024). Population effect of chronic disease management policies on trajectories of medication adherence after stroke. *European Stroke Journal*, *9* (1_suppl), 3–647. https://doi.org/10.1177/23969873241245672

3 Kilkenny, M., Olaiya, M., Ung, D., Dalli, L., Kim, Cadilhac, D., Nelson, M., & Andrew, N. (2024). General practitioner and specialist care improves survival after TIA: a linked registry study. *European Stroke Journal*, *9* (1_suppl), 3–647. https://doi.org/10.1177/23969873241245672

PRESENTATIONS AND POSTERS

1 Cadilhac, D. (2024a, February 3). *Interactive Data Dashboards to Improve the Quality of Hyperacute Stroke Care and Patient Outcomes* [Presentation]. 2024 Sun Valley Cerebrovascular Conference, Sun Valley, The United States of America.

2 Cadilhac, D. (2024b, February 6). *National stroke care measurement, health disparities and policy* [Presentation]. International Stroke Conference, Phoenix, United States of America.

3 Cadilhac, D. (2024c, August 7). *Stroke Week: research innovations in treatment and recovery* [Presentation]. Stroke Week: Research Innovations in Treatment and Recovery, The Florey Institute, Melbourne, Australia.

4 Cadilhac, D. (2024d, November 14). *National integrated data: the future for stroke* [Presentation]. 12th Annual National Stroke Quality Improvement Workshop 2024, Melbourne, Australia.

5 Cadilhac, D., Birhanu, M., Churilov, L., Zhao, H., Coote, S., Campbell, B., Langenberg, Davis, S., Donnan, G., Smith, K., & Kim, J. (2024, November 14). *Evaluation of the Melbourne Mobile Stroke Unit using an Emulated Target Trial* [Presentation]. National Stroke Quality Improvement Workshop, Melbourne.

6 Cadilhac, D., Gibbs, A., Ross, A., Blennerhassett, J., Purvis, T., Morrison, J., Brooks, M., Pyman, J., Khanna, R., Kleinig, T., Grimley, R., Thijs, V., Kilkenny, M., Middleton, S., Kim, J., & on behalf of the A-LISTS investigator group. (2024, December). *The feasibility of a tailored, follow-up service for people living with stroke via a registry-based randomised controlled trial* [Poster]. ACTA 2024 Clinical Trials and Registries Symposium, Melbourne.

7 Dewey, H. (2024, September 25). *AuSCR future directions* [Presentation]. Asia Pacific Stroke Conference, Adelaide, Australia.

8 Hill, K., & Morrison, J. (2024, November 13). *Vision and progress for a modern integrated national stroke data program for improved monitoring and quality improvement* [Presentation]. 12th Annual National Stroke Quality Improvement Workshop 2024, Melbourne, Australia.

9 Kilkenny, M. (2024, May 21). *Insights into stroke: big data, epidemiology and prevention* [Presentation]. Faculté de Médecine Lyon-Est, France.

10 Marion, V. (2024a, May 30). *Australian Stroke Clinical Registry (AuSCR) data* [Presentation]. Royal Hobart Hospital Stroke Excellence in Practice Program Workshop Day 1, Virtual.

