NOCA National Office of Clinical Audit | INAS Irish National Audit of Stroke

IRISH NATIONAL AUDIT OF STROKE

NATIONAL THROMBECTOMY REPORT 2025



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ABOUT THE NATIONAL OFFICE OF CLINICAL AUDIT

The National Office of Clinical Audit (NOCA) was established in 2012 to create sustainable clinical audit programmes at national level. NOCA is funded by the Health Service Executive's (HSE) office of the Chief Clinical Officer (CCO), Dr Colm Henry, and is managed by HSE Quality and Patient Safety via the HSE National Centre of Clinical Audit (NCCA). Audits are commissioned by the NCCA via the CCO. NOCA is based in and operationally supported by the Royal College of Surgeons in Ireland (RCSI), and is independently governed by a voluntary board.

"Clinical audit is a clinically-led quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit specific clinical standards or clinical guidelines and acting to improve care when clinical standards or clinical guidelines are not met. The process involves the selection of aspects of the structure, processes and outcomes of care which are then systematically evaluated against explicit specific clinical standards or clinical guidelines" (Patient Safety (Notifiable Incidents and Open Disclosure) Act, 2023). Following clinical audit, improvements, if required, should be implemented at an individual, team or organisation level and the care then be re-evaluated to confirm improvements (Department of Health and Children, 2008).

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This report underwent a single-blind peer review process. NOCA gratefully acknowledges the reviewers for their valuable contributions and constructive feedback.

Finally, we acknowledge the support of the National Ambulance Service, the Dublin Fire Brigade, and the Airport Police Service for their continued engagement in the care of patients with a stroke and in quality improvement initiatives aimed at improving timely access to thrombectomy services. Their collaboration plays an important role in enhancing patient outcomes and advancing stroke care across Ireland.

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17th November 2026

Dear Professor Harbison,

On behalf of the NOCA Governance Board, I wish to acknowledge receipt of the *Irish National Audit of Stroke: National Thrombectomy Report 2025*.

We extend our sincere congratulations to you and the entire team, including Dr Matthew Crockett and Dr Patrick Barry, Cardiovascular Programme Audit Manager Joan McCormack, the report writing group, Governance Committee and Patient and Public Interest Representatives, for producing this important first report under the governance of the Irish National Audit of Stroke. We also acknowledge the valuable collaboration of the National Thrombectomy Service and clinical teams in Beaumont Hospital, Cork University Hospital and referring hospitals nationwide.

This inaugural report represents a significant development in national stroke audit reporting, providing a dedicated evidence base for monitoring access to thrombectomy and patient outcomes. The findings demonstrate encouraging clinical outcomes, with successful restoration of blood flow achieved in 91% of cases, while highlighting opportunities to improve the timeliness of referrals, inter-hospital transfers and equitable access to this time-critical treatment.

This letter serves as the formal endorsement of the NOCA Governance Board for the *Irish National Audit of Stroke National Thrombectomy Report 2025*. We are confident that its findings will support continued quality improvement and the development of thrombectomy services nationally.



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PREFACE



It is a privilege to introduce the inaugural Irish National Audit of Stroke (INAS) National Thrombectomy Report. The annual National Thrombectomy Report has previously been produced by Beaumont Hospital and Cork University Hospital under the auspices of the National Thrombectomy Service. This is the first year that the report has been brought under the governance of the INAS. That transition is a major win for patients, clinicians, and services across Ireland and reflects the maturity and national importance of endovascular thrombectomy (EVT) as a standard of care for acute ischaemic stroke.

Thrombectomy is among the most efficacious, time-critical treatments in modern medicine. Since the seminal randomised trials published in 2015 established EVT as a transformative therapy for selected patients with large vessel occlusion, the evidence base has expanded rapidly. Landmark late-window trials such as DAWN and DEFUSE 3 extended the therapeutic window for carefully selected patients, and more recent trials addressing large infarct cores (for example, SELECT2 and RESCUE-Japan LIMIT) have broadened the population who may benefit from thrombectomy. Together, these studies have reshaped practice worldwide in less than a decade and underpin the clinical pathways we now deliver in Ireland.

Ireland's National Thrombectomy Service is delivered through two designated EVT centres – Beaumont Hospital and Cork University Hospital – working in partnership with referring hospitals across the country. Concentrating specialist neurointerventional and stroke expertise in two centres has delivered consistently high technical performance and robust follow-up, while relying on efficient referral and transfer pathways to reach patients in every region. This model has served us well to date, but it also places a premium on seamless interhospital coordination, rapid decision-making, and efficient patient transportation to achieve equitable access.

This report establishes a clear national baseline for 2025 and highlights both strengths and opportunities. In 2025, 483 patients underwent thrombectomy, an overall national thrombectomy rate of 8% among patients with ischaemic stroke. Most of these patients (78%) required transfer from a referring hospital to an EVT centre, underscoring the centrality of transfer pathways to national service delivery. Timeliness of intervention is the major determinant of outcome: national medians included 22 minutes to computed tomography (CT) scan, 56 minutes to contact an EVT centre, and a median 'door-in to door-out' time of 109 minutes. After transferred patients arrived in the EVT centre, the median time from arrival to arterial puncture was 22 minutes, and technically successful reperfusion was achieved in 91% of cases (thrombolysis in cerebral infarction (TICI) scale score ≥2b). Early clinical improvement was seen in patients undergoing EVT, with the median National Institutes of Health Stroke Scale (NIHSS) score dropping from 14 pre-procedure to 8 at 24 hours post-procedure. At 90 days post-procedure, 48% of patients were functionally independent (modified Rankin Scale score of 0–2), a rate comparable with outcomes reported in major international thrombectomy trials and meta-analyses, where approximately 46% of patients achieved functional independence (Goyal *et al*., 2016).

This report confirms the excellent technical and clinical performance of EVT, but it also exposes variability in access and timeliness that represents clear opportunities for system improvement. There is reason to be ambitious. International experience suggests that, with optimised systems of care, thrombectomy can be delivered to up to 15% of patients with ischaemic stroke (McMeekin *et al*., 2024). Some European systems report thrombectomy rates approaching 20% of patients with ischaemic stroke (de Sousa *et al*., 2023); achieving higher, more equitable national rates in Ireland will require continued focus on pre-hospital recognition, imaging pathways, referral decisionmaking, transfer logistics, and capacity planning. At the same time, we must preserve the high technical standards and outcomes already achieved at our EVT centres.

This report celebrates the dedication and skill of many teams, neurointerventional radiologists, stroke physicians, emergency clinicians, radiographers, nurses, paramedics, and data and administrative staff, whose collaboration makes thrombectomy possible. It also sets out a pragmatic, evidence-based agenda: reduce interhospital variation, shorten transfer and decision times, expand equitable access, and sustain rigorous audit and quality improvement. The detailed findings and recommendations from this report will guide those efforts.

I congratulate all involved in the production of this report, and I warmly welcome the integration of this audit into the INAS. This report is the product of many people working together for the benefit of patients; it provides a firm, evidence-based platform from which to drive improvements in access, timeliness, and outcomes for people with acute ischaemic stroke across Ireland. I look forward to continued collaboration as we translate these findings into better, faster and fairer care for every patient who may benefit from thrombectomy.

Dr Matthew Crockett
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Beaumont Hospital
Director, National Thrombectomy Service

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GLOSSARY OF TERMS AND DEFINITIONS

ACRONYM/TERM	MEANING
ANP	advanced nurse practitioner
ASPECTS	Alberta Stroke Program Early CT Score
CT	computed tomography
DIDO	'door-in door-out'
door-to-contact time	Time from hospital arrival to contact with the endovascular thrombectomy (EVT) centre.
ESD	Early Supported Discharge
EVT	endovascular thrombectomy
FAST	face, arm, speech and time
HADx	hospital acquired diagnosis
HIPE	Hospital In-Patient Enquiry
HPO	Healthcare Pricing Office
HSE	Health Service Executive
ICA	internal carotid artery
ICD-10	International Classification of Diseases, Tenth Revision
IQR	interquartile range
INAS	Irish National Audit of Stroke
LVO	large vessel occlusion

ACRONYM/TERM	MEANING
MCA	middle cerebral artery
mRS	modified Rankin Scale
NAS	National Ambulance Service
NCP-Stroke	National Clinical Programme for Stroke
NIHSS	National Institutes of Health Stroke Scale
NOCA	National Office of Clinical Audit
NTS	National Thrombectomy Service
PITSTOP	Protocol for Improving Times for STroke patients requiring Onward transfer from Primary stroke centre to thrombectomy centre
QI	quality improvement
SPSS	Statistical Package for the Social Sciences
TICI	thrombolysis in cerebral infarction
thrombectomy	A thrombectomy is the mechanical removal of a blood clot from a blood vessel.
thrombolysis	Thrombolysis is the use of drug treatment to dissolve blood clots.
reperfusion	Reperfusion is the restoration of blood flow to affected tissue.
repatriation	Repatriation is the return of a patient to the referring hospital after treatment.

EXECUTIVE SUMMARY

This document is the inaugural Irish National Audit of Stroke (INAS) National Thrombectomy Report, which provides a comprehensive overview of thrombectomy services delivered in Ireland during 2025. While thrombectomy data have been reported previously through INAS publications, the development of this report involved the introduction of a new set of thrombectomy-specific reporting metrics, definitions and methodologies. As a result, the analyses presented here are not directly comparable with those published in previous National Thrombectomy Service (NTS) reports or other INAS reports. In order to avoid potential misinterpretation, the authors have not made any comparisons with results reported previously. Future reports will establish a baseline against which trends in performance, service delivery and patient outcomes can be monitored over time.

Thrombectomy is a highly effective, time-critical treatment for selected patients with acute ischaemic stroke caused by large vessel occlusion. This report examines patient demographics, access to care, process measures, treatment timelines, and patient outcomes across the two national endovascular thrombectomy (EVT) centres, Beaumont Hospital and Cork University Hospital, as well as across referring hospitals throughout the country.

In 2025, 483 patients underwent thrombectomy in Ireland. The national thrombectomy rate is calculated using only cases with available ischaemic stroke data; therefore, 476 thrombectomy cases were included in the rate calculation. This represents an estimated national thrombectomy rate of 8% among patients with ischaemic stroke. Considerable variation was observed between hospitals, with thrombectomy rates ranging from 5% to 13%, highlighting opportunities to improve equitable access to treatment nationwide. Most thrombectomy patients (78%) required transfer from a referring hospital to an EVT centre, emphasising the importance of efficient referral pathways. The median National Institutes of Health Stroke Scale (NIHSS) score before thrombectomy was 14, indicating that most patients presented with moderate to severe strokes.

"THROMBECTOMY IS A HIGHLY EFFECTIVE, TIME-CRITICAL TREATMENT FOR SELECTED PATIENTS WITH ACUTE ISCHAEMIC STROKE CAUSED BY LARGE VESSEL OCCLUSION."

Timeliness remains a key determinant of patient outcomes. National median times were 22 minutes from hospital arrival to computed tomography (CT) scan, 56 minutes from arrival to contact with an EVT centre, and 109 minutes for 'door-in door-out' (DIDO) time. Variation between hospitals indicates potential for further improvement in transfer and treatment pathways.

Clinical outcomes were favourable. Successful reperfusion (thrombolysis in cerebral infarction (TICI) scale score of ≥2b) was achieved in 91% of cases, while the median NIHSS score improved from 14 before treatment to 8 at 24 hours post-procedure. Ninety-day follow-up data were available for 92% of patients, and of these, 49% had good functional outcomes with a modified Rankin Scale (mRS) score ranging from 0 to 2.

Forty-four percent (n=168) of cases who were transferred to an EVT centre for thrombectomy required admission to the EVT centre after the procedure. These patients required admission to an acute stroke unit following thrombectomy, and the additional demand that they placed on stroke unit bed capacity should be considered in service planning and resource allocation.

This report establishes a national baseline for thrombectomy services in Ireland and identifies important opportunities to improve access, reduce treatment delays and enhance outcomes for patients with acute ischaemic stroke. Caution is advised in the interpretation of variation between hospitals, as much of the variation observed within a single year could be accounted for by spontaneous fluctuations in the small numbers coming from many of the hospitals, rather than reflecting true differences in clinical practice.

