GIG CYMRU NHS WALES | Perfformiad a Gwella Performance and Improvement

NHS Wales National Stroke Service Standards

Version 1

Stroke Implementation Network (part of the National Strategic Network for Cardiovascular Conditions)

October 2025

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Disclaimer for the NHS Wales National Stroke Service Standards

The National Stroke Implementation Network and NHS Wales Performance and Improvement assume that healthcare professionals will use their clinical judgement, expertise, and knowledge when determining the appropriateness of applying the standards in individual cases.

This document serves as guidance and may not be clinically applicable in every situation. It does not replace the responsibility of healthcare professionals to make decisions based on the specific circumstances of each patient in consultation with the patient, the carer and/or their legal guardian as appropriate.

The National Stroke Implementation and NHS Wales Performance and Improvement disclaims any liability for outcomes arising from the use or non-use of the standards. It remains the responsibility of service providers and Health Boards to ensure compliance with relevant laws, professional standards, and local governance requirements.

Acknowledgements

We extend our sincere gratitude to colleagues and services across Wales and beyond who generously contributed their time, knowledge, and expertise to inform the development of these standards. We would like to thank the members of the Stroke Implementation Network subgroups and advisory groups, whose dedication and collaborative efforts were instrumental in shaping significant aspects of this work.

Introduction

This document sets out the recommended Stroke Service Standards for NHS Wales, defining the benchmarks for delivering high-quality, patient-centred stroke care. These aspirational standards have been developed collaboratively with healthcare professionals across NHS Wales and are underpinned by the National Clinical Guidelines for Stroke for the UK and Ireland.[1]

Delivering high-quality stroke care in Wales requires clearly defined roles and collaborative working across multiple organisations. All partners and organisations involved in the delivery of stroke care should be aware of their roles and responsibilities, working together to support effective decision-making and contributing to the delivery of safe, equitable, and person-centred care in line with these service standards and the Welsh Government's Quality Statement for Stroke.

Accountability and oversight mechanisms already in existence for stroke services should continue, with providers remaining accountable to Welsh Government for policy delivery and the effective use of resources and using metrics such as Patient Reported Outcome Measures (PROMs), Patient Reported Experience Measures (PREMs), and Sentinel Stroke National Audit Programme (SSNAP) scores to monitor performance. In addition, the use of self-assessment tools, peer review and service user feedback are encouraged along with governance frameworks for quality and safety in stroke services.

Overview

Stroke services in NHS Wales deliver comprehensive, person-centred care, across the entire stroke pathway – from prevention and emergency response, to rehabilitation, and long-term support. These services are aligned with the National Clinical Framework[2] and the Quality Statement for Stroke[3] (published September 2021), which sets out the vision, ambition and strategic direction for stroke care in Wales. The Quality Statement is structured around six domains of quality defined in the Duty of Quality[4] and identifies four key population groups, each with specific desired outcomes.

1 National Clinical Guideline for Stroke for the UK and Ireland. London: Intercollegiate Stroke Working Party; 2023 May 4. Available at: www.strokeguideline.org.

2 National Clinical Framework: A Learning Health and Care System. Welsh Government; 2021. Available at: https://www.gov.wales/sites/default/files/publications/2021-05/national-clinical-framework-a-learning-health-and-care-system_0.pdf

3 The quality statement for stroke. Welsh Government; 2021. Available at: https://www.gov.wales/quality-statement-stroke

4 Duty of Quality Statutory Guidance; Welsh Government; 2023. Available at: https://www.gov.wales/sites/default/files/publications/2023-04/duty-of-quality-statutory-guidance-2023_0.pdf

Population Group	Definition	Outcomes
Population 1 Primary stroke Prevention	All people in Wales who have not had a stroke	People have the lowest possible risk of having a stroke
Population 2 Stroke survivors and life after stroke	All people in Wales who have had a stroke	People have an excellent chance of surviving, thriving, and regaining independence as quickly as possible.
Population 3 Unpaid carers and life after stroke	All people in Wales who support or care for someone who has had a stroke	*Carers of people who have had a stroke feel supported, informed, and equipped to provide care and support while maintaining their own wellbeing.
Population 4 Workforce	The Stroke workforce in Wales	*The stroke workforce in Wales is well-trained, well-supported and adequately resourced to deliver high-quality, equitable stroke care across the entire pathway.

*** These outcomes were co-developed with individuals who bring expertise through lived experience.**

The quality statement and stroke service standards align with a population health approach. Value-based healthcare[5] and Outcome-Based Accountability™ (OBA™)[6], together with relevant improvement methodologies and the seven-elements of the optimal stroke pathway (see Figure 1), provides the overarching architecture and organising framework to guide improvement across the entire stroke pathway.