11 Marion, V. (2024b, September 20). *AuSCR updates* [Presentation]. Tasmanian Acute Stroke Forum, Virtual.

12 Morrison, J. (2024, September 25). *AuSCR dashboards: Australian Stroke Clinical Registry workshop* [Presentation]. Asia Pacific Stroke Conference, Adelaide, Australia.
13 Cadilhac, D. (2024, November 14). *AuSCR – Life after stroke tailored support study: a feasibility study and pilot randomised control trial* [Presentation]. 12th Annual National Stroke Quality Improvement Workshop 2024, Melbourne, Australia.
14 Hancock, S., Thayabaranathan, T., Stolwyk, R., Cameron, J., Immink, M., Hillier, S., Kilkenny, M., Brodtmann, A., Carey, L., Olaiya, M., Gee, E., & Cadilhac, D. (2024, September 24). *A comparison of post-stroke mental health, fatigue and quality of life following participation in a movement-based mindfulness or lifestyle education program: The Support After Stroke with group-based classeS (SASS) study* [Poster]. APSC 2024 conference, Adelaide. https://karger.com/doi/10.1159/000541320
15 Purvis, T., Thayabaranathan, T., Immink, M., Hillier, S., Hancock, S., Brancatisano, O., & Cadilhac, D. (2024, August 29). *Engagement in group-based community-based programs after stroke: example from the Support After Stroke with group-based classeS (SASS) trial.* [Presentation]. Smart Strokes conference, Gold Coast.
16 Thayabaranathan, T., Paul, M., Walker, R., Hancock, S., Allan, L., Immink, M., Hillier, S., Kilkenny, M., Brodtmann, A., Gee, E., Carey, L., Stolwyk, R., Bernhardt, J., Nilsson, M., & Cadilhac, D. (2024, September 24). *Movement-based mindfulness versus lifestyle education for managing physiological risk factors in stroke survivors: A Phase II study* [Poster]. Congress Abstracts entitled: 'Asia Pacific Stroke Conference 2024 Combined Australian and New Zealand Stroke Organisation Conference,' Adelaide. https://karger.com/doi/10.1159/000541320
17 Cadilhac, D. (2024, July 10). *Data linkage and automation in the Australian Stroke Clinical Registry* [Presentation]. Alliance of Registries (AoR) Working Group, Department of Health and Aged Care, online.
18 Dalli, L. (2024a, April 12). *Sex differences in initiation and discontinuation of secondary prevention medications after stroke* [Presentation]. 13th Health Services Research Conference, Brisbane.
19 Dalli, L. (2024b, July 26). *Big data to monitor population-wide adherence to antihypertensive medications* [Presentation]. Hypertension Australia, Hypertension Winter School, online.
20 Dalli, L. (2024c, November 26). *Using big data to monitor population-wide adherence to antihypertensive medications* [Presentation]. National Hypertension Taskforce Meeting, Sydney.
21 Dalli, L., Kilkenny, M., Cadilhac, D., Sundararajan, V., Nelson, M., & Andrew, N. (2024, May 15). *Population effect of chronic disease management policies on trajectories of medication adherence after stroke* [Poster]. 10th European Stroke Organisation Conference (ESOC 2024), Basel, Switzerland.
22 Kilkenny, M. (2024, October 5). *Translating big data insights for stroke into clinical policy and practice* [Presentation]. Kings College London, London.
23 Kilkenny, M., Olaiya, M., Cadilhac, D., Nelson, M., & Andrew. (2024, May 15). *General practitioner and specialist care improves survival after TIA: a linked registry study* [Poster]. 10th European Stroke Organisation Conference (ESOC 2024), Basel, Switzerland.

OTHER

1 Kilkenny, M. (2024, May 14). *International Network for Standardised Population Insights and Real-world Evidence for STROKE (INSPIRE-STROKE)* [Presentation]. Departement für Pharmazeutische Wissenschaften Universität Basel.
2 Murphy, L., Dalli, L., & Kim, J. (2024, November 26). *Economic Impact of Stroke Report 2024* [Presentation]. National Hypertension Taskforce Meeting, Sydney.
3 Thander, M. (2024, April 8). *MRFF Grant Austin Data Collection.*

JOURNAL PUBLICATIONS 2025

1 Cadilhac, D. A., Birhanu, M. M., Churilov, L., Zhao, H., Coote, S., Campbell, B. C. V., Langenberg, F., Davis, S. M., Donnan, G. A., Smith, K., & Kim, J. (2025). Costs and Benefits of the Melbourne Mobile Stroke Unit Compared with Standard Ambulance: Causal Analysis Using Observational Linked Data. Stroke, 56(4), 948–956. https://doi.org/10.1161/STROKEAHA.124.048403
2 Christie, L. J., Godecke, E., Smith, M., Scrivener, K., Hill, K., Kim, J., Crotty, M., Cadilhac, D. A., Dos Santos, A., & Lannin, N. A. (2025). State of stroke rehabilitation in Australia: a WHO STARS assessment to identify strengths and gaps across policy, practice and funding. Current Physical Medicine and Rehabilitation Reports, 13(1), 12.https://doi.org/10.1007/s40141-025-00481-x
3 Dalli, L. L., Andrew, N. E., Olaiya, M. T., Cadilhac, D. A., Kim, J., Ung, D., Thrift, A. G., Phan, H. T., Gall, S., Nelson, M. R., & Kilkenny, M. F. (2025). Sex differences in prescription, initiation, and discontinuation of secondary

prevention medications after stroke. Stroke, 56(7), 1769–1778. https://doi.org/10.1161/STROKEAHA.124.050207