KEY FINDINGS

- Thrombectomy was performed in 8% of ischaemic stroke cases nationally (483 patients), with substantial variation across hospitals (5–13%).
- Forty-five percent (n=216) of patients who had a thrombectomy were female and 55% (n=267) were male. The mean age was 73 years for female cases and 69 years for male cases.
- Most patients (78%; n=379) were transferred to EVT centres rather than being directly admitted.
- The median NIHSS score prior to thrombectomy was 14 (interquartile range (IQR): 9–19), reflecting predominantly moderate to moderately severe stroke prior to thrombectomy.
- The median time to CT scan was 22 minutes (IQR: 15–33 minutes).
- The thrombolysis rate was 34% (n=165).
- The median door to contact the EVT centre was 56 minutes (IQR: 39–78 minutes), and 12% (n=36) of patients had a door-to-contact time of 30 minutes or less.
- The median DIDO time was 109 minutes (IQR: 74–143 minutes).
- The median time from arrival at the EVT centre to groin puncture was 27 minutes (IQR: 14–55 minutes). This length of time was 84 minutes (IQR: 60–101 minutes) for those who presented directly to an EVT centre, compared with 22 minutes (IQR: 12–34 minutes) for cases transferred to an EVT centre from another hospital.
- The median time from groin puncture to first reperfusion was 21 minutes (IQR: 13–37 minutes).
- The proportion of patients with witnessed stroke is only available in 48% (n=234) of cases, limiting the interpretation of the time from symptom onset to reperfusion. The median time from symptom onset to reperfusion was 341 minutes (IQR: 242–489 minutes).
- Successful reperfusion (TICI scale score of ≥2b) was achieved in 91% of cases, indicating a high level of technical effectiveness of thrombectomy across both EVT centres.
- The median NIHSS score improved from 14 pre-thrombectomy to 8 at 24 hours post-procedure.
- At 90 days post-thrombectomy, 49% (n=216) of cases had no symptoms or had a mild disability (mRS score of 0–2), 32% (n=143) had a moderate to severe disability (mRS score of 3, 4 or 5), and 19% (n=84) had died.
- Forty-four percent (n=168) of patients who were transferred to the EVT centre were not immediately transferred back to the referring hospital after thrombectomy, and the median length of stay in the EVT centre was 4 days (IQR: 2–7 days).
- Of those who were admitted directly to the EVT centre (excludes in-hospital strokes), the median length of stay was 12 days (IQR: 6-27 days), and the same proportion of cases were discharged home or home with ESD (60%) as in the general stroke population.

RECOMMENDATIONS

RECOMMENDATION 1

All Health Service Executive health regions should review thrombectomy rates in order to ensure equitable access for all eligible patients.



RECOMMENDATION 2

The rate of intravenous thrombolysis in eligible patients who subsequently undergo thrombectomy should be reviewed across all participating hospitals.



RECOMMENDATION 3

Timely transfer processes to EVT centres require regional review and improvement.



KEY FINDINGS 2025

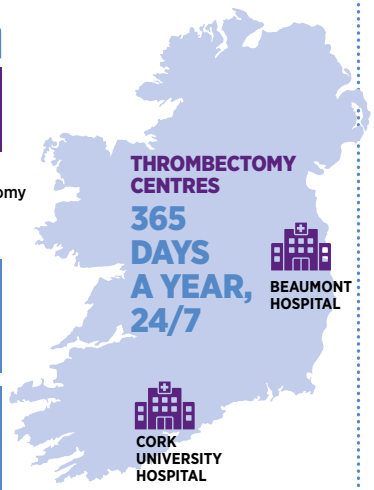
ACCESS TO THROMBECTOMY

483

In 2025, **483 people** underwent thrombectomy in Ireland across two specialist centres:

BEAUMONT HOSPITAL
347
PATIENTS

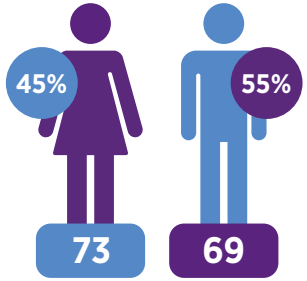
CORK UNIVERSITY HOSPITAL
136
PATIENTS



This represented approximately **8%** of all patients admitted with ischaemic stroke nationally.

8%

WHO RECEIVED TREATMENT?



45% of patients were women and 55% were men. The average age was 73 years for women and 69 years for men.

Most people who received a thrombectomy had a moderate to severe stroke.

78%

Most patients (**78%**) first attended a local hospital and were then transferred to one of Ireland's two specialist thrombectomy centres.

HOW QUICKLY WERE PATIENTS TREATED?

Stroke treatment is extremely time-critical. The faster treatment is given, the better the chance of reducing brain damage and improving recovery.



Patients had a brain scan (computed tomography (CT) scan) within a median time of 22 minutes after arriving at hospital.



34% of patients also received clot-busting medication (thrombolysis) before undergoing thrombectomy.



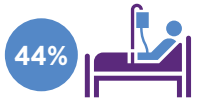
Hospitals contacted a specialist thrombectomy centre to assess whether a patient was suitable for thrombectomy within a median* time of 56 minutes after arrival.



The median time between arrival at the first hospital and the time that the patient left the first hospital for transfer to the thrombectomy centre was 109 minutes.



Once patients arrived at the thrombectomy centre, the thrombectomy procedure started within a median time of 27 minutes.



Almost one-half (44%) of patients who were transferred to a thrombectomy centre needed to stay in the stroke unit for further treatment and care after their procedure.

The INAS National Thrombectomy Report found that some hospitals were able to move patients through the thrombectomy pathway faster than others. This suggests that there are opportunities to share good practice and make stroke care quicker and more consistent for patients across Ireland.

* The median is the middle value in a set of numbers arranged from lowest to highest, with half the values above it and half below it.

PATIENT OUTCOMES

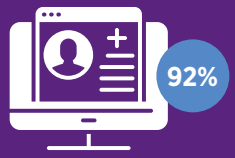
Blood flow was successfully restored in **91% of patients**, showing that thrombectomy is a highly effective treatment when used in appropriate patients.



Stroke symptoms improved after treatment, One day after thrombectomy, patients had fewer stroke symptoms, with the typical stroke severity score improving from 14 to 8.

A stroke severity score measures how severely a person has been affected by a stroke, with higher scores indicating more severe stroke symptoms.

Follow-up information was available for 92% of patients at 90 days after their stroke.





Among patients with follow-up data, 49% had little or no disability 90 days after their stroke.

19% of patients had died within 90 days of their stroke.



PATIENT STORY



MAJELLA'S STORY

"I had a major stroke. By lunchtime, after thrombectomy, I was waving at my family with the hand that had been paralysed that morning."

Rapid recognition and timely treatment

My name is Majella Cassidy, and in September 2018, a few days after my 36th birthday, I had a major stroke. At the time, I was working as an occupational therapist specialising in stroke rehabilitation.

In the days beforehand, I had a chest infection and was coughing very hard. Later, doctors discovered that my coughing may have caused a carotid artery dissection in my neck, resulting in a major right middle cerebral artery (MCA) stroke. Looking back, there may have been a warning sign. The day before, I had experienced a brief episode of visual disturbance while out walking my dogs, but it settled quickly and I thought nothing more of it. When you're young, healthy, and have no risk factors, stroke is not something you expect.

The following morning, while driving to work, I developed a facial droop and weakness down my left side. Looking in the mirror, I remember thinking, "Oh my God, I could be having a stroke." Yet somehow, I still couldn't fully accept it. You're not fully with it, but you are at the same time. One part of my brain knew I was having a stroke while the other kept saying, "Don't be silly, you're grand." Thankfully, two women stopped and called an ambulance. Even then, despite displaying all the signs, I remember insisting, "I'm not FAST (face, arm, speech and time) positive. I'm grand."

I was brought to Our Lady of Lourdes Hospital Drogheda, where everything moved incredibly quickly. I received thrombolysis before being transferred to Beaumont Hospital for thrombectomy. My parents were kept informed throughout and later spoke about how reassured they felt by the clinical team. Prior to the thrombectomy, I was given conscious sedation, which made me relaxed and drowsy but aware of what was happening and able to respond to questions. Most of it is a blur, but I remember the clot being retrieved. I remember feeling some discomfort in my head, but it was for a very short time. Then came the moment I'll never forget. I was asked to lift my left leg and I could do it almost immediately. A few hours earlier I had been unable to move my left side. I returned to Our Lady of Lourdes Hospital Drogheda around lunchtime and waved at my family with the hand that had been paralysed that morning.

The human experience of stroke

What surprised me most wasn't fear. Lying beside my car, unable to move, all I could think was, "Well, there's nothing you can do about it now." It was a lovely sense of calm. Acceptance. If I could bottle that feeling, I would.

The experience has taught me what it means to become the patient. Until you're the person lying in a hospital bed, dependent on others, you don't fully appreciate how important dignity is in healthcare. Despite everything that was happening, I never felt frightened because I knew and trusted the people caring for me.

Although my physical recovery was excellent, the hidden effects lasted much longer. The fatigue was unlike anything I had experienced before. I honestly don't think you realise the intensity of stroke fatigue until you've experienced it. When I eventually saw my brain scan, the enormity of what had happened really hit me. Counselling helped me to process what had happened and rebuild my confidence.

Recovery beyond hospital and reflection

It was 6 months before I returned to work. Returning as someone who specialised in stroke rehabilitation gave me a completely different perspective on recovery. Before my stroke, I understood fatigue professionally. Afterwards, I understood it personally. The experience made me more aware of the hidden effects of stroke and the challenges people face long after they leave hospital.

I often get asked to tell my story because it is a positive one. Sometimes you hear all the stories about what went wrong. But I feel like this was a really good example of what can happen when people work well together and the processes are there.

Professionally, I knew the devastating impact a major stroke can have. Without thrombectomy, I know my life could have been very different. That morning I couldn't move my left side. Just a few hours later, I was waving at my family.

That's the power of thrombectomy.



1. INTRODUCTION

1. INTRODUCTION

What is a thrombectomy?

A thrombectomy is a highly effective treatment for acute ischaemic stroke, involving the mechanical removal of a blood clot from a large cerebral artery. It is performed by inserting a thin tube called a catheter into a large artery, usually in the groin (femoral artery) or occasionally the wrist (radial artery) and guiding it through the blood vessels to the blocked artery in the brain using X-ray imaging. A specialised device, most commonly a stent retriever or aspiration catheter, is then used to remove the clot and restore blood flow to the affected part of the brain (Figure 1.1).

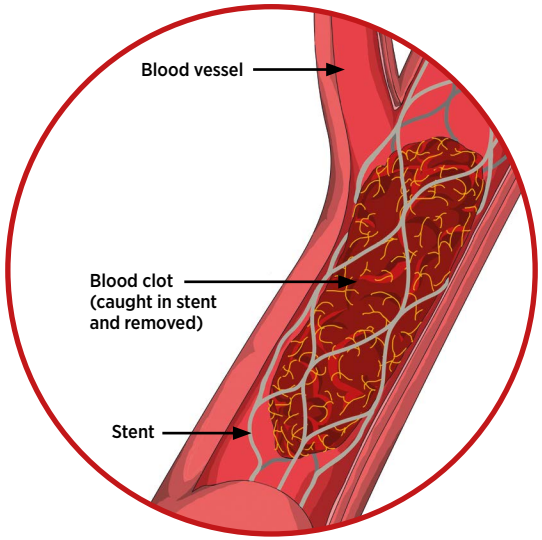


FIGURE 1.1: THROMBECTOMY

Multiple randomised controlled trials and meta-analyses have demonstrated thrombectomy's clinical benefit in appropriately selected patients, with efficacy extending up to 24 hours after the onset of stroke symptoms (Albers *et al*., 2018; Nogueira *et al*., 2018; Goyal *et al*., 2016). The principle that 'time is brain' is central to stroke care, and emergency thrombectomy is among the most time-critical interventions. Evidence suggests that for every minute saved in delivering thrombectomy, patients gain, on average, an additional week of independent living (Meretoja *et al*., 2017).

How is thrombectomy delivered in Ireland?

In Ireland, the National Thrombectomy Service (NTS) is delivered through two designated endovascular thrombectomy (EVT) centres: Beaumont Hospital and Cork University Hospital. Emergency thrombectomy is recognised as the standard of care for eligible patients with acute ischaemic stroke for up to 24 hours following symptom onset and is available 24 hours a day, 7 days a week (Albers *et al*., 2018; Nogueira *et al*., 2018; Goyal *et al*., 2016).

The NTS operates a 'drip and ship' model of care. Under this model, patients presenting with suspected stroke are initially assessed at the nearest hospital that provides acute stroke services. Following diagnostic assessment, eligible patients receive intravenous thrombolysis, are assessed for suitability for thrombectomy, and are then transferred to the nearest EVT centre for thrombectomy.