Health boards and trusts are responsible for planning and delivering services in line with professional standards, clinical guidelines, and the quality attributes defined in the Quality Statement for Stroke. NHS Wales Performance and Improvement will support health boards to deliver improved outcomes in stroke care and quality-of-life. This approach enables effective collaboration between the right partners across all segments of the population, consistent with the principles of population health improvement and population health management.

5 Value-Based Healthcare for Wales - Value in Health

6 Freidman, M (2015) Trying hard is not good enough 10th Anniversary Edition: How to Produce Measurable Improvement for Customers and Communities. Further information also available here: RBA Ebook & Outcome Based Accountability - David Burnby

Objectives and expectations

The aim of these service standards is to define the essential requirements for stroke care, setting out the standards that should be met to prevent stroke and to deliver high quality, person-centred stroke services for people living in Wales.

The objectives of these service standards are to:

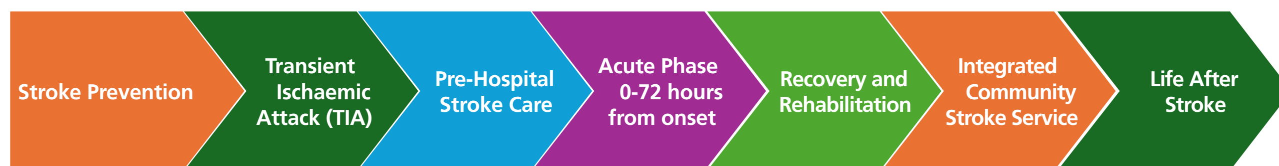
- Deliver a fully integrated, end-to-end stroke care pathway across NHS Wales
- Support the implementation of the National Clinical Guidelines for Stroke, as endorsed by NHS Wales, the Royal College of Physicians of London, the Scottish Intercollegiate Guidelines Network (SIGN), and the Royal College of Physicians of Ireland
- Ensure stroke services consistently achieve:
    - Optimal outcomes and experience for the four identified population groups
    - High quality, equitable care that reduces disparities and addresses unwarranted variation across services

The expectations for stroke services in Wales are to:

- Reduce the incidence of stroke through effective prevention and risk management strategies
- Decrease the length of hospital stay for stroke patients by providing efficient and coordinated care
- Enhance recovery and improve the experience of patients and carers through comprehensive long term support and follow up
- Reduce stroke related mortality and long term disability
- Ensure optimal end of life care that is compassionate, person-centred, and tailored to individual needs
- Promote advanced professional development for stroke specialists and all staff involved in the stroke pathway, ensuring the delivery of high-quality, evidence based care.

The service standards are organised according to the phases of the stroke pathway. The optimal clinical pathway for stroke involves structuring services to meet these standards at each phase, ensuring consistent, high quality care for every patient.

Figure 1 - The seven elements of the stroke pathway



These standards were developed collaboratively by the Stroke Implementation Network (NHS Wales Performance and Improvement), in partnership with a community of stroke professionals and key stakeholders across Wales. They are aligned with the current National Clinical Guideline for Stroke and reflect recognised best practice across the UK and Ireland.

Recognising the evolving nature of clinical evidence and national guidance, these standards are intended to remain flexible and will be updated as necessary in future iterations. Additionally, specific clinical pathways such as the Welsh Optimal Stroke Imaging Pathway (WOSIP) will be developed and implemented to support components of care within the broader stroke pathway.

Life after stroke

This section of the standards is currently in development. Throughout the collaborative process of creating these guidelines, the vital importance of including people with lived experience has been recognised. Consequently, this section will be co-produced with stroke survivors and their caregivers to ensure their insights and perspectives meaningfully shape the standards for life after stroke services in Wales.

Co-production will ensure that these standards are not only evidence based but also relevant, practical and person centred – reflecting what matters most to those living with the long term effects of stroke.

Monitoring of the standards

In addition to key measures in the **Sentinel Stroke National Audit Programme (SSNAP)**, stroke services will be expected to monitor their delivery against these NHS Wales standards. This will align with NHS Wales performance and productivity frameworks, ensuring accountability, continuous improvement, and high quality care across the stroke pathway.

1. Infrastructure Standards

Delivering safe, effective, and timely stroke care requires robust infrastructure that supports each stage of the patient journey. This includes physical environments, diagnostic and therapeutic equipment, digital systems, and communication tools that enable coordinated and responsive care. Infrastructure must be fit for purpose, resilient, and adaptable to evolving service models — including innovations such as artificial intelligence, telemedicine, and integrated digital records. The standards in this section define the essential infrastructure requirements to support high-performing stroke services across Wales and ensure equitable access regardless of geography.

1.1. Inclusive services

Across the pathway services need to promote bilingual services and comply with Welsh Language Standards, ensuring patients can communicate in their preferred language and receive rehabilitative interventions accordingly.

Services should provide culturally sensitive and inclusive care to meet the needs of diverse populations.