4 Dalli, L. L., Kilkenny, M. F., Olaiya, M. T., Ung, D., Kim, J., Churilov, L., Cadilhac, D. A., Sundararajan, V., Thrift, A. G., Nelson, M. R., Lannin, N. A., Barnden, R., Srikanth, V., & Andrew, N. E. (2025). Chronic Disease Management to Enhance Medication Adherence Trajectories in Long-Term Survivors of Stroke: A Population-Based Cohort Study. Pharmacoepidemiology and Drug Safety, 34(5), e70148. https://doi.org/10.1002/pds.70148

5 Eliakundu, A., Kim, J., Smith, K., Kilkenny, M., Birhanu, M., Bagot, K., Nehme, E., Cox, S., Campbell, B., Clissold, B., Dewey, H., Rabaut, J., Ma, H., Baldin, C., & Cadilhac, D. (2025). Adherence to ambulance performance indicators and patient outcomes after stroke: An Australian data linkage study. Australasian Emergency Care. https://doi.org/10.1016/j.auec.2025.04.002

6 Hancock, S., Thayabaranathan, T., Stolwyk, R., Cameron, J., Immink, M. A., Hillier, S., Kilkenny, M. F., Brodtmann, A., Carey, L. M., Olaiya, M., Gee, E., & Cadilhac, D. A. (2025). Anxiety, Depression, Fatigue, and Quality of Life Outcomes Following a Movement-Based Mindfulness or Social Group Program for Chronic Stroke: A Sub-Study of a Phase II Feasibility Randomised Controlled Trial. Mindfulness, 16(6), 1612–1623. https://doi.org/10.1007/s12671-025-02579-8

7 Kilkenny, M. F., Dalli, L. L., Andrew, N. E., Ung, D., Kim, J., Sundararajan, V., Cadilhac, D. A., Thrift, A. G., Nelson, M. R., Olaiya, M. T., & on behalf of the PRECISE investigators. (2025). Region of birth differences in medication adherence among patients with stroke or transient ischemic attack. Neuroepidemiology, 1–14. https://doi.org/10.1159/000543317

8 Kilkenny, M. F., Sanders, A., Burns, C., Sanders, L. M., Ryan, O., Read, C., Lum On, M., Ranta, A., Purvis, T., Inman, C., Cadilhac, D. A., Carter, H., Rowlands, S., Nedkoff, L., Olaiya, M. T., & on behalf of the Australia and New Zealand Stroke Coding Working Group. (2025). Stroke clinical coding education program in Australia and New Zealand. Health Information Management Journal, 54(1), 25–33. https://doi.org/10.1177/18333583231184004

9 Leigh, C., Gill, J., Razak, Z., Shreyan, S., Cadilhac, D. A., Kim, J., Lannin, N. A., Dennis, M., Kapral, M., Pandian, J., Hardianto, Y., Lin, B., Meretoja, A., Aziz, N. A. A., Schwamm, L., Norrving, B., Thapa, L., Dozier, M., Kelavkar, S., & Mead, G. (2025). A systematic review of current national hospital-based stroke registries monitoring access to evidence-based care and patient outcomes. European Stroke Journal, 23969873241311821. https://doi.org/10.1177/23969873241311821

10 Morrison, J., Dalli, L., Kilkenny, M., Lannin, N., Paice, K., Thander, M., Kim, J., Birhanu, M., Pompeani, N., Carter, H., Ghuliani, J., Gibbs, A., Middleton, S., Dewey, H., & Cadilhac, H. (2025). Optimising data quality in a national clinical quality registry: Insights from the Australian Stroke Clinical Registry. Health Information Management Journal. https://doi.org/10.1177/18333583251352646