In many cases, where patients are clinically stable and the referring hospital is within a 90-minute travel time, patients are repatriated immediately following the thrombectomy procedure using the same ambulance crew and accompanying medical team. This approach is referred to as the 'drip, ship, retrieve, and leave' model of care. Patients who require ongoing monitoring or treatment may be admitted to the EVT centre following the procedure.

Purpose of this report

Since 2020, NTS activity and outcomes have been reported separately by the Irish National Audit of Stroke (INAS) using Hospital In-Patient Enquiry (HIPE)/Stroke Clinical Audit data and by the NTS using data collected in the two EVT centres on a local database. In 2025, it was agreed through the Office of the Chief Clinical Officer and the Health Service Executive National Clinical Programme for Stroke (NCP-Stroke) that a single national thrombectomy report should be produced within the governance structure of the INAS (Appendix 1).

This report describes the quality of care provided to patients with a stroke who underwent thrombectomy in the two designated EVT centres and in referring hospitals in 2025, comparing hospital-to-hospital performance based on processes and outcomes.

This report was prepared by a multidisciplinary writing group and overseen by the INAS Governance Committee. It underwent a single-blind review process, and feedback was incorporated into the report.



2. METHODOLOGY

2. METHODOLOGY

BACKGROUND



The INAS dataset was established in 2012 and collects additional stroke-specific data on patients with a stroke through a stroke audit portal in the HIPE system. The INAS dataset has three sections:

1. core clinical data
2. thrombectomy data
3. health and social care professional data.

The thrombectomy dataset was first included in the INAS dataset in 2016, and additional variables have been added in subsequent years and are documented in the INAS data dictionary. Thrombectomy data are collected on all patients who receive a thrombectomy in an EVT centre, both within the HIPE stroke audit portal and in a separate database in each EVT centre. Data recorded in the HIPE stroke audit portal are reported by the INAS.

Further information on the establishment of the INAS and its aims and objectives can be found in Appendix 2.

DATA SOURCE



The Healthcare Pricing Office (HPO) merged the HIPE and INAS data to create an anonymised stroke extract. This extract was subsequently filtered by the National Office of Clinical Audit (NOCA) data analyst in order to extract the thrombectomy dataset used for this report. The thrombectomy dataset includes only cases in which a thrombectomy was performed, along with the associated core clinical data for each case.

In order to assess the rate of thrombectomy, an extract was obtained from HIPE comprising all cases from acute hospitals with an International Classification of Diseases, Tenth Revision (ICD-10) code of I63 or I64 recorded either as the principal diagnosis or as a hospital acquired diagnosis (HADx).

In order to assess coverage, total thrombectomy procedure numbers were obtained from each EVT centre. Please see the data quality statement for further information.

In order to assess the rate of thrombolysis prior to thrombectomy, additional data were sourced from Cork University Hospital. Please see the data quality statement for further information.

DATA COLLECTION



Audit coordinators entered core clinical and thrombectomy data for each patient undergoing thrombectomy at either of the two EVT centres: Beaumont Hospital and Cork University Hospital.

DATA VALIDATION



In 2025, the NOCA data analytics team developed a data validation process for the thrombectomy dataset. The data presented in this report have undergone these validation checks.

DATA ANALYSIS



NOCA received the full stroke audit portal 2025 data extract from the HPO on 6 May 2026, and analysis was completed by the NOCA data analyst. The analysis was conducted using Statistical Package for the Social Sciences (SPSS) V30.

Appendix 3 displays the frequency tables for all figures within this report.

INCLUSION/EXCLUSION CRITERIA

The thrombectomy dataset was extracted from the HIPE/INAS dataset by filtering for all cases who had a thrombectomy and were aged 17 years and over.

The thrombectomy dataset inclusion criteria for 2025 were:
I. all cases with the 'thrombectomy' field populated with '1=Yes' within the stroke audit portal
II. patients aged 17 years and over.
The thrombectomy dataset exclusion criterion for 2025 was:
I. patients aged 16 years and under.

After applying the inclusion and exclusion criteria, the final thrombectomy dataset used to report on thrombectomy comprised 483 cases.

Additional note on Inpatient stroke

The inclusion and exclusion criteria used in this report differ from those applied in the INAS National Reports (NOCA, 2025). In the INAS National Reports, patients who experience a stroke while already admitted to hospital for another condition (inpatient stroke) are excluded from the denominator. In contrast, this report includes all patients who underwent EVT in the denominator, including patients who experienced an inpatient stroke either within an EVT centre or in another hospital prior to transfer to an EVT centre.

The INAS dataset contains a variable indicating whether a patient experienced a stroke while already admitted to hospital. However, there are differences in how this variable is recorded at Beaumont Hospital and Cork University Hospital. Beaumont Hospital records 'Yes - in-hospital stroke' for patients whose stroke occurred either in Beaumont Hospital itself or in a referring hospital. Cork University Hospital records 'Yes - in-hospital stroke' only when the stroke occurred while the patient was admitted to Cork University Hospital itself.

Several metrics presented in Chapter 5 assess the timeliness of emergency stroke processes, such as Table 5.1. For these analyses, the patient's arrival time at their first hospital is used as the starting point. This measure is not applicable, or may not be reliably available, for patients who experience a stroke while already admitted to hospital. Consequently, these cases are excluded from analyses that rely on a first hospital arrival time. However, they remain included in analyses where this information is not required, such as Table 6.4 in Chapter 6.

In addition, for patients who experience an inpatient stroke within an EVT centre, the recorded first hospital arrival time may not accurately reflect the start of the acute stroke pathway. Therefore, the in-hospital stroke variable is used in order to identify and exclude these cases from analyses of early emergency process metrics.

One data quality action arising from this report is that the two EVT centres should agree and implement a standardised approach to recording in-hospital stroke status from 2026 onwards. This would improve consistency in reporting and support more accurate comparisons between centres.

Handling Missing Data

Missing and unknown data are reported within the analysis. In the cleaning phase of data analysis, it was noted that five cases had missing values for the 'hospital patient was transferred from' variable; however, it was recorded that the brain computed tomography (CT) scan or magnetic resonance imaging (MRI) had been performed prior to EVT admission. These missing values were imputed based on available HIPE variables: TRANSINHOSP and TRANSOUTHOSP. Where the TRANSINHOSP and TRANSOUTHOSP values were identical, that value has been used to populate the missing field.

In addition, when identifying cases with in-hospital stroke, four cases had missing values for the 'in-hospital stroke' variable. Based on investigation, these strokes did not occur in hospital, and the missing values were imputed as 'not in-hospital stroke'.

The clinical leads of both EVT centres requested that 90-day modified Rankin Scale (mRS) outcomes be reported as a proportion of all known scores, excluding cases where follow-up data were missing (8%). They advised that this approach aligns with international reporting standards and facilitates more meaningful comparison with outcomes reported by other thrombectomy services.



3. DATA QUALITY STATEMENT

Coverage of Data Release

Completeness of Data Release

Accuracy of Data Release

3. DATA QUALITY STATEMENT

Tables 3.1, 3.2 and 3.3 provide an assessment of the quality of the thrombectomy data in this report using internationally agreed dimensions of data quality (Health Information and Quality Authority, 2018). A full data quality assessment of the INAS dataset is available in Appendix 4.

TABLE 3.1: CONTEXT OF DATA QUALITY STATEMENT

SCOPE	This data quality statement provides an assessment of the data released for this report. This statement focuses solely on the data quality dimension of accuracy and reliability, and specifically on the characteristics of: • coverage of data release • completeness of data release • accuracy of data release This can be used in conjunction with the assessment of the characteristics of the INAS dataset available at www.noca.ie.
PURPOSE	This will help the reader decide whether the data are fit for the user's specific purpose.
DATA SOURCE	The data were extracted from the HIPE system, which includes data submitted to the stroke audit portal within HIPE.
TIME FRAME OF DATA RELEASE	The data released in this report are based on INAS clinical audit data, which were reported between 1 January 2025 and 31 December 2025.
TYPE OF DATA	Final

TABLE 3.2: CHARACTERISTICS OF DATA QUALITY

COVERAGE OF DATA RELEASE	The two hospitals that provide EVT treatment (the EVT centres) are included in this report. The EVT centres enter details of thrombectomy cases into their respective local databases, based on the date of the thrombectomy, and report the number of thrombectomies performed in the reporting year. The HIPE stroke audit portal is based on cases discharged during the reporting year, which means that some cases may have been treated in 2024 but discharged in 2025. As a result, the numbers will not match exactly. Beaumont Hospital reported 343 thrombectomy cases in its local database in 2025. The HIPE stroke audit portal contained 347 thrombectomy cases discharged in 2025; however, 10 of these patients were admitted in 2024 and were thus excluded from the coverage assessment. Therefore, estimated coverage for 2025 was 98% (337/343). Similarly, Cork University Hospital reported within its own database that 131 patients were treated with thrombectomy in 2025. The HIPE stroke audit portal contained 136 thrombectomy cases discharged in 2025; however, 9 of these patients were admitted in 2024 and were thus excluded from the coverage assessment. Therefore, estimated coverage for 2025 was 97% (127/131). In total, national coverage of data in 2025 was estimated to be 98% (464/474).
COMPLETENESS OF DATA RELEASE	In this report, data completeness was high in general, with most questions receiving responses of more than 90% completeness. Only eight questions recorded a response rate of less than 90%, and only one question recorded less than an 80% response rate. The missing data were primarily related to variables concerning patient transfer times to EVT centres (Appendix 5). The exact time of onset of stroke symptoms (witnessed stroke) was captured within the core clinical dataset and was only available in 48% (n=234) of cases, although another 49% (n=239) had the time when the patient was last seen looking well recorded. In total, 98% (n=473) of cases had either the onset of stroke symptoms or the time last seen looking well recorded. The National Institutes of Health Stroke Scale (NIHSS) score at 24 hours after thrombectomy was either missing or invalid in 14% (n=66) of cases, and this has been included as a validation in the revised thrombectomy data validation reports. Following further analysis, Cork University Hospital informed NOCA that not all patients who received thrombolysis prior to thrombectomy had been recorded in the HIPE stroke audit portal. A total of 25 cases were identified in which thrombolysis had been administered before thrombectomy but the case had not been entered into the portal. These previously unrecorded cases have now been included in the calculation and reporting of thrombolysis rates.
ACCURACY OF DATA RELEASE	All records are included in the analysis, including those where data are missing and/or unknown for some data fields. During the analysis and report-writing process, variability was identified in the manner in which data were recorded across the two EVT centres. Any discrepancies or inaccuracies identified are detailed within the body of this report. Addressing these issues has informed the recommendations for quality improvement (QI) and audit development that are outlined in Chapter 9.

TABLE 3.3: ASSESSMENT COMPLETE

STRENGTHS OF DATA IN THIS REPORT	Data collection for thrombectomy is centred in two hospitals and is carried out by a dedicated team of data managers and specialist nurses in order to ensure high-quality data. There are strong links with other stroke teams in referring hospitals, facilitating the reporting of 90-day follow-up for this group of patients. In 2025, 90-day follow-up is available in 92% (n=443) of cases.
LIMITATIONS OF DATA IN THIS REPORT	This is the first INAS National Thrombectomy Report. While thrombectomy data have been reported previously through INAS publications, the development of this report involved the introduction of a new set of thrombectomy-specific reporting metrics, definitions and methodologies. As a result, the analyses presented are not directly comparable with those published in previous NTS reports or other INAS reports. In order to avoid potential misinterpretation, comparisons with results reported previously have not been made. Future reports will establish a baseline against which trends in performance, service delivery and patient outcomes can be monitored over time. There is only one agreed QI target to measure against. This report and subsequent reports will help to identify other QI targets and key quality indicators in the future. The HIPE stroke audit portal can only record one thrombectomy procedure, and therefore the dataset does not include data on any case that may have had more than one thrombectomy. The proportion of patients with witnessed stroke is only available for 48% (n=234) of cases, limiting the interpretation of the time from symptom onset to reperfusion. The timeliness of thrombolysis is not reported in this analysis due to insufficient data.



4. DEMOGRAPHICS AND CASE MIX

4. DEMOGRAPHICS AND CASE MIX

THROMBECTOMY ACTIVITY

In 2025, 483 patients received a thrombectomy in one of the two EVT centres: Beaumont Hospital (n=347) and Cork University Hospital (n=136). A total of 379 (78%) patients were transferred to an EVT centre and 104 (22%) were admitted directly to an EVT centre. The national rate of thrombectomy in 2025 was 8%. Variance is observed between hospitals, although caution is advised in the interpretation of EVT rates from different hospitals, as much of the variation observed within a single year could be accounted for by spontaneous fluctuations in the small numbers coming from many of the hospitals, rather than reflecting true differences in clinical practice. Table 4.1 displays the thrombectomy rate by hospital where the total ischaemic stroke number is known. Hospitals with five or fewer cases have been grouped together in order to minimise the risk of identification.