Services should involve the expert voice of lived experience in their service design and review.

1.2. Transient Ischemic Attack (TIA) services

Dedicated clinic with capacity for stroke specialist clinicians to see TIA referrals according to clinical standards.

Access to urgent imaging and investigations.

1.3. Acute Phase 0-72 hours

There should be access to:

- Brain imaging in line with Welsh Optimal Stroke Imaging Pathway (WOSIP)
- Carotid imaging
- Access to a specialist stroke unit with a specialist multidisciplinary team
- Urgent clinical investigations
- Access to specialist services (such as neuro and vascular surgery)
- Clinical Psychology
- Therapy assessment and rehabilitation facilities
- Ongoing stroke rehabilitation services
- Access to an Integrated Community Stroke Service (ICSS) and integrated discharge services (including social worker).

1.4. Stroke rehabilitation

Stroke rehabilitation services should provide:

- An inpatient stroke unit capable of providing specialist rehabilitation for all people with stroke admitted to hospital
- Therapy assessment and rehabilitation facilities.

Rehabilitation facilities should include:

- Gymnasium
- Functional rehabilitation spaces (for example, adapted bathroom, kitchen)
- 1:1 quiet rehabilitation space (for example, for clinical psychology or speech and language therapist rehabilitation)
- Multiuse activity space (for example, for group activity, music therapy sessions)
- Outdoor rehabilitation space

1.5. Integrated Community Stroke Service (ICSS)

ICSS services are community-based specialist rehabilitation services capable of meeting the specific health, social and vocational needs of people with stroke.

Community provision should be in a variety of community settings including the persons own home, gyms or community centres, or outpatient clinics and therapy departments.

Services should be integrated to provide seamless specialist care that is not time limited.

Both inpatient and ICSS stroke rehabilitation services should be capable of meeting all the needs of people with stroke (e.g. equipment provision, management of physical or emotional needs).

2. Workforce Standards

A skilled, supported and sustainably resourced workforce is the foundation of high-quality stroke care. To meet the ambitions of the NHS Wales National Stroke Service Standards and deliver equitable, timely, and person centred care across all settings, it is essential to have clearly defined workforce expectations. These standards ensure that staff are trained, competent and supported to work across the stroke care pathway. This section outlines the roles, training, staffing levels, and support mechanisms required to deliver safe and effective stroke services in line with national priorities.

The recommended staffing levels are based on the **National Clinical Guidelines for stroke** and consensus of the Stroke Implementation Network advisory groups and standards writing group.

2.1. Recommended staffing levels

2.1.1. Acute Phase (0-72 hours from arrival to hospital)

Consultant stroke physician	24/7 availability With at least 8 thrombolysis trained physicians on rota
Resident doctor workforce	24/7 middle grade cover
Stroke specialist nurses or Advanced Clinical Practitioner roles	24/7 cover
Stroke ward nurse	2.9 WTE per bed 80:20 Registered: Unregistered ratio
Multidisciplinary workforce:	WTE per 5 beds
Physiotherapist	1.02
Occupational therapist	0.95
Speech and language therapist	0.48
Clinical Psychologist	0.28
Dietitian	0.25
Therapies working in seven-day service model of delivery	The WTE recommendations are for registered therapy staff and do not include rehabilitation support staff
Clinical audit administrative staff (whole pathway role)	1.0 WTE per 500 patients per year

2.1.2. Recovery and Rehabilitation

Consultant stroke physician or Consultant level practitioner (physician, nurse or AHP)	Acute Stroke Unit:7-day cover with adequate out of hours arrangements Rehab unit: twice weekly ward round
Resident doctor workforce	Acute Stroke Unit: Daily ward round Rehab unit: access to medical review on patient need
Stroke ward nurse (WTE per bed):	1.35 WTE per bed 65:35 Registered: Unregistered ratio
Multidisciplinary workforce	WTE per 5 beds
Physiotherapist	1.18
Occupational therapist	1.13
Speech and language therapist	0.56
Clinical neuropsychologist/clinical psychologist	0.28
Dietitian	0.25
Orthoptist	0.1
Therapies working in seven-day service model of delivery	The WTE recommendations are for registered therapy staff and do not include rehabilitation support staff

2.1.3. Integrated Community Stroke Care

Consultant stroke physician	Access to a named stroke consultant for follow up of each patient
Multidisciplinary workforce:	WTE per 100 patients per year
Stroke specialist nurses or Advanced Clinical Practitioner roles	Up to 1.2 WTE per 100 referrals per year and at least 1 WTE per team
Physiotherapist	1.0
Occupational therapist	1.0
Speech and language therapist	0.4
Multiprofessional Rehab Assistant	1.0
Clinical psychologist	up to 0.4
Therapies working in seven-day service model of delivery for ESD Pathway	
Clinical scientist/rehabilitation engineer **Working across the pathway not exclusive to ICSS**	1.0 WTE per 100 referrals to ICSS

2.2. Specialist skills, training and education

The multidisciplinary workforce receives at least annual education and skills training specific to stroke.