11 Olaiya, M., Kim, J., Pearce, C., Cadilhac, D., Andrew, N., Sanders, L., Thrift, A., Gall, S., & Kilkenny, M. (2025). Primary care management of stroke in people with dementia: Linked registry and general practice data. Australasian Journal on Ageing. https://doi.org/DOI:%2010.1111/ajag.70064

12 Purvis, T., Ross, A., Blennrhassett, J., Barclay, K., Frost, T., Wong, D., Hillier, S., Bagot, K., Kim, J., Cranefield, J., Jaques, K., Nelson, M., Russell, G., Scott, C., Kilkenny, M., Lannin, N., Kleinig, T., Grimley, R., Morrison, J., … Cadilhac, D. (n.d.). Co-Design of a Registry-Based Tailored Follow-up Service Intervention for People Living with Stroke: A Multiple Method Consensus Approach. Wiley. **https://doi.org/10.1111/hex.70474**

13 Thayabaranathan, T., Paul, M., Walker, F., Hancock, S., Allan, L., Immink, Maarten, Hillier, S., Kilkenny, M., Brodtmann, A., Gee, E., Carey, L., Stolwyk, R., Bernhardt, J., Nilsson, M., & Cadilhac, D. (n.d.). Movement-Based Mindfulness vs. Attention Control for Modifying Physiological Risk in Chronic Stroke: Evidence from a Feasibility Trial. MDPI, 13(22). https://doi.org/10.3390/healthcare13222940

Poster and Presentations

1 Cadilhac, D., Gibbs, A., Ross, A., Blennerhassett, J., Purvis, T., Morrison, J., & et al. (2025a, March 10). The feasibility of a tailored, follow-up service 6-months after stroke: a registry-based randomised controlled trial [Poster]. European Life After Stroke Conference, Prague, Czech Republic.

2 Morrison, J. (2025, March 14). Australian Stroke Clinical Registry. Stroke Foundation.

3 Cadilhac, D. (2025, April 9). CQRs within the National Health Data Hub Australian Stroke Clinical Registry. SAHMRI Registry Centre Seminar.

4 Cadilhac, D., Gibbs, A., Ross, A., Blennerhassett, J., Purvis, T., Morrison, J., & et al. (2025b, May). Evaluating the feasibility and acceptability of a tailored, follow-up service for people living with stroke using a registry-based

randomised controlled trial [abstract accepted for e-Poster] [Poster]. European Stroke Organisation Conference, Helsinki, Finland.

5 Cadilhac, D. (2025, May 9). Advances in the stroke clinical registry. Australian and New Zealand Stroke Organisation Conference 2025.

6 Morrison, J. (2025, July 29). Australian Stroke Clinical Registry. Stroke and Critical Care Launch.

7 Morrison, J. (2025). Australian Stroke Clinical Registry. Stroke Theme Forum.

8 Cadilhac, D. (2025b, September). The national clinical quality stroke registry program to support improvements in acute stroke care: Progress update. Australian & New Zealand Stroke Organisation Conference, Hobart, Tasmania.

9 Mackay, M. (2025, September). Paediatric stroke care and outcomes: Insights from the Australian Stroke Clinical Registry. Australian & New Zealand Stroke Organisation Conference, Hobart, Tasmania.

10 Cadilhac, D. (2025, September). The national clinical quality stroke registry program to support improvements in acute stroke care: Progress update. Australian & New Zealand Stroke Organisation Conference, Hobart, Tasmania.

11 Cadilhac, D. (2025, September). Future directions & the new National Stroke Data Platform. Australian & New Zealand Stroke Organisation Conference, Hobart, Tasmania.

12 Morisson, J. (2025, September). Use of registry data to drive improvements in acute stroke care: Insights from the Australian Stroke Clinical Registry. Australian & New Zealand Stroke Organisation Conference, Hobart Tasmania.

13 Cadilhac, D., Morrison, J., Birhanu, M., Dalli, L., & Paice, K. (2025, October). Hospital quality improvement activities and improvement in quality of care: Insights from the Australian Stroke Clinical Registry. Smart Strokes Conference, Newcastle.