TABLE 4.1: THROMBECTOMY RATE BY HOSPITAL, 2025

Hospital	Total number of ischaemic stroke cases	Number of thrombectomies	Thrombectomy rate
National total number of thrombectomies		483	
National rate of thrombectomy	**6155**	**476**[1]	**8%**
Bantry General Hospital	85	11	13%
Beaumont Hospital (excluding cases transferred for thrombectomy)[2]	494	46	9%
Cork University Hospital (Excluding cases transferred for thrombectomy)[3]	564	58	10%
Cavan General Hospital	144	11	8%
Connolly Hospital	298	16	5%
Galway University Hospital	320	27	8%
Letterkenny University Hospital	227	14	6%
Mater Misericordiae University Hospital	328	34	10%
Mayo University Hospital	196	9	5%
Our Lady of Lourdes Hospital Drogheda	271	28	10%
Regional Hospital Mullingar	241	25	10%
Sligo University Hospital	214	12	6%
St James's Hospital	280	19	7%
St Luke's General Hospital, Carlow/Kilkenny	177	8	5%
St Vincent's University Hospital	443	35	8%
Tallaght University Hospital	348	41	12%
Tipperary University Hospital	110	11	10%
University Hospital Kerry	281	14	5%
University Hospital Limerick	459	25	5%
University Hospital Waterford	202	12	6%
Wexford General Hospital	159	12	8%
Hospitals with ≤5 cases[4]	314	9	3%
Private hospitals	Not applicable	-	Not applicable
Belfast	Not applicable	-	Not applicable
Unknown	Not applicable	-	Not applicable

[1] The national rate is calculated using the number of cases where there are ischaemic stroke data available.
[2] Refers to patients with ischaemic stroke who were admitted directly to Beaumont Hospital and had a thrombectomy.
[3] Refers to patients with ischaemic stroke who were admitted directly to Cork University Hospital and had a thrombectomy.
[4] Hospitals with ≤5 cases include Naas General Hospital, Mercy University Hospital and St John's Hospital.

DEMOGRAPHICS

Forty-five percent (n=216) of patients who underwent thrombectomy were female, while 55% (n=267) were male. Overall, 31% (n=151) of patients who underwent thrombectomy were aged 65 years and under. The mean age of female patients who had a thrombectomy was 73 years, compared with 69 years for male patients.

Males tended to undergo thrombectomy at a younger age than females. More than one-third of male thrombectomy patients (37%; n=99) were aged 65 years and under, compared with 24% (n=52) of females. This age difference is also reflected in the distribution of cases across age groups, with a higher proportion of males represented in the younger age categories (Table 4.2).

Table 4.2 presents the age distribution of all those who had a thrombectomy and the cohort of patients with ischaemic reported in the INAS National Reporting Table 2025. In the thrombectomy cohort, the median age of patients undergoing thrombectomy was 73 years (interquartile range (IQR): 62–81 years), with a mean age of 71 years. This was comparable to the national ischaemic stroke cohort reported in the INAS National Reporting Table 2025, where the median age was 74 years (IQR: 63–82 years) and the mean age was 72 years.

TABLE 4.2: AGE DISTRIBUTION OF PATIENTS RECEIVING THROMBECTOMY COMPARED WITH ALL ISCHAEMIC STROKE ADMISSIONS, BY SEX

Sex	Age Groups	Total Thrombectomy		Total Ischaemic Stroke (National Report)	
		n	%	n	%
Total	**Total**	**483**	**100%**	**5676**	**100%**
	≤50 years	38	8%	481	9%
	51-65 years	113	23%	1210	21%
	66-80 years	205	42%	2267	40%
	81-90 years	109	23%	1414	25%
	≥91 years	18	4%	304	5%
Female	**Total**	**216**	**100%**	**2416**	**100%**
	≤50 years	18	8%	182	8%
	51-65 years	34	16%	391	16%
	66-80 years	92	43%	881	37%
	81-90 years	58	27%	752	31%
	≥91 years	14	6%	210	9%
Male	**Total**	**267**	**100%**	**3260**	**100%**
	≤50 years	*	*	299	9%
	51-65 years	79	30%	819	25%
	66-80 years	113	42%	1386	43%
	81-90 years	51	19%	662	20%
	≥91 years	~	*	94	3%

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

STROKE SEVERITY

NIHSS score pre-thrombectomy

The NIHSS is used in order to objectively quantify stroke severity, wherein scores range from 0 to 42, and higher scores indicate greater severity (Cummock *et al*., 2023) (Table 4.3).

TABLE 4.3: NATIONAL INSTITUTES OF HEALTH STROKE SCALE

0	No stroke symptoms
1–4	Minor stroke
5–15	Moderate stroke
16–20	Moderate to severe stroke
21–42	Severe stroke

The median NIHSS score prior to thrombectomy was 14 (IQR: 9–19), reflecting predominantly moderate to moderately severe stroke. Figure 4.1 displays the pre-thrombectomy NIHSS scores by category, indicating that 94% of cases were in the moderate to severe categories.

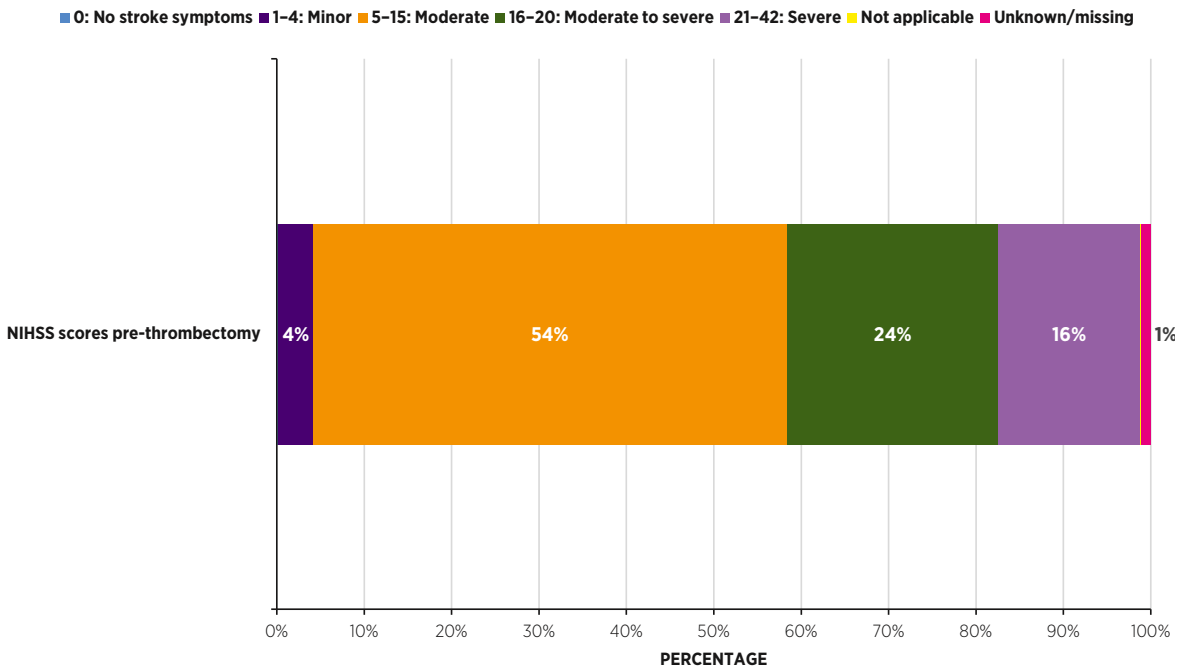


FIGURE 4.1: NATIONAL INSTITUTES OF HEALTH STROKE SCALE SCORES PRE-THROMBECTOMY, 2025 (N=483)

Occulation sites

The middle cerebral artery (MCA) is a major vessel supplying the brain. One-half of cases (50%; n=243) had a proximal occlusion in the MCA-1 segment[5] and 23% (n=109) had a proximal occlusion in the MCA-2 segment[6]. Table 4.4 displays all occlusion sites. Among cases with a proximal occlusion, 15% (n=72) had a second occlusion site.

TABLE 4.4: PROXIMAL OCCULUSION SITES, 2025 (N=483)

PROXIMAL OCCLUSION SITES	n	%
Total	**483**	**100%**
MCA-1 segment	243	50%
MCA-2 segment	109	23%
Basilar 4	12	2%
Internal carotid artery (ICA) terminus	64	13%
ICA cervical segment	40	8%
Posterior cerebral artery	8	2%
Vertebro basilar	~	*
Unknown	~	*

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

KEY FINDINGS FROM CHAPTER 4

- 483 patients with ischaemic stroke had a thrombectomy. This represents approximately 8% of all ischaemic stroke admissions with variation across hospitals.
- Forty-five percent (n=216) of patients who had a thrombectomy were female, and 55% (n=267) were male.
- The mean age was 73 years for female cases and 69 years for male cases.
- Most patients (78%; n=379) were transferred to EVT centres rather than being directly admitted.
- The median NIHSS score prior to thrombectomy was 14 (IQR: 9–19), reflecting predominantly moderate to moderately severe stroke prior to thrombectomy.

[5] The M1 segment of the MCA is the first (proximal) segment, extending from its origin at the internal carotid artery to its main bifurcation/trifurcation, usually in the sylvian fissure.
[6] The M2 segments of the MCA are the second (middle) segments that run within the sylvian fissure after the M1 segment bifurcates.



5. ACCESS TO THROMBECTOMY

5. ACCESS TO THROMBECTOMY

Thrombectomy is a highly effective but time-dependent treatment for selected patients with ischaemic stroke. Stroke pathways are designed to ensure rapid diagnosis, decision-making, and access to specialised centres, maximising the chances of recovery and reducing long-term disability. This chapter presents four key time points in the patient pathway to thrombectomy:

- **time to CT scan**
- **time to contact the EVT centre**
- **time to decision for thrombectomy**
- **'door-in door-out' time.**

TIME TO CT SCAN



Table 5.1 presents the time from arrival at the first hospital to the time of the first CT scan for patients who presented either directly to an EVT centre or to another hospital prior to transfer to an EVT centre. A total of 394 cases were included in the analysis.[7] The median time to CT scan was 22 minutes (IQR: 15–33 minutes), substantially faster than the median time observed in the general stroke population, which was reported as 54 minutes (IQR: 24–235 minutes) in 2024 (NOCA, 2025).

This shorter time to imaging likely reflects the greater stroke severity within this cohort, as indicated in Figure 4.1, which may prompt more urgent clinical assessment and expedited imaging pathways.

TABLE 5.1: TIME INTERVAL IN MINUTES BETWEEN ARRIVAL AT THE FIRST HOSPITAL AND TIME OF COMPUTED TOMOGRAPHY SCAN, 2025 (n=394)[8]

HOSPITAL	n	Median (IQR 1-IQR 3)
National	**394**	**22 (15–33)**
Beaumont Hospital	41	23 (14–28)
Cork University Hospital	49	23 (21–36)
Bantry General Hospital	8	9 (7–16)
Cavan General Hospital	8	29 (20–31)
Connolly Hospital	11	14 (12–23)
Letterkenny University Hospital	10	18 (8–25)
Mater Misericordiae University Hospital	29	14 (9–19)
Mayo University Hospital	6	38 (31–46)
Our Lady of Lourdes Hospital Drogheda	23	18 (11–26)
Regional Hospital Mullingar	20	21 (15–26)
Sligo University Hospital	12	30 (21–46)
St James's Hospital	13	25 (15–31)
St Luke's General Hospital, Carlow/Kilkenny	8	25 (22–45)
St Vincent's University Hospital	31	24 (17–30)
Tallaght University Hospital	36	18 (12–25)
Tipperary University Hospital	10	26 (14–34)
University Hospital Galway	16	20 (15–30)
University Hospital Kerry	11	16 (12–25)
University Hospital Limerick	21	34 (18–59)
University Hospital Waterford	10	23 (20–29)
Wexford General Hospital	12	44 (37–51)
Hospitals with ≤5 cases[9]	7	43 (10–1316)
Other/unknown	~	*

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

[7] This includes cases with complete arrival and CT dates/times; excludes in-hospital stroke.
[8] This includes cases with complete arrival and CT dates/times; excludes in-hospital stroke.
[9] Hospitals with ≤5 cases include Naas General Hospital, Mercy University Hospital and St John's Hospital.