Services need to demonstrate that time and resources are provided and protected for education and professional development of the multidisciplinary clinical workforce across the pathway.

Specialist stroke practitioners assessing TIA patients should possess the appropriate training, skills and competence necessary for the accurate diagnosis and effective management of TIA.

Primary care staff should receive education and training in the recognition and management of TIA patients to ensure timely and appropriate care.

Staff caring for people dying of stroke should be trained in end-of-life care, including the recognition of people who are approaching the end of life.

The multidisciplinary workforce is research active with a proportion with MSc / doctorate level research training.

A proportion of the workforce should be able to deliver patient care and rehabilitation in the Welsh language.

2.3. Management and leadership

Multidisciplinary staff in senior roles should be job planned accordingly to reflect the pillars of clinical practice with dedicated resource allocated to support their continued professional development and the ongoing training, education and development of their colleagues.

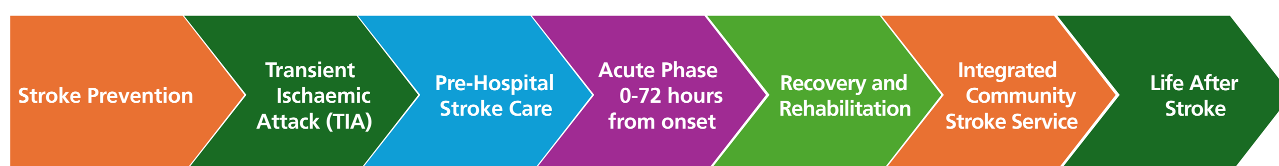
There is a multidisciplinary leadership structure with senior clinicians involved in service improvement projects and initiatives as well as regional and national networks for clinicians.

There is a dedicated management team and administration support, including data and audit management.

3. Clinical Standards

Clinical standards define the expected level of care that stroke patients should receive across all phases of the pathway from initial presentation through to rehabilitation and long-term support. These standards are grounded in best practice, national guidelines, and the principles of prudent healthcare. They aim to ensure that stroke services across Wales are safe, timely, effective, and person-centred. By setting a consistent benchmark for care, the clinical standards support service improvement, reduce unwarranted variation, and promote equitable outcomes for all patients, regardless of geography.

The clinical standards are divided into the following phases of the stroke pathway:



3.1. Primary prevention of stroke

Stroke prevention should be integrated into routine cardiovascular disease (CVD) management within primary care settings, given the strong interrelationship between stroke and CVD. Effective stroke prevention should be implemented through the following strategies:

Cluster identification

Identify and target geographic areas or population groups with higher stroke incidence, facilitating tailored community-based interventions.

Blood pressure monitoring

Ensure regular, accurate measurement and management of blood pressure as a key intervention for stroke prevention, in line with established CVD guidelines.

Atrial fibrillation management

Prioritise the early identification, diagnosis and appropriate management of atrial fibrillation to mitigate the risk of embolic stroke.

Healthy lifestyle promotion

Support and encourage patient engagement in lifestyle modifications, such as smoking cessation, weight management, and physical activity, to reduce overall cardiovascular and cerebrovascular risk.

Primary prevention recommendations are currently being developed and are expected to be available as part of the Wales Quality Assurance and Improvement Framework (QAIF) basket for primary care in 2025. Please refer to the **National Strategic Clinical Network for Cardiovascular Conditions** for further information.

3.2. Primary prevention of stroke

3.2.1. TIA assessment

Healthcare professionals should not use assessment tools such as the ABCD2 score to stratify risk of TIA, determine the urgency of a referral or guide subsequent treatment decisions.

TIA services should be available seven days a week, 365 days a year, to ensure timely access to care for all patients.

Patients referred with suspected TIA should be assessed within 24 hours by a stroke specialist clinician either in a neurovascular clinic or an acute stroke unit.

For patients presenting with suspected TIA more than a week after the event, an assessment by a stroke specialist clinician should be conducted within seven days of referral.

A stroke specialist clinician must assess patients with suspected TIA before a decision on brain imaging is made. An exception is when intracerebral haemorrhage must be excluded in patients taking anticoagulants or with a bleeding disorder, in which case, an enhanced CT brain scan should be performed urgently.

For patients with suspected TIA, MRI should be the primary brain imaging modality for detecting the presence and/or distribution of brain ischaemia.

If MRI imaging cannot be performed within seven days of symptoms, MRI imaging should be used to exclude haemorrhage.

3.2.2. TIA management

Patients with TIA should be given aspirin 300 mg immediately unless contraindicated.

Imaging of the carotid arteries (carotid duplex ultrasound or either CT or MR angiography) should be performed urgently when clinically indicated to assess for carotid artery pathology.