14 Cadilhac, D. (2025, November). Addressing disparities in registries - providing equitable reports for vulnerable populations. Australian Clinical Trials Alliance, Melbourne.

15 Morrison, J. (2025, November). Co-designed dashboards to support a quality improvement collaborative: a Safer Care Victoria project with the Australian Stroke Clinical Registry. Australian Clinical Trials Alliance, Melbourne.

16 Morrison, J. (2025, November). The future of enhanced data feedback: Example from the AuSCR. Australian Clinical Trials Alliance, Melbourne.

17 Cadilhac, D. (2025, November). Advancing Learning Health Systems: The Role of Clinical Quality Registries and Linked Data. Australian Clinical Trials Alliance, Melbourne.

APPENDIX L: EMERGENCY DEPARTMENT DATA

TABLE I: BASELINE AND CLINICAL CHARACTERISTICS

	N=633 adult patients
	n (%)
Age in years, mean (standard deviation)	68 (14)
Age in years, median (25th–75th percentile)	70 (60–78)
Female	271 (43)
	N=633 adult episodes
Clinical diagnosis	
Ischaemic	498 (79)
Intracerebral haemorrhage	116 (18)
Undetermined	16 (3)
Able to walk on admission*	100 (17)
National Institutes of Health Stroke Scale	
No stroke symptoms (0)	24 (4)
Minor stroke (1–4)	108 (17)
Moderate stroke (5–15)	267 (42)
Moderate to severe stroke (16–20)	97 (15)
Severe stroke (21–42)	52 (8)
Missing	85 (13)
Modified Rankin Scale prior to stroke	
0 – No symptoms at all	463 (73)
1 – No significant disability despite symptoms	79 (12)
2 – Slight disability	65 (10)
3 – Moderate disability	18 (3)
4 – Moderately severe disability	<5 (<1)
5 – Severe disability	<5 (<1)
Missing	<5 (<1)
Triage category	
1	79 (9)
2	443 (70)
3	44 (7)
4	7 (1)
5	0 (0)
Missing	60 (9)

** Excludes missing responses (12%).*

TABLE II: CARE PROVISION IN THE EMERGENCY DEPARTMENT

CT: computed tomography; MR: magnetic resonance.

	N=633 adult episodes
	n (%)
Arrival by ambulance	516 (82)
Arrival within 4.5 hours of symptom onset	391 (62)
Pre-hospital notification by paramedics	286 (45)
Brain scan after stroke	592 (99)
Advanced Imaging Performed*	
CT angiography	546 (86)
CT perfusion	454 (72)
Diffusion weighted imaging	7 (1)
MR angiography	<5 (<1)
Perfusion weighted imaging	16 (2.5)
None	34 (5)
Median time to brain scan, minutes (25th–75th percentile) †	25 (15–41)
Provision of thrombolytic therapy if ischaemic stroke	219 (45)
Serious adverse event related to thrombolytic therapy	5 (2)
Telemedicine consultation	253 (82)
Swallow screen conducted	166 (28)
Swallow screen prior to oral intake	167 (30)
Reason for transfer to another hospital*	
Need for intravenous thrombolytic therapy	12 (2)
Need for stroke unit care	157 (25)
Need for specialist medical assessments	155 (24)
Need for surgical interventions	125 (20)
Need for diagnostic tests	55 (9)
Need for endovascular therapy	416 (66)
Unknown	20 (3)
Other	46 (7)

** Responses are not mutually exclusive (i.e., >1 option may be selected).*

† Excludes 11% missing or invalid responses (i.e., negative time or after 4.5 hours from arrival)

APPENDIX M: SUPPLEMENTARY REPERFUSION DATA

Table III: Reperfusion therapy for ischaemic stroke by stroke severity

	National Institutes of Health Stroke Scale Score					
Reperfusion provided for any episodes in the event	**None / Minor stroke (1-4)**	**Moderate Stroke (5-15)**	**Moderate to Severe stroke (16-20)**	**Severe stroke (21-42)**	**Missing**	**Total**
No reperfusion	5,809 (91)	2,381 (60)	329 (38)	331 (46)	3,237 (95)	12,087 (79)
IV-tPA only	415 (7)	729 (18)	84 (10)	70 (10)	64 (2)	1,362 (9)
EVT only	100 (2)	552 (14)	278 (32)	204 (28)	87 (3)	1,221 (8)
EVT + IV-tPA	54 (<1)	338 (8)	172 (20)	113 (16)	24 (<1)	701 (4)

Data are shown as number (percent). IV-tPA denotes intravenous thrombolytic therapy; EVT, endovascular therapy.