RATE OF THROMBOLYSIS IN THOSE WHO RECEIVED A THROMBECTOMY

Patients who are eligible for a thrombectomy should receive prior intravenous thrombolysis as rapidly as possible (unless contraindicated), irrespective of whether they have presented to an acute stroke centre or an EVT centre (Intercollegiate Stroke Working Party, 2023). In 2025, 165 patients received thrombolysis prior to the thrombectomy, indicating a thrombolysis rate of 34%, higher than the 10% reported in the general stroke population (INAS National Reporting Table 2025). The rate of thrombolysis varied between hospitals, from 11% in Mayo University Hospital to 64% in Bantry General Hospital. Figure 5.1 displays the proportion of patients who received thrombolysis, by hospital. As with the thrombectomy rate, caution is advised in the interpretation of thrombolysis rates from different hospitals, as much of the variation observed within a single year could be accounted for by spontaneous fluctuations in the small numbers coming from many of the hospitals, rather than reflecting true differences in clinical practice. In addition, data quality related to the capture of thrombolysis pre-thrombectomy was observed and formed part of the audit development plan for 2026.[10] The timeliness of thrombolysis is not reported due to insufficient available data.

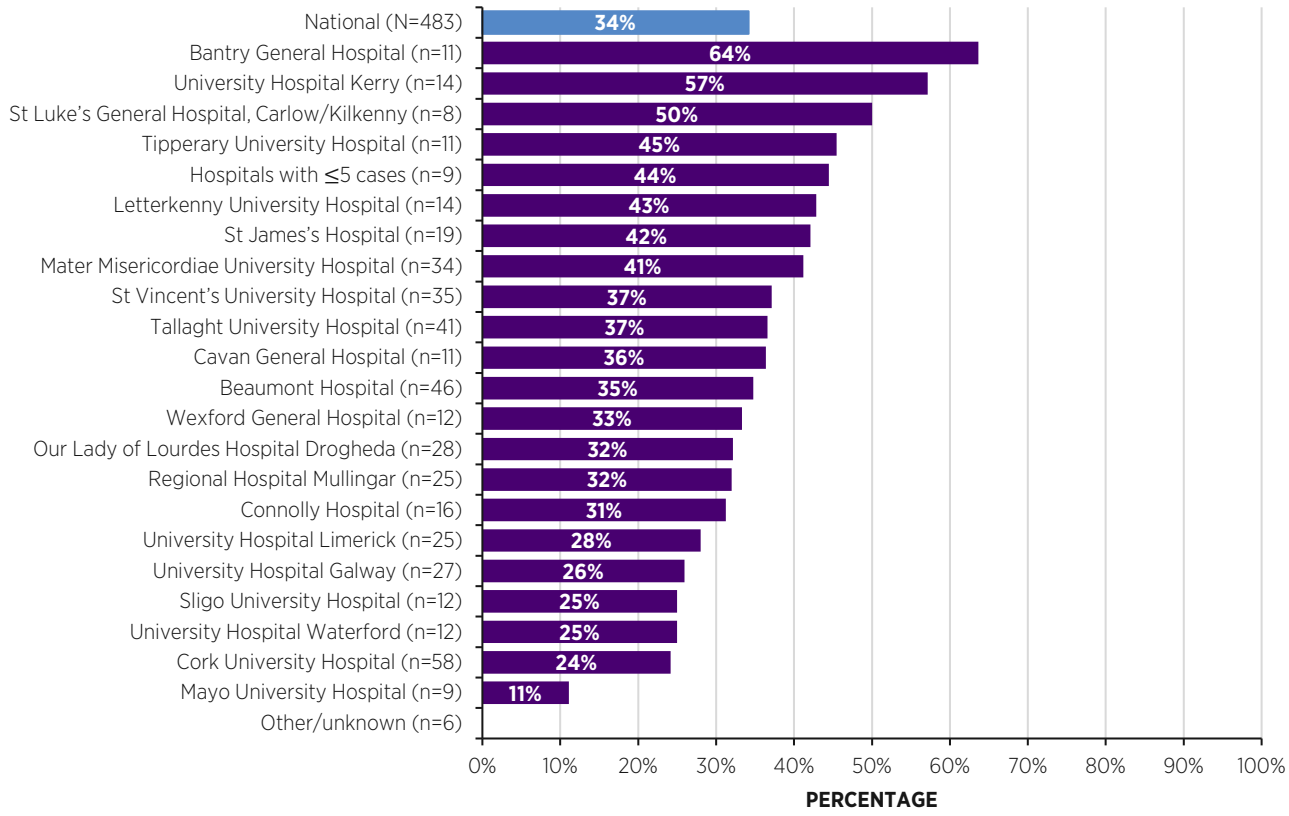


FIGURE 5.1: THROMBOLYSIS RATE IN CASES WHO HAD A THROMBECTOMY, BY HOSPITAL (N=483)[11]

[10] Further information is available in the data quality statement.
[11] Hospitals with ≤5 cases include Naas General Hospital, Mercy University Hospital and St John's Hospital.

TIME TO DECISION TO TRANSFER FOR THROMBECTOMY



In 2018, the NTS established a national QI project in order to enhance the care of patients with acute ischaemic stroke. This initiative demonstrated a significant reduction in door-to-decision time within the intervention cohort, decreasing by 16% (p<0.001) from a mean of 93 minutes to 79 minutes (Walsh *et al*., 2025).

This report presents the interval between a patient's arrival at the first hospital and the time the EVT centre is contacted, referred to as the door-to-contact time, for which the target is 30 minutes.[12] Table 5.2 displays the median and IQR of the time interval between arrival at the first hospital and the time to contact the EVT centre for all hospitals that transferred patients to an EVT centre (n=331). A total of 294 cases were analysed in order to calculate the time from arrival at the first hospital to contact with the EVT centre. The overall median time to contact with the EVT centre was 56 minutes (IQR: 39–78 minutes). The QI target for this metric is 30 minutes. In 2025, 12% (n=36) of cases had a door-to-contact time of 30 minutes or less. Variation was observed between hospitals, and all hospitals should review their data and identify opportunities for QI.

TABLE 5.2: MEDIAN TIME FROM ARRIVAL AT THE FIRST HOSPITAL TO CONTACT WITH THE ENDOVASCULAR THROMBECTOMY CENTRE, BY HOSPITAL (n=294)[13]

HOSPITAL	n	Median (IQR 1-IQR 3)
National	**294**	**56 (39–78)**
Bantry General Hospital	7	34 (21–57)
Cavan General Hospital	9	70 (55–90)
Connolly Hospital	11	41 (35–95)
Letterkenny University Hospital	10	75 (68–86)
Mater Misericordiae University Hospital	29	50 (36–65)
Mayo University Hospital	6	75 (70–106)
Our Lady of Lourdes Hospital Drogheda	22	55 (38–73)
Regional Hospital Mullingar	22	49 (32–70)
Sligo University Hospital	12	82 (72–104)
St James's Hospital	13	55 (51–66)
St Luke's General Hospital, Carlow/Kilkenny	8	51 (42–101)
St Vincent's University Hospital	31	50 (37–63)
Tallaght University Hospital	36	45 (34–61)
Tipperary University Hospital	10	64 (37–87)
University Hospital Galway	15	53 (35–56)
University Hospital Kerry	9	62 (55–77)
University Hospital Limerick	18	74 (44–101)
University Hospital Waterford	8	69 (53–80)
Wexford General Hospital	12	76 (63–96)
Hospitals with ≤5 cases[14]	6	191 (65–1330)
Other/unknown	0	

[12] This is different to the methodology used in the QI project (Walsh *et al*., 2025) where the interval between the time of arrival at the first hospital the decision to transfer the patient was reported.
[13] This includes cases with complete arrival/EVT contact dates/times; excludes in-hospital stroke.
[14] Hospitals with ≤5 cases include Naas General Hospital, Mercy University Hospital and St John's Hospital.

‘DOOR-IN DOOR-OUT’ TIME



The ‘door-in door-out’ (DIDO) time metric represents the interval from a patient’s arrival at the first hospital to their departure for transfer to an EVT centre, capturing a critical phase in the referral pathway where timely decision-making and coordination are essential. The median DIDO time in 2025 was 109 minutes (IQR: 74–143 minutes). Table 5.3 displays the DIDO times by hospital. Variation between hospitals is observed, ranging from 66 minutes in Bantry General Hospital to 167 minutes in Letterkenny University Hospital and Mayo University Hospital.

TABLE 5.3: TIME BETWEEN ARRIVAL AT THE FIRST HOSPITAL AND THE TIME THE PATIENT LEFT THE FIRST HOSPITAL FOR ENDOVASCULAR THROMBECTOMY (MINUTES), BY HOSPITAL (n=307)[15]

HOSPITAL	n	Median (IQR 1-IQR 3)
National	**307**	**109 (74–143)**
Bantry General Hospital	10	66 (39–122)
Cavan General Hospital	9	138 (137–181)
Connolly Hospital	12	79 (56–113)
Letterkenny University Hospital	10	167 (130–180)
Mater Misericordiae University Hospital	29	105 (64–126)
Mayo University Hospital	7	167 (94–185)
Our Lady of Lourdes Hospital Drogheda	23	99 (73–120)
Regional Hospital Mullingar	23	90 (57–117)
Sligo University Hospital	12	158 (137–208)
St James’s Hospital	13	107 (92–115)
St Luke’s General Hospital, Carlow/Kilkenny	8	139 (96–188)
St Vincent’s University Hospital	30	111 (82–127)
Tallaght University Hospital	36	71 (52–101)
Tipperary University Hospital	9	122 (80–150)
University Hospital Galway	18	100 (75–120)
University Hospital Kerry	11	130 (96–137)
University Hospital Limerick	18	138 (80–179)
University Hospital Waterford	9	138 (120–195)
Wexford General Hospital	12	134 (115–174)
Hospitals with ≤5 cases[16]	7	145 (59–1364)
Other/unknown	~	*

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

[15] This includes cases with complete arrival and departure date/times for EVT; in-hospital stroke is excluded.
[16] Hospitals with ≤5 cases include Naas General Hospital, Mercy University Hospital and St John’s Hospital.

KEY FINDINGS FROM CHAPTER 5

- The median time to CT scan was 22 minutes (IQR: 15–33 minutes).
- The thrombolysis rate was 34% (n=165).
- The median door to contact the EVT centre was 56 minutes (IQR: 39–78 minutes), and 12% (n=36) of patients had a door-to-contact time of 30 minutes or less.
- The median DIDO time was 109 minutes (IQR: 74–143 minutes).



6. TIME METRICS FOR THROMBECTOMY PROCEDURES

6. TIME METRICS FOR THROMBECTOMY PROCEDURES

The time metrics for thrombectomy procedures include all cases in which a thrombectomy was performed and are reported at both a national level and by individual EVT centres, allowing for comparison of performance.

The time metrics reported are:

- the time interval between arrival at the EVT centre and groin puncture
- the time interval between groin puncture and first reperfusion
- the time interval between groin puncture and final angiogram
- the time interval between onset of stroke symptoms and reperfusion.

TIME INTERVAL BETWEEN ARRIVAL AT THE EVT CENTRE AND GROIN PUNCTURE

The way in which a patient accesses the EVT centre will have an impact on the time between arrival at the EVT centre and groin puncture. Patients presenting directly to the EVT centre typically require diagnostic imaging, clinical assessment, and a decision regarding thrombectomy after arrival, whereas patients transferred from another hospital have usually already undergone imaging and assessment, with the decision to proceed to thrombectomy made prior to arrival at the EVT centre.

Overall, 19% (n=91) of patients presented directly to an EVT centre, 78% (n=379) were transferred from other hospitals, and an additional 3% (n=13) were in-hospital strokes in the EVT centre[17]. In Beaumont Hospital, 12% (n=41) of patients were admitted directly and 88% (n=301) were transferred. In Cork University Hospital, 39% (n=50) of patients were admitted directly and 61% (n=78) were transferred.

A total of 459 cases were included in the analysis of the time between arrival at the EVT centre and groin puncture.[18] The overall median time was 27 minutes (IQR: 14–55 minutes). This was 22 minutes (IQR: 12–34 minutes) for those transferred to an EVT centre and 84 minutes (IQR: 60–101 minutes) for those admitted directly. Variation between the two EVT centres (Table 6.1) was observed. Cork University Hospital had a higher proportion of patients who were admitted directly to the EVT centre, which may partly explain the longer median time from arrival to groin puncture.