Where indicated, patients should be assessed, referred and seen by vascular surgery for carotid surgery as soon as possible within 7 days of the onset symptoms.

Patients with TIA, along with their families and carers, should receive written information about the recognition of stroke symptoms and the appropriate action to take if these symptoms occur, ensuring they are well-informed about the signs of a potential stroke and the urgency of seeking immediate medical attention.

Secondary prevention after TIA should include:

Lifestyle advice
Patients should receive tailored lifestyle advice, focusing on smoking cessation, moderation of alcohol consumption, dietary changes, and increasing physical activity.

Antiplatelet or anticoagulant therapy
Appropriate antiplatelet or anticoagulant therapy should be prescribed based on the individual patient's risk profile and clinical needs.

High intensity statin therapy
Patients should be prescribed high intensity statin therapy to reduce the risk of recurrent stroke and other cardiovascular events.

Blood pressure-lowering therapy
Blood pressure lowering therapy should be initiated or adjusted to ensure optimal control, as part of the patient's ongoing management strategy.

3.3. Pre-hospital stroke care

3.3.1. Identifying stroke pathway needs (primary care)

Patients presenting with symptoms of suspected stroke when contacting primary care services should be immediately redirected to emergency services via 999, ensuring urgent and timely access to appropriate stroke care.

Patients presenting with resolved transient symptoms suspected as TIA should be referred into local emergency TIA assessment pathways.

3.3.2. Identifying stroke pathway needs (ambulance service)

999 calls made for suspected stroke cases will be prioritised by an Emergency Medical Dispatcher (EMD).

If potential stroke is identified as the chief complaint and symptom onset is within 10 hours, the call will receive the appropriate response. The next available ambulance will be allocated, directing patients directly into the emergency stroke pathway.

Where potential stroke is identified as the chief complaint, yet onset of symptoms is over 10 hours ago, calls will be prioritised accordingly and responded to in the most appropriate manner as quickly as possible. (This may be at a lower priority than strokes where the onset time is more recent, but they are still responded to as emergency calls. This is because there are specific treatments available for patients presenting with a stroke within a specific time period, which are no longer available outside of that time window.)

3.3.3. Commencing stroke clinical pathway (ambulance service)

On arrival, ambulance service clinicians should obtain a clear and accurate history to include confirming the exact onset time of symptoms, or where this is not known, establish when the person was last seen well or went to sleep if they have woken with the symptoms.

A face-to-face clinical assessment should be undertaken by an appropriately trained clinician to include a FAST test and assessment of associated symptoms, and appropriate observations.

The on-scene assessment time should be limited to under 30 minutes where clinically appropriate and prehospital video triage should be utilised to enable early consultation and referral to the local stroke team at the earliest opportunity.

On continued suspicion of stroke, patients should be conveyed to hospital with pre alert to the Emergency Department and stroke teams in line with local protocols.

On arrival at hospital, suspected stroke cases must be prioritised for immediate clinical handover from the ambulance. A coordinated approach between ambulance and hospital staff must ensure no avoidable delay in transferring the patient into the emergency stroke care pathway.

Patients presenting with resolved transient symptoms suspected as TIA should be referred into local emergency TIA assessment pathways.

3.3.4. Accessing emergency stroke pathway – ambulance arrivals (stroke team)

The stroke team should arrange an appropriate location for assessment ahead of the patient's arrival to ensure streamlined care.

On arrival, patients with suspected stroke should be transferred directly to imaging where possible, without delay.

The stroke team should assume responsibility for the patient's care immediately upon arrival, unless resuscitation or stabilisation is required.

Patients requiring emergency resuscitation should be initially managed by the Emergency Department, with care formally handed over to the stroke team as soon as clinically appropriate.

3.3.5. Accessing emergency stroke pathway – self-presenting patients (ED team)

Patients presenting to Emergency departments with suspected stroke symptoms should be triaged as soon as possible.

On initial suspicion of stroke at triage, the Recognition of Stroke in the Emergency Room (ROSIER) tool should be used by appropriately trained staff to support prompt and accurate identification of stroke symptoms.

On continued suspicion of stroke, (ROSIER positive or posterior circulation stroke suspected), the local stroke alert pathway must be activated immediately to ensure timely assessment and intervention.

Upon activation of the local stroke alert, the stroke team must respond without delay, assume responsibility for the patient's care immediately, and ensure the patient is assessed in an appropriate, pre-designated clinical location.

The stroke team should request appropriate imaging immediately upon attending the stroke alert.

Patients should be transferred direct to scan without delay.

3.3.6. Accessing emergency stroke pathway – inpatients

When stroke is suspected in a patient who is already receiving inpatient care, the care team need to raise a stroke alert call requesting emergency assessment by the stroke team.