Table IV: Reperfusion therapy by arrival time within 4.5 hours in ischaemic stroke

Reperfusion provided for any episodes in the event	**Arrived within 4.5 hours (270 minutes) of symptom onset**		**Total**	***P*-value**
	No	**Yes**		
No reperfusion	5,110 (83)	3,871 (65)	8,981 (74)	*P*<0.001
IV-tPA only	259 (4)	1,067 (18)	1,326 (11)	
EVT only	552 (9)	588 (10)	1,140 (9)	
EVT + IV-tPA	242 (4)	449 (7)	691 (6)	

Data are shown as number (percent). IV-tPA denotes intravenous thrombolytic therapy; EVT, endovascular therapy.

Table V: Reperfusion therapy by onset to arrival categories with missing values in ischaemic stroke

Reperfusion provided for any episodes in the event	**Arrival hours category (minutes) of symptom onset**							**Total**
	0-90 minutes	**90-120 minutes**	**120-270 minutes**	**270-540 minutes**	**9-24 hours**	**>24 hours**	**Missing**	
No reperfusion	1,427 (60)	612 (65)	1,530 (69)	1,333 (71)	2,353 (84)	1,424 (96)	3,408 (93)	12,087 (78)
tPA only	544 (23)	178 (19)	299 (13)	152 (8)	82 (3)	25 (2)	82 (2)	1,362 (9)
EVT only	218 (9)	80 (9)	218 (10)	228 (12)	286 (10)	38 (3)	153 (4)	1,221 (8)
EVT + tPA	205 (9)	66 (7)	165 (8)	160 (9)	78 (3)	4 (<0)	23 (1)	701 (5)

Data are shown as number (percent). IV-tPA denotes intravenous thrombolytic therapy; EVT, endovascular therapy.

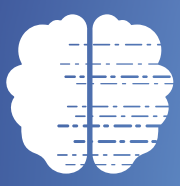
Table VI: Stroke treatment by transfer status in ischaemic stroke

Reperfusion provided for any episodes in the event	**Transfer from another hospital**		**Total**	***P*-value**
	No	**Yes**		
No reperfusion	10,201 (83)	1,792 (61)	11,993 (78)	*P*<0.001
tPA only	1,069 (9)	273 (9)	1,342 (9)	
EVT only	688 (5)	521 (18)	1,209 (8)	
EVT + tPA	355 (3)	343 (12)	698 (5)	

Data are shown as number (percent). IV-tPA denotes intravenous thrombolytic therapy; EVT, endovascular therapy.

APPENDIX N: ABBREVIATIONS

ABC™	Achievable benchmarks of care
ACT	Australian Capital Territory
ACHI	Australian Classification of Health Interventions
APF	Adjusted performance fraction
ASC	Australian Stroke Coalition
ASGS	Australian Statistical Geography Standard
AuSCR	Australian Stroke Clinical Registry
AuSDaT	Australian Stroke Data Tool
ANZSO	Australian and New Zealand Stroke Organisation
ED	Emergency Department
EQ-5D-3L™	European Quality of Life - five dimension, three level instrument
EVT	Endovascular therapy
FeSS	Fever Sugar Swallow
ICD-10	International Classification of Diseases (Version 10)
ICH	Intracerebral haemorrhage
mRS	Modified Rankin Scale
NDI	National Death Index
NIHSS	National Institutes of Health Stroke Scale
NSW	New South Wales
QLD	Queensland
RAMR	Risk adjusted mortality rate
SA	South Australia
SD	Standard deviation
SSA	Stroke Society of Australasia
SMS	Short Message Service
TAS	Tasmania
TIA	Transient ischaemic attack
tPA	Tissue plasminogen activator
VAS	Visual Analogue Scale
VIC	Victoria
WA	Western Australia
WSO	World Stroke Organization



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