TABLE 6.1: TIME BETWEEN ARRIVAL AT THE ENDOVASCULAR THROMBECTOMY CENTRE AND THE TIME OF GROIN PUNCTURE, 2025 (MINUTES) (n=459)[19]

EVT centre	Admission route	n	Median (IQR 1-IQR 3)
Total	Direct	90	84 (60–101)
	Transferred	369	22 (12–34)
	Total	459	27 (14–55)
Beaumont Hospital	Direct	41	84 (56–101)
	Transferred	295	18 (10–31)
	Total	336	22 (11–43)
Cork University Hospital	Direct	49	83 (65–100)
	Transferred	74	33 (24–44)
	Total	123	48 (31–79)

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

[17] The analysis for time between arrival at the EVT centre and groin puncture excludes in-hospital strokes.
[18] This includes cases with complete arrival (direct or transfer) and groin puncture date/time data.
[19] This includes cases with complete arrival (direct or transfer) and groin puncture date/time data. In-hospital stroke cases are excluded from direct admissions only.

TIME INTERVAL BETWEEN GROIN PUNCTURE AND FIRST REPERFUSION

A total of 448 cases were included in the analysis of the interval between groin puncture and first reperfusion across the two EVT centres. This includes cases with complete groin puncture and firstl reperfusion date/time data. The overall median procedure time was 21 minutes (IQR: 13–37 minutes). This was 20 minutes (IQR: 13–34 minutes) in Beaumont Hospital and 24 minutes (IQR: 13–41 minutes) in Cork University Hospital (Table 6.2).

TABLE 6.2: MEDIAN TIME FROM GROIN PUNCTURE TO FIRST REPERFUSION, 2025 (MINUTES) (n=448)

EVT centre	n	Median (IQR 1-IQR 3)
Total	**448**	**21 (13–37)**
Beaumont Hospital	327	20 (13–34)
Cork University Hospital	121	24 (13–41)

TIME INTERVAL BETWEEN GROIN PUNCTURE AND FINAL ANGIOGRAM

The total length of the thrombectomy procedure is the time between the groin puncture and final angiogram. A total of 480 cases were included in the analysis of the time between groin puncture and final angiogram across the two EVT centres. The overall median time was 32 minutes (IQR: 18–59 minutes). This was 29 minutes (IQR: 16–51 minutes) in Beaumont Hospital and 47 minutes (IQR: 21–71 minutes) in Cork University Hospital (Table 6.3).

TABLE 6.3: MEDIAN TIME BETWEEN GROIN PUNCTURE AND FINAL ANGIOGRAM, 2025 (MINUTES) (n=480)[20]

EVT centre	n	Median (IQR 1-IQR 3)
Total	**480**	**32 (18–59)**
Beaumont Hospital	345	29 (16–51)
Cork University Hospital	135	47 (21–71)

[20] This includes cases with complete groin puncture and final angiogram date/time data.

TIME INTERVAL BETWEEN ONSET OF STROKE SYMPTOMS AND FIRST REPERFUSION

The time interval between onset of stroke symptoms (witnessed stroke) and first reperfusion is the complete patient pathway to reperfusion. Recording the exact time of onset of stroke symptoms is challenging, and when the time is not available, the time that the patient was last seen well is recorded instead. In 2025, 98% (n=473) had either the time of onset of stroke symptoms (48%; n=234) or time when they were last seen well (49%; n=239) recorded.

In total, out of all those who had a witnessed stroke (48%; n=234), 79% (n=185) of cases were included in the analysis of the time between onset of stroke symptoms and first reperfusion. The median time from onset of stroke symptoms to reperfusion was 341 minutes (IQR: 242–489 minutes) (Table 6.4). As expected, those who were admitted directly to an EVT centre tended to have shorter onset to reperfusion times compared with those who were transferred.

KEY FINDINGS FROM CHAPTER 6

- The median time from arrival at the EVT centre to groin puncture was 27 minutes (IQR: 14–55 minutes) in 2025. This time was 84 minutes (IQR: 60–101 minutes) for those who presented directly to an EVT centre, compared with 22 minutes (IQR: 12–34 minutes) for cases that were transferred to an EVT centre from another hospital.
- The median time from groin puncture to first reperfusion was 21 minutes (IQR: 13–37 minutes).
- The proportion of cases with witnessed stroke is only available in 48% (n=234) of cases, limiting the interpretation of the time from symptom onset to reperfusion.
- The median time from symptom onset to reperfusion was 341 minutes (IQR: 242–489 minutes).

TABLE 6.4: MEDIAN TIME IN MINUTES FROM ONSET OF STROKE SYMPTOMS TO FIRST REPERFUSION, BY HOSPITAL (n=185)[21]

Hospital	n	Median (IQR 1-IQR 3)
National	**185**	**341 (242–489)**
Beaumont Hospital[22]	17	226 (180–953)
Cork University Hospital[23]	32	231 (167–325)
Bantry General Hospital	7	296 (226–315)
Cavan General Hospital	~	*
Connolly Hospital	~	*
Letterkenny University Hospital	7	489 (438–520)
Mater Misericordiae University Hospital	8	250 (229–295)
Mayo University Hospital	~	*
Our Lady of Lourdes Hospital Drogheda	9	298 (224–441)
Regional Hospital Mullingar	8	588 (258–1044)
Sligo University Hospital	6	490 (438–578)
St James's Hospital	~	*
St Luke's General Hospital, Carlow/Kilkenny	~	*
St Vincent's University Hospital	11	318 (278–414)
Tallaght University Hospital	8	251 (224–321)
Tipperary University Hospital	7	372 (290–425)
University Hospital Galway	9	411 (381–569)
University Hospital Kerry	10	357 (330–377)
University Hospital Limerick	15	408 (295–533)
University Hospital Waterford	8	414 (338–680)
Wexford General Hospital	~	*
Hospitals with ≤5 cases	~	*
Other/unknown	~	*

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

[21] This includes cases with complete symptom onset and reperfusion date/time data; excludes in-hospital stroke cases.
[22] Includes only patients admitted directly to Beaumont Hospital.
[23] Includes only patients admitted directly to Cork University Hospital.



7. OUTCOMES

7. OUTCOMES

The outcomes following thrombectomy are based on all cases in which a thrombectomy was performed and are reported at both a national level and by individual EVT centres, allowing for comparison of performance. The metrics reported are:

- thrombolysis in cerebral infarction (TICI) scale scores
- National Institutes of Health Stroke Scale (NIHSS) scores
- modified Rankin Scale (mRS) scores.

This chapter also includes an analysis of the length of stay and discharge destination of all patients.

TICI SCALE SCORES

The TICI scale is a grading system used during thrombectomy in order to assess how well blood flow has been restored in a blocked artery after the procedure (Table 7.1). It is a predictor of functional recovery, and successful reperfusion is typically defined as a TICI scale score of 2b or higher.

TABLE 7.1: THROMBOLYSIS IN CEREBRAL INFARCTION SCALE SCORE

SCORE	Meaning	Reperfusion level
0	No perfusion	No blood flow past the clot
1	Minimal perfusion	Slight penetration beyond the clot, but no meaningful perfusion
2a	Partial perfusion (<50%)	Less than one-half of the affected territory is reperfused
2b	Substantial perfusion (>50%)	More than one-half of the territory is reperfused
2c	Near-complete perfusion	Almost complete reperfusion except slow flow or small distal emboli
3	Complete perfusion	Full, normal blood flow restored

In 2025, the TICI scale score after the thrombectomy procedure was available in 99% (n=479) of cases (Table 7.2). Ninety-one percent of cases had a TICI scale score of 2b or higher, indicating a high level of successful reperfusion.

TABLE 7.2: THROMBOLYSIS IN CEREBRAL INFARCTION SCALE SCORE AFTER PROCEDURE, 2025 (N=483)

		Total		Beaumont Hospital		Cork University Hospital	
		n	%	n	%	n	%
TICI scale score after reperfusion	Total	483	100%	347	100%	136	100%
	0	25	5%	18	5%	7	5%
	1	~	*	~	*	0	0%
	2a	9	2%	~	*	*	*
	2b	84	17%	62	18%	22	16%
	2c	102	21%	72	21%	30	22%
	3	254	53%	187	54%	67	49%
	Missing[24]	~	*	0	0%	~	*

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

[24] 'Missing' includes missing TICI scale score after reperfusion.

NIHSS SCORES 24 HOURS AFTER THROMBECTOMY

The median NIHSS score 24 hours post-thrombectomy was 8 (IQR: 3–15), indicating moderate stroke severity and an improvement from the pre-thrombectomy median of 14. However, 24-hour NIHSS scores were unavailable in 14% (n=66) of cases, limiting the ability to make comprehensive comparisons (Figure 7.1).

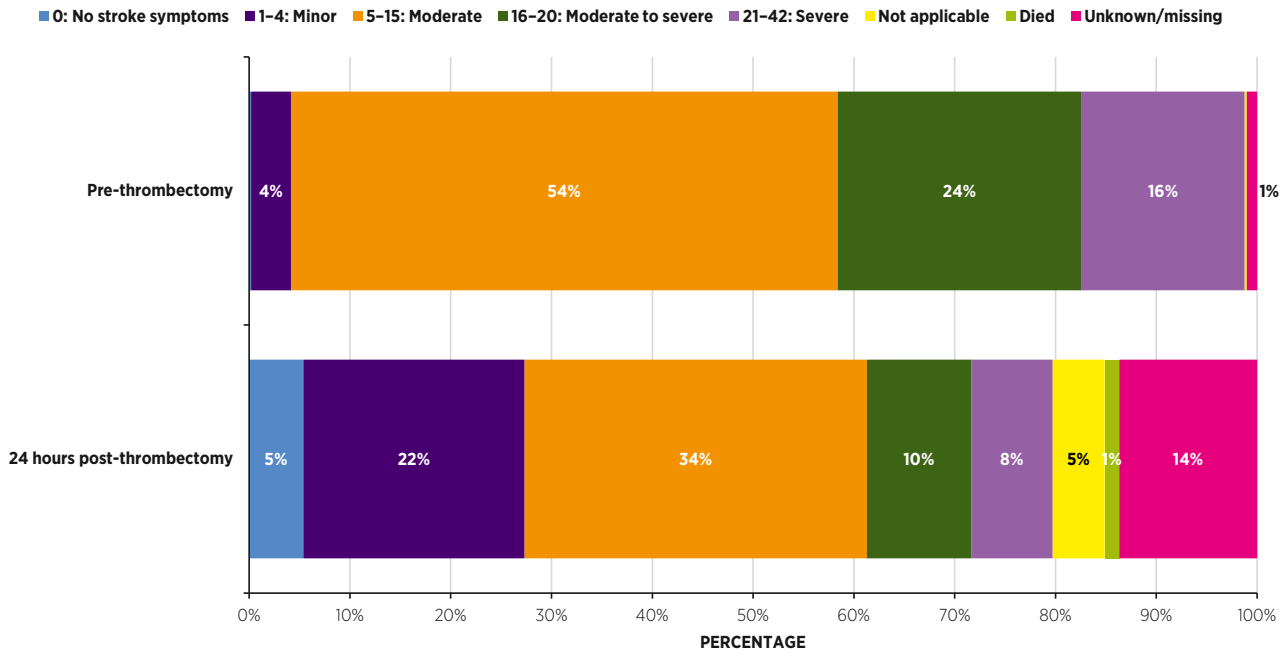


FIGURE 7.1: NATIONAL INSTITUTES OF HEALTH STROKE SCALE SCORES PRE-THROMBECTOMY VERSUS 24 HOURS POST-THROMBECTOMY (N=483)[25,26]

[25] 'Unknown/missing' includes cases where the NIHSS score was missing or not documented.
[26] 'Not applicable' refers to cases where NIHSS assessment was not possible, e.g. the patient was intubated and ventilated or under palliative care.

90-DAY MRS SCORES

The mRS is used in order to measure the degree of disability in patients who have had a stroke, as follows:

SCORE	MEANING
0	No symptoms at all
1	No significant disability despite symptoms; able to carry out all usual duties and activities
2	Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance
3	Moderate disability; requires some help, but able to walk without assistance
4	Moderately severe disability; unable to walk without assistance and unable to attend to own bodily needs without assistance
5	Severe disability; bedridden, incontinent and requiring constant nursing care and attention
6	Dead

The 90-day mRS score was available for 443 of 483 cases (92%). Among these patients, 49% (n=216) had no symptoms or had a mild disability (mRS score of 0–2), 32% (n=143) had a moderate to severe disability (mRS score of 3, 4 or 5), and 19% (n=84) had died by 90 days.