Upon activation of the local stroke alert, the stroke team must respond to assess the patient without delay.

The stroke team should request appropriate imaging immediately upon attending the stroke alert.

Patients should be transferred direct to scan without delay.

3.4. Acute Phase 0-72 hours from arrival to hospital

3.4.1. Brain imaging (in line with Wales Optimal Stroke Imaging Pathway, WOSIP – Appendix 1)

Patients should have a CT scan performed within 20 minutes of arrival.

CT and CT angiogram scans should be performed in the same imaging slot to avoid delay.

Patients presenting between 4.5 and nine hours from symptom onset, including those with wake-up stroke or an unknown time of onset, should undergo CT perfusion or MRI imaging.

Image interpretation should be supported by artificial intelligence (AI) software to facilitate timely detection of patients potentially eligible for an intervention emergency assessment

Patients should be clinically assessed within 30 minutes of arrival by a stroke-trained doctor, specialist nurse or advanced clinical practitioner.

An in person clinical assessment by a stroke specialist clinician should be completed within one hour of the patient's arrival.

Patients should have their swallow function screened within 4 hours of arrival by an appropriately trained member of staff using a standardised screening tool.

Patients with ischaemic stroke, including those who have received thrombolysis, should have an individualised care plan in place prior to admission to the stroke unit. This should include a schedule for neurological observations monitoring, rescanning schedule and escalation plan.

3.4.2. Thrombolysis treatment

Where clinically indicated, patients should receive thrombolysis treatment within 30 minutes of arrival, administered by staff trained in stroke thrombolysis.

At least 20% of patients with ischaemic stroke should receive thrombolysis, where clinically appropriate.

3.4.3. Thrombectomy treatment

Where clinically indicated, patients should be referred for mechanical thrombectomy without delay.

If thrombectomy is delivered on-site, treatment should commence (door to groin) within 60 minutes of arrival ('door-to-groin' time)

If transfer to an external thrombectomy centre is required, patients should leave the referring hospital within 45 minutes of arrival ('door in door out' time)

At the receiving thrombectomy centre, mechanical thrombectomy should within 30 minutes of arrival commence ('door to groin' time).

At least 10% of patients with ischaemic stroke should receive mechanical thrombectomy, where clinically appropriate.

3.4.4. Intracerebral haemorrhage (ICH) management

Patients with intracerebral haemorrhage (ICH) with Glasgow Coma Scale (GCS) score of ≤8 will require Emergency Department / Resuscitation support for stabilisation.

Patients with ICH with GCS ≥9 should be managed according to the ABC-ICH pathway[7].

Patients with ICH should have an individualised care plan in place prior to admission to the Stroke Unit. This plan should include a schedule for neurological observations, rescanning and an escalation plan.

3.4.5. Admission to stroke unit

Patients should be admitted to a specialist stroke unit within four hours of hospital arrival.

Patients should spend at least 90% of their hospital stay on a stroke unit. All patients should have access to continuous cardiac telemetry monitoring during their hospital stay.

3.4.6. Specialist assessments

Patients should receive an in-person stroke consultant assessment within 14 hours of arrival.

Patients should receive an in-person stroke specialist nurse assessment within 4 hours of arrival.

Patients should receive an occupational therapy assessment within 24 hours of arrival.

Patients should receive a physiotherapy assessment within 24 hours of arrival.

Patients with swallowing difficulty should receive a formal swallow assessment, conducted by an appropriately trained specialist such as a speech and language therapist, within 24 hours of arrival.

Using the 'Adult Mouth Care Assessment' patients should receive an assessment of their oral health condition daily.

Patients should receive a speech and language therapy assessment of their speech, language and communication needs within 72 hours of arrival.

3.4.7. Medical management

Patients should receive investigations to identify the possible causes of their stroke. This may include blood tests, carotid imaging, cardiac investigations / Continuous cardiac monitoring for up to 72 hours.

Patients should have access to referral for neurosurgery, interventional neuroradiology and vascular surgery as required.

The ongoing medical plan should be included in prescription of care needs beyond the first 72 hours.

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7 Parry-Jones, Adrian R et al. "An Intracerebral Hemorrhage Care Bundle Is Associated with Lower Case Fatality." Annals of neurology vol. 86,4 (2019): 495-503. Available at: https://pmc.ncbi.nlm.nih.gov/articles/PMC6771716/

3.4.8. Assessment of deficits / determinants of ongoing needs

Patients should receive nutritional screening within 24 hours of admission, with dietetic referral actioned as outlined in local screening tool care plan.

Patients should receive mood screening using a standardised screening tool within 72 hours of admission, with a rationale provided if not completed.

Patients should receive cognition screening using a standardised screening tool within 72 hours of admission, with a rationale provided if not completed.

Patients should receive an assessment of visual acuity and function using a standardised screening tool within 72 hours of admission, with a rationale provided if not completed.