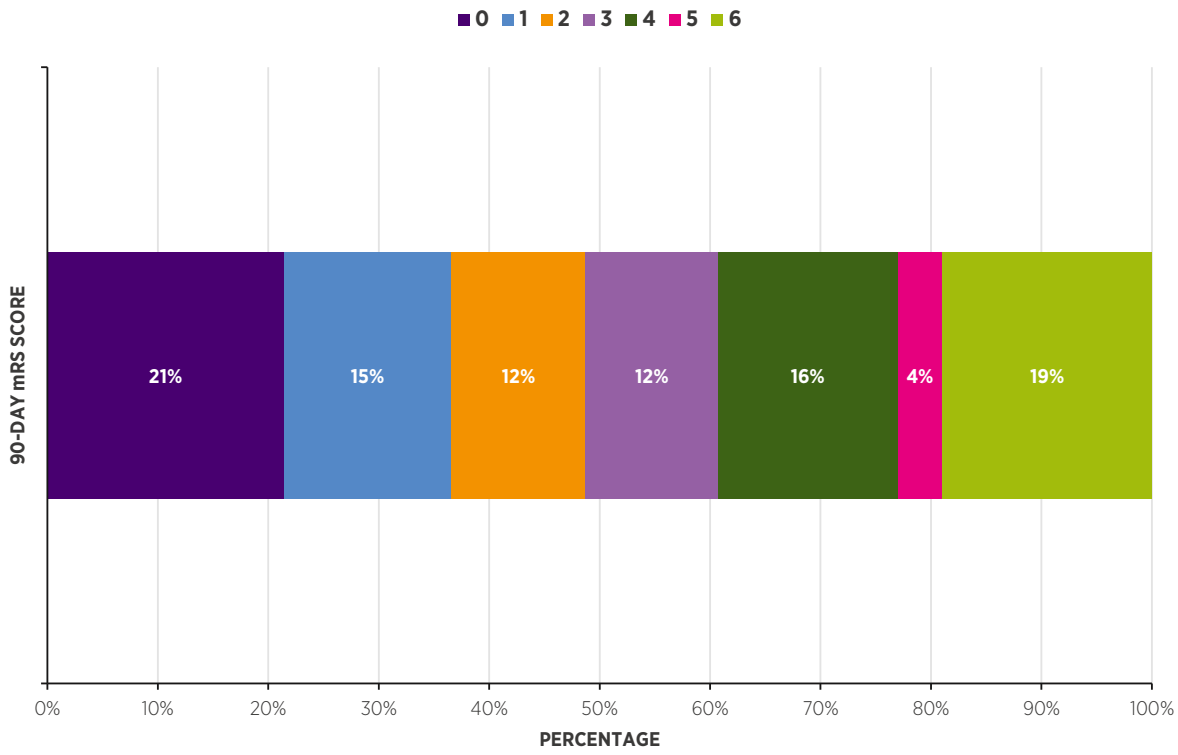


FIGURE 7.2: MODIFIED RANKIN SCALE SCORE AT 90 DAYS (n=443)[27]

[27] Percentage may not add up to 100% due to rounding. Cases with missing mRS scores at 90 days (8%) were excluded from the analysis as requested by the writing group in order to align with international reporting.

LENGTH OF STAY AND DISCHARGE DESTINATION

Length of stay in the EVT centres

Patients who are transferred to an EVT centre may either be repatriated immediately to their referring hospital following thrombectomy, if they are clinically stable, or admitted to the EVT centre for ongoing acute stroke care. In 2025, out of a total of 379 transferred cases, 55% (n=210) were repatriated immediately back to the referring hospital after thrombectomy and 44% (n=168) were admitted to the EVT centre; this information is unknown in one other case. In Beaumont Hospital, 55% of patients (n=166) were transferred back to their referring hospital following treatment, while at Cork University Hospital, a similar proportion (56%; n=44) were repatriated to their primary referring hospital.

Of the 44% (n=168) who were not transferred immediately back to the referring hospital after thrombectomy, the median length of stay in the EVT centre was 4 days (IQR: 2–7 days). In Beaumont Hospital (n=135), the median length of stay was 4 days (IQR: 2–7 days), and in Cork University Hospital (n=33), the median stay was 2 days (IQR: 1–6 days). Patients in this group require admission to an acute stroke unit following thrombectomy, and the additional demand they place on stroke unit bed capacity should be considered in service planning and resource allocation.

Of the 91 patients admitted directly to the EVT centres,[28] the median length of stay was 12 days (IQR: 6–27 days). In Beaumont Hospital (n=41), the median length of stay was 12 days (IQR: 8–19 days), while at Cork University Hospital (n=50), the median length of stay was 14 days (IQR: 6–28 days).

Discharge destination

For those patients who were admitted directly to an EVT centre[29] or who were not repatriated immediately (n=272), Table 7.3 displays the discharge destination from the EVT centre. Of those who were transferred to an EVT centre and were not immediately repatriated, the majority (82%; n=138) were transferred back to the referring hospital and 13% (n=21) died. Of those who were admitted directly to an EVT centre, a similar proportion were discharged home or discharged home with Early Supported Discharge (ESD) in the thrombectomy population (60%) as in the general stroke population (60%) (INAS National Reporting Table 2025).

TABLE 7.3: DISCHARGE DESTINATION FROM THE ENDOVASCULAR THROMBECTOMY CENTRE, 2025 (n=272)

		Total		Admitted directly		Transferred cases not immediately repatriated	
		n	%	n	%	n	%
Discharge destination	Total	272	100%	104	100%	168	100%
	Home	51	19%	44	42%	7	4%
	Home with ESD	19	7%	19	18%	0	0%
	Discharged to long-term care	6	2%	6	6%	0	0%
	Discharged to off-site rehabilitation	12	4%	*	*	~	*
	Transferred	144	53%	6	6%	138	82%
	Died	38	14%	17	16%	21	13%
	Other/unknown	~	*	~	*	~	*

~ Denotes five cases or fewer.
* Further suppression required in order to prevent disclosure of five cases or fewer.

[28] Excludes in-hospital stroke cases (n=13).
[29] This includes patients who had an in-hospital stroke in the EVT centre.

KEY FINDINGS FROM CHAPTER 7

- Successful reperfusion (TICI scale score of ≥2b) was achieved in 91% of cases, indicating a high level of technical effectiveness of thrombectomy across both EVT centres.
- The median NIHSS score improved from 14 pre-thrombectomy to 8 at 24 hours post-procedure.
- At 90 days post-thrombectomy, 49% (n=216) of cases had no symptoms or had a mild disability (mRS score of 0–2), 32% (n=143) had a moderate to severe disability (mRS score of 3, 4 or 5) and 19% (n=84) had died.
- Forty-four percent (n=168) of patients who were transferred to an EVT centre were not transferred immediately back to the referring hospital after thrombectomy, and the median length of stay in the EVT centre was 4 days (IQR: 2–7 days).
- Of those who were admitted directly to the EVT centre (excludes in-hospital strokes), the median length of stay was 12 days (IQR: 6-27 days), and the same proportion of cases were discharged home or home with ESD (60%) as in the general stroke population.



8. QUALITY IMPROVEMENT

8. QUALITY IMPROVEMENT

National clinical audit is a powerful and valuable resource that can be used to support quality improvement (QI) work, assurance work and research that enhances the care of patients with a stroke.

QI INDICATORS IN THROMBECTOMY

The National Thrombectomy Service has always championed QI and, as mentioned in Chapter 5, established a national QI project in 2018 in order to enhance the care of patients with acute ischaemic stroke (Walsh *et al*., 2025). This QI project improved time to emergency treatment for all patients with a stroke, with evidence suggesting that these gains have been sustained in the intervening years (NOCA, 2025). Figure 8.1, from the INAS dashboard, displays the median door-to-imaging time in minutes from 2016 to 2025. Q1 2016 reported a median door-to-imaging time of 169 minutes compared with 51 minutes in Q1 2025, and there has been a sustained improvement since 2022.

There is currently only one agreed QI target within the thrombectomy dataset: door to contact the EVT centre. The target is that this contact should be made within 30 minutes of hospital arrival. While current performance demonstrates encouraging progress towards timely thrombectomy pathway activation, continued QI efforts are needed in order to sustain and build on these achievements. Ongoing monitoring will support the identification of further opportunities to streamline stroke pathways and improve timely access to thrombectomy for eligible patients.

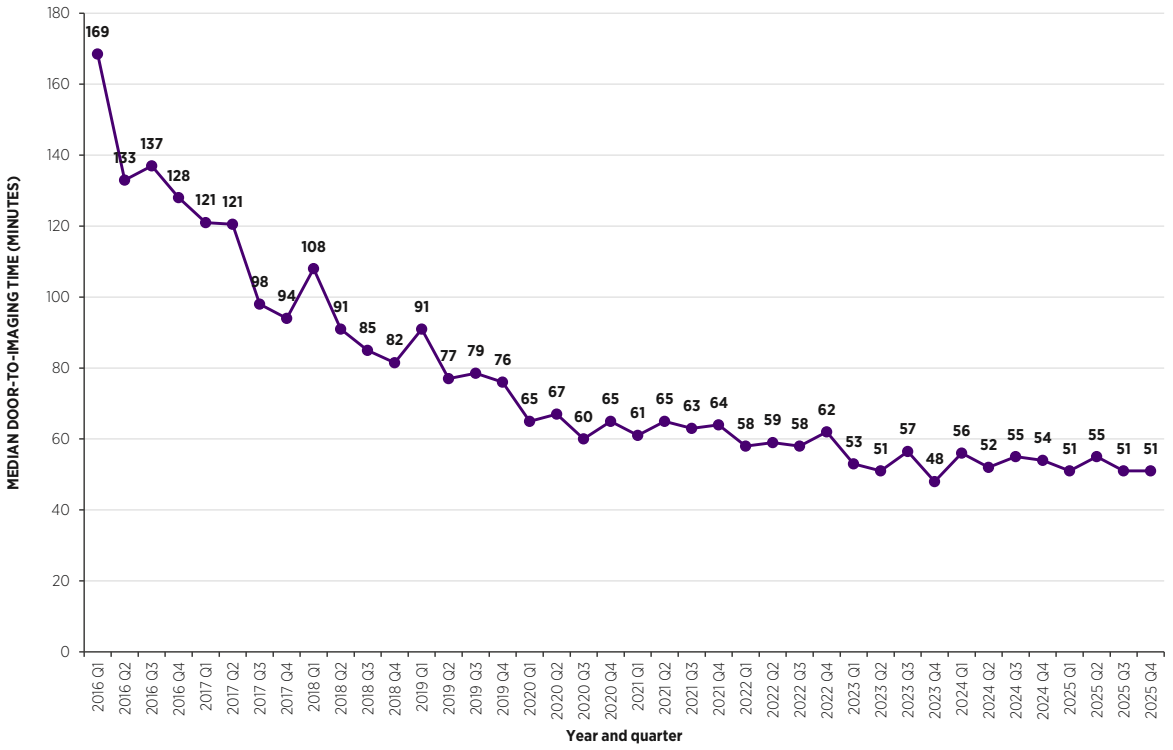


FIGURE 8.1: MEDIAN DOOR-TO-IMAGING TIME (MINUTES) BY QUARTER, 2016–2025

QI INITIATIVE: **BEAUMONT HOSPITAL**

PITSTOP

(Protocol for Improving Times for STroke patients requiring Onward transfer from Primary stroke centre to thrombectomy centre)

What is PITSTOP?

PITSTOP is a protocol involving Beaumont Hospital, the National Ambulance Service (NAS) and participating primary stroke centres (PSCs) around Ireland, which accept and transfer patients with a large vessel occlusion (LVO) stroke to Beaumont Hospital's thrombectomy service for EVT. This emergency medical pathway is designed to reduce transfer delays by reducing the 'door-in door-out' (DIDO) time for patients with an acute stroke.

How it works

When a patient is identified by paramedics as having a suspected stroke, the ambulance crew remains with the patient at the PSC while all medical and radiological assessments are completed and a decision is made regarding suitability for onward transfer to Beaumont Hospital's thrombectomy service. If transfer is required, the same ambulance crew transports the patient to Beaumont Hospital, thereby reducing the patient's DIDO time. Without this protocol, the ambulance crew would hand over the patient at the PSC and leave. Once the decision to transfer is made, a new ambulance would need to be requested under Protocol 37 to transport the patient to Beaumont Hospital for possible EVT, resulting in a longer DIDO time.