Patients requiring orthoptics input should receive this during their hospital stay.

Patients should receive an assessment of continence within 72 hours of admissions, with a rationale provided if not completed.

The multidisciplinary team should document a comprehensive summary of the patient’s ongoing needs, including:

- Medical, nursing and therapy needs
- Recovery and rehabilitation goals
- Ongoing life after stroke needs.

3.4.9. Transfer of care

Patients going home from the stroke unit should receive:

- Timely referrals to ongoing community and follow up services
- A transitioned handover to Integrated Community Stroke Service (ICSS) / Life After Stroke services
- Provision of named contacts and contact details at the stroke team
- A joint health and social care plan on discharge where applicable.

If further inpatient rehabilitation is required in the stroke pathway patients should receive:

- Transition handover to ongoing service.

3.4.10. End of life care

The decision-making process regarding the withholding or withdrawal of life-prolonging treatments should be timely, sensitive and made by an appropriately experienced individual, with the needs of the dying person and those important to them actively explored.

People with stroke with limited life expectancy, should be offered advance care planning, with robust pathways and timely referrals to specialist inpatient and community palliative care services when needed. They should also have the opportunity to be discharged home or to a hospice for end-of-life care.

Primary care services should be informed prior to discharge as palliative care should be planned and not reactive in the community.

A person-centred individual care plan should be documented and coordinated and should include food and drink provisions with associated risk management, symptom control and psychological, social and spiritual support.

3.5. Pre-hospital stroke care

3.5.1. Stroke unit care

The patient should remain on a specialist stroke unit until they are either ready for transfer of care to the ICSS or have achieved their stroke recovery goals.

People with stroke should be considered to have the potential to benefit from rehabilitation at any point after their stroke.

Goals for stroke recovery and rehabilitation should be considered to include those related to adjustment and discharge planning which still require specialist stroke input.

When transferring between stroke teams, the transfer should occur without delay and within 24 hours of the patient being deemed ready.

3.5.2. Medical management

Outstanding investigations should be completed and medical optimisation achieved, with a clear escalation plan in case of clinical deterioration.

Appropriate treatment should be provided for any acquired or stroke associated infection or other acute medical problem

There should be an ongoing plan for management of nutritional support (e.g. nasogastric (NG) tube feeding, Percutaneous Endoscopic Gastrostomy (PEG)) following feeding optimisation for discharge or inpatient rehabilitation transfer.

Medical follow up arrangements should be in place before the patient leaves the stroke unit, with a named stroke specialist doctor, within 6 weeks of discharge from hospital.

3.5.3. Assessment of deficits / determinants of ongoing needs

If a patient is transferred between stroke teams, there should be a clear handover of assessments between multidisciplinary teams, including a description of ongoing needs.

Upon arriving at the receiving stroke unit, any outstanding multidisciplinary assessments should be completed within 24 hours.

The patient and their family or carers should be involved in the developing and documenting of recovery and rehabilitation goals and treatment plans within 5 days.

3.5.4. In-hospital rehabilitation

Patients should have at least weekly multidisciplinary team (MDT) reviews of their recovery and rehabilitation goals and ongoing needs.

Patients should receive evidence-based rehabilitation interventions in accordance with all relevant national clinical guidelines for stroke and neurological rehabilitation, in a seven-day model of delivery.

Patients with motor recovery goals after stroke should receive a minimum of three hours of multidisciplinary therapy per day,

- delivered or supervised by a therapist or rehabilitation assistant
- focused on exercise, motor retraining and/or functional practice
- provided at least five days per week.

Patients with ongoing communication and swallow function recovery goals should receive a minimum of 45 minutes of multidisciplinary therapy per day,

- delivered or supervised by a therapist or rehabilitation assistant
- focused on communication, swallowing and/or functional practice
- provided at least five days per week.

Patients with ongoing psychological function recovery goals should receive a minimum of 45 minutes of multidisciplinary therapy per day,

- delivered or supervised by a therapist or rehabilitation assistant
- focused on psychological support, emotional wellbeing, and/or cognitive-behavioural strategies
- provided at least five days per week.

Nutritional screening should be completed at least once weekly or more frequently if indicated as outlined in local screening tool care plan.

Patients requiring clinical psychology support should receive this within 5 days of the identified need.

Patients requiring orthoptics input should receive this during their hospital stay.

Patients should have access to appropriate specialist support during their hospital stay, based on individual needs. This may include:

- Ongoing clinical psychology support
- Instrumental dysphagia assessment (for example, FEES or VF)
- Ongoing dietetic or nutritional support input
- Spasticity management
- Pain management
- Fatigue Management
- Visual function rehabilitation
- Posture and mobility requirements, including wheelchair and special seating provision, with referral to specialist posture and mobility services as needed
- Orthotics input, splinting and appliances
- Assistive technology, including rehabilitation technologies, equipment (such as functional electrical stimulation), environmental controls, communication aids, and support, as determined by individual need.