QI start date

In 2018, a pilot study was undertaken involving Naas General Hospital, the NAS and Beaumont Hospital. This study resulted in a significant reduction of DIDO times for patients (Walsh *et al.*, 2025). In 2020, PITSTOP was developed and expanded to more PSCs. This QI project reports on data from 2025.

How cases are identified and recorded

Each PSC participating in PITSTOP has a Microsoft Excel database. Acute pathway metrics of all FAST (face, arm, speech and time)-positive patients are documented by the stroke clinical nurse specialist. The stroke clinical nurse specialist records whether or not the transfer occurred using the PITSTOP protocol. There are occasions when a patient in the participating PSC will not be transferred via PITSTOP, e.g. they were brought in by Dublin Fire Brigade (DFB) or an end of crew shift in the NAS. In these cases, normal transfer (under Protocol 37) will occur.

All FAST-positive data are collected by stroke clinical nurse specialists in participating PSCs. The data are sent to the Beaumont Hospital thrombectomy service on a monthly basis; the data are collated and analysed by the project lead and presented back to stroke teams in participating PSCs at quarterly meetings for ongoing QI.

2025 Data

A total of 131 patients from 4 hospitals participated in PITSTOP:

- Tallaght University Hospital
- Regional Hospital Mullingar
- University Hospital Galway
- Our Lady of Lourdes Hospital Drogheda.

Results

The median DIDO time for those transferred with the PITSTOP protocol (n=83) was 1 hour and 20 minutes.

The median DIDO time for those transferred without the PITSTOP protocol (n=48) was 1 hour and 41 minutes.

On average, PITSTOP protocol patients were transferred 21 minutes faster than non-PITSTOP patients in participating PSCs.

The median DIDO time for patients transferred from hospitals not participating in PITSTOP (n=144) was 1 hour and 56 minutes.

On average, PITSTOP protocol patients were transferred 36 minutes faster than patients transferred from PSCs not participating in PITSTOP.

Next Steps

Enroll more PSCs across the country in PITSTOP.

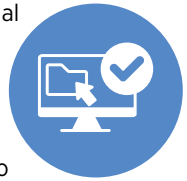
The PITSTOP protocol is open to any PSCs in Ireland that wish to participate. It will involve stroke teams being willing and able to collect all FAST-positive patients' metrics and to engage in an ongoing QI programme.



9. AUDIT UPDATE

9: AUDIT UPDATE

VALUE OF THE AUDIT



This is the first INAS National Thrombectomy Report, and it presents information on key stages of the patient pathway from the onset of stroke symptoms through to 90-day outcomes. The report provides valuable insights into the delivery of thrombectomy services and the provision of high-quality acute stroke care in Ireland.

Current national clinical guidelines recommend that patients with acute neurological presentation suspected to be a stroke should be admitted directly to a stroke unit that cares predominantly for patients with a stroke, with access to a designated thrombectomy centre 24 hours a day, 7 days a week, for consideration of thrombectomy (Intercollegiate Stroke Working Party, 2023). Currently, there is only one nationally agreed QI target (door to contact in 30 minutes) against which performance can be measured. Establishing a national audit of thrombectomy services provides an important opportunity to monitor access to treatment, timeliness of care, and patient outcomes. Findings from this report will support the identification and development of national QI targets and key quality indicators, helping to maximise both the provision and timeliness of thrombectomy for all eligible patients and to drive continuous improvement in stroke services nationally.

AUDIT DEVELOPMENT PLAN

Thrombectomy dataset



As described in Chapter 1, data on thrombectomy have been collected in the EVT centres using two different datasets and data entry systems. The EVT centres will continue to collect detailed data locally for research and service evaluation; however, it is agreed that national clinical audit data will be collected through the Hospital In-Patient Enquiry (HIPE) stroke audit portal and reported by the National Office of Clinical Audit (NOCA).

The clinical teams in the two EVT centres identified some additional variables to be added to the HIPE stroke audit portal for the thrombectomy dataset. One variable – 90-day mRS score – was added in 2026, and data were retrospectively added to the 2025 dataset.

In 2026, the following variables will be added:

- Alberta Stroke Program Early CT Score (ASPECTS)
- THROMB_MOST_PROX_OCCLUSION – the addition of anterior cerebral artery (ACA) to the occlusion sites
- whether carotid stenting is performed during the EVT procedure
- If carotid stenting was performed, where the stent was located.

Further consideration is required in relation to how to capture multiple thrombectomies in one admission, as well as on patients transferred for EVT assessment but who are deemed unsuitable and are repatriated.

The INAS will work with the EVT centres and the Healthcare Pricing Office to plan for these additional data.

Three areas were identified where data collection processes were not aligned between the EVT centres, and these will be reviewed and agreed for 2026:

1. in-hospital stroke
2. duplicating hospital arrival times for cases transferred to the EVT centre
3. recording pre-transfer thrombolysis.

Data validation report review

The process of analysing these data has identified new data validations that will be incorporated into the data validation report. These include:

- NIHSS score at 24 hours post-thrombectomy
- confirmation of HIPE ischaemic stroke diagnosis
- 90-day mRS score.

INAS national reporting table

Since 2021, the INAS National Reporting Table has included data relating to thrombectomy services. However, the development of the inaugural INAS National Thrombectomy Report has involved the introduction of a new set of thrombectomy-specific reporting metrics. In order to minimise confusion and avoid the duplication of reporting during this transitional period, thrombectomy data are not presented in the INAS National Reporting Table 2025.

The INAS National Thrombectomy Report will serve as the primary source of national thrombectomy performance data. Once the National Thrombectomy Report writing group determines that the reporting framework, metrics and data definitions have reached a stable and mature state, consideration will be given to reintroducing thrombectomy reporting within the INAS National Reporting Table. This approach will help ensure consistency in the reporting and interpretation of thrombectomy performance indicators across the national stroke audit programme.



10. RECOMMENDATIONS

10. RECOMMENDATIONS

RECOMMENDATION 1

ALL HEALTH SERVICE EXECUTIVE HEALTH REGIONS SHOULD REVIEW THROMBECTOMY RATES IN ORDER TO ENSURE EQUITABLE ACCESS FOR ALL ELIGIBLE PATIENTS.

Rationale
The national thrombectomy rate in Ireland in 2025 was 8%. While this compares favourably with reported rates in England and Wales (4.5%) (Banerjee *et al*., 2026), considerable variation exists between hospitals, ranging from 5% to 13%. This variation suggests that not all eligible patients may be accessing thrombectomy and highlights opportunities for hospitals and Health Service Executive (HSE) Health Regions to review local stroke pathways, identify barriers to access and implement targeted QI initiatives in order to optimise referral, transfer and treatment processes.

What actions should be taken	Who is responsible for implementation?	When should this be implemented?
All HSE Health Regions should monitor thrombectomy rates in each hospital and support targeted QI programmes in order to increase access to thrombectomy for eligible patients.	Regional Executive Officers	Q4 2026

Evidence that the action will be effective
Given the strong evidence that mechanical thrombectomy substantially improves functional outcomes in patients with acute ischaemic stroke, and recognising that treatment benefit declines with every delay in reperfusion, all hospitals should review their transfer performance data and undertake targeted QI initiatives in order to minimise delays and optimise access to EVT centres (Goyal *et al*., 2016).

Who will benefit from this recommendation?
All patients with acute ischaemic stroke.

RECOMMENDATION 2

THE RATE OF INTRAVENOUS THROMBOLYSIS IN ELIGIBLE PATIENTS WHO SUBSEQUENTLY UNDERGO THROMBECTOMY SHOULD BE REVIEWED ACROSS ALL PARTICIPATING HOSPITALS.

Rationale
Patients who are eligible for thrombectomy should receive prior intravenous thrombolysis as rapidly as possible (unless contraindicated), irrespective of whether they have presented to an acute stroke centre or an EVT centre (Intercollegiate Stroke Working Party, 2023). The rate of thrombolysis in those who received a thrombectomy in 2025 was 34%. However, the rate of thrombolysis varied between hospitals, from 11% in Mayo University Hospital to 64% in Bantry General Hospital. This variation suggests that not all eligible patients may be accessing thrombolysis and highlights opportunities for hospitals and HSE Health Regions to review local stroke pathways, identify barriers to access and implement targeted QI initiatives in order to optimise treatment processes.

What actions should be taken	Who is responsible for implementation?	When should this be implemented?
All HSE Health Regions should monitor thrombolysis rates in patients who receive thrombectomy in each hospital and support targeted QI programmes in order to increase access to thrombolysis for eligible patients. Each EVT centre should review the reasons for patients not receiving thrombolysis.	Regional Executive Officers	Q4 2026

Evidence that the action will be effective
Patients who are eligible for thrombectomy should receive prior intravenous thrombolysis as rapidly as possible (unless contraindicated), irrespective of whether they have presented to an acute stroke centre or an EVT centre (Intercollegiate Stroke Working Party, 2023).

Who will benefit from this recommendation?
All patients with acute ischaemic stroke.

RECOMMENDATION 3

TIMELY TRANSFER PROCESSES TO EVT CENTRES REQUIRE REGIONAL REVIEW AND IMPROVEMENT.

Rationale		
The DIDO time metric represents the interval from a patient's arrival at the first hospital to their departure for transfer to an EVT centre, capturing a critical phase in the referral pathway where timely decision-making and system-wide coordination are essential. In 2025, the median DIDO time was 109 minutes (IQR: 74–143 minutes). Variation between hospitals is observed, from 66 minutes in Bantry General Hospital to 167 minutes in Letterkenny University Hospital and Mayo University Hospital.		
What actions should be taken	**Who is responsible for implementation?**	**When should this be implemented?**
All HSE Health Regions should undertake a review of patient transfer processes to EVT centres in each hospital providing acute stroke services. The review of national thrombectomy transfer guidelines should be agreed and implemented at a national level.	Regional Executive Officers National Clinical Programme for Stroke	Q4 2027
Evidence that the action will be effective		
A major meta-analysis of five randomised controlled trials found that the benefit of thrombectomy declines with time. The proportion of patients achieving functional independence fell from 64% when reperfusion occurred at 3 hours to 46% when reperfusion occurred at 8 hours after symptom onset (Saver *et al*., 2016).		
Who will benefit from this recommendation?		
All patients with ischaemic stroke who are transferred from the first treating hospital to an EVT centre.		



11. CONCLUSION

11. CONCLUSION

This inaugural INAS National Thrombectomy Report provides a comprehensive national assessment of thrombectomy services in Ireland and establishes an important baseline against which future performance can be measured. In 2025, 483 patients underwent thrombectomy, demonstrating that this highly specialised service is providing life-changing treatment to patients with acute ischaemic stroke across the country. The findings confirm that thrombectomy services in Ireland deliver high-quality care, with successful reperfusion achieved in 91% of cases and substantial improvements in neurological outcomes observed following treatment.

The report also highlights the effectiveness of the National Thrombectomy Service, which enables patients from hospitals throughout Ireland to access specialist EVT centres 24 hours a day, 7 days a week. However, as thrombectomy is an extremely time-sensitive intervention, the data demonstrate ongoing opportunities to improve the timeliness of assessment, referral, transfer and treatment. Caution is advised in the interpretation of variation between hospitals, as much of the variation observed within a single year could be accounted for by spontaneous fluctuations in the small numbers coming from many of the hospitals, rather than reflecting true differences in clinical practice. Variation in thrombectomy rates and treatment times between hospitals suggests that not all eligible patients currently have the same opportunity to benefit from thrombectomy and that further QI initiatives are required.

A key strength of this report is its ability to identify opportunities for improvement while also demonstrating the value of national clinical audit in supporting evidence-based service development. The findings provide a strong foundation for the development of future quality indicators, national targets and service improvements.

Continued collaboration between referring hospitals, EVT centres, the National Clinical Programme for Stroke, NOCA and all stakeholders will be essential to ensuring equitable access to thrombectomy, reducing treatment delays, and improving outcomes for patients with acute ischaemic stroke. Future reports will enable progress to be monitored over time and support the ongoing development of thrombectomy services in Ireland.

"The findings confirm that thrombectomy services in Ireland deliver high-quality care, with successful reperfusion achieved in 91% of cases and substantial improvements in neurological outcomes observed following treatment."



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ACCESSING REPORT APPENDICES

National Office of Clinical Audit (2026)
Irish National Audit of Stroke National Report 2025 - Appendices.
Dublin: National Office of Clinical Audit.
Available at: https://www.noca.ie/publications/publications-listing/P0/category/3

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