Patients should have access to advice and signposting to appropriate specialist support during their hospital stay, based on individual needs. This may include:

- Return to work and vocational rehabilitation
- Return to driving.

3.5.5. Transfer of care

Patients and their families should be involved in decision making and planning for their transfer of care from the stroke unit.

On leaving the stroke unit, patients should receive:

- Timely referrals to ongoing community, primary care and follow up services
- A transition handover to ICSS with in person handover where possible
- Provision of named contacts and contact details at the stroke team
- A joint health and social care plan on discharge, where applicable.

3.5.6. End of life care

The decision-making process regarding the withholding or withdrawal of life-prolonging treatments should be timely, sensitive and carried out by an appropriately experienced individual. The needs of the dying person and those important to them should be actively explored and considered.

People with stroke with limited life expectancy, should be offered advance care planning, with robust pathways in place for timely referral to specialist inpatient and community palliative care services. This should include the opportunity to be discharged home or to a hospice for end-of-life care when appropriate.

Primary care services should be informed prior to discharge as palliative care should be planned and not reactive in the community.

A person-centred individual care plan should be developed, including food and drink management, related risk management, symptom control and psychological, social and spiritual support. This care plan should be documented and coordinated effectively.

3.6. Integrated Community Stroke Service (ICSS)

3.6.1. Referral and handover

Hospital inpatients who have mild to moderate disability (mRs 0-3) after stroke should be offered Early Supported Discharge (ESD) by the ICSS with treatment at home starting within 24 hours of discharge.

Hospital inpatients with stroke who do not meet the ESD criteria should be offered follow up from the ICSS with treatment or support at home beginning within five days of discharge.

There should be a clear handover to the ICSS, including a detailed description of the patient and their family's ongoing needs and the required support.

3.6.2. Assessment of deficits / determinants of ongoing needs

For the ESD patient group, all relevant multidisciplinary assessments should be completed within 24 hours of commencing ICSS input.

For the non-ESD patient group, all relevant multidisciplinary assessments should be completed within 5 days of commencing ICSS input.

The patient, along with their family or carers, should be supported to develop and document goals and treatment plans within 5 days of commencing ICSS input.

3.6.3. ICSS rehabilitation

Patients should receive evidence-based rehabilitation interventions in accordance with all relevant national clinical guidelines for stroke and neurological rehabilitation

ICSS Patients on the ESD pathway should have at least weekly multidisciplinary team (MDT) reviews of their recovery and rehabilitation goals and ongoing needs.

Non-ESD ICSS patients should have at least fortnightly MDT reviews of their recovery and rehabilitation goals and ongoing needs.

For the ESD patient group
People with predominantly motor recovery goals should receive a minimum of three hours of multidisciplinary therapy per day, which is:

- delivered or supervised by a therapist or rehabilitation assistant
- focused on exercise, motor retraining and/or functional practice
- at least five days per week.

People with ongoing communication and swallow function recovery goals should receive a minimum of 45 minutes of multidisciplinary therapy per day, which is:

- delivered or supervised by a therapist or rehabilitation assistant
- focused on communication, swallowing and/or functional practice
- provided at least five days per week.

People with ongoing psychological function recovery goals should receive a minimum of 45 minutes of multidisciplinary therapy per day, which is:

- delivered or supervised by a therapist or rehabilitation assistant
- focused on psychological support, emotional wellbeing, and/or cognitive-behavioural strategies
- provided at least five days per week.

For the non-ESD patient group
Provision of rehabilitation should be tailored to individual patient goals, based on a thorough needs assessment.

For all ICSS patients
According to individual patient needs, timely access should be provided to the following services:

- Return to work / vocational rehabilitation
- Return to driving
- Ongoing clinical psychology input

- Ongoing dietetic or nutritional support input
- Spasticity management
- Pain management
- Fatigue management
- Visual function rehabilitation
- Posture and mobility services (including wheelchair and special seating), with referral to specialist services as needed
- Orthotics input, splinting and appliances
- Assistive technology, including rehabilitation technologies, equipment (such as functional electrical stimulation), environmental controls, communication aids, and support, as determined by individual need
- Instrumental dysphagia assessment (Fibreoptic Endoscopic Evaluation of Swallow (FEES) or Video Fluoroscopy (VF)) in accordance with local community provision and dysphagia management pathways.

3.6.4. Transfer of care

All patients, along with their families, should be actively involved in the decision making and planning for their transfer of care from the service.

On transfer from the Integrated Community Stroke Services (ICSS) to other services:

- Timely referrals to ongoing services including life after stroke support
- Provision of named contacts and contact details of the stroke team
- Support for patients to reintegrate into the community setting and social roles, with appropriate community services in place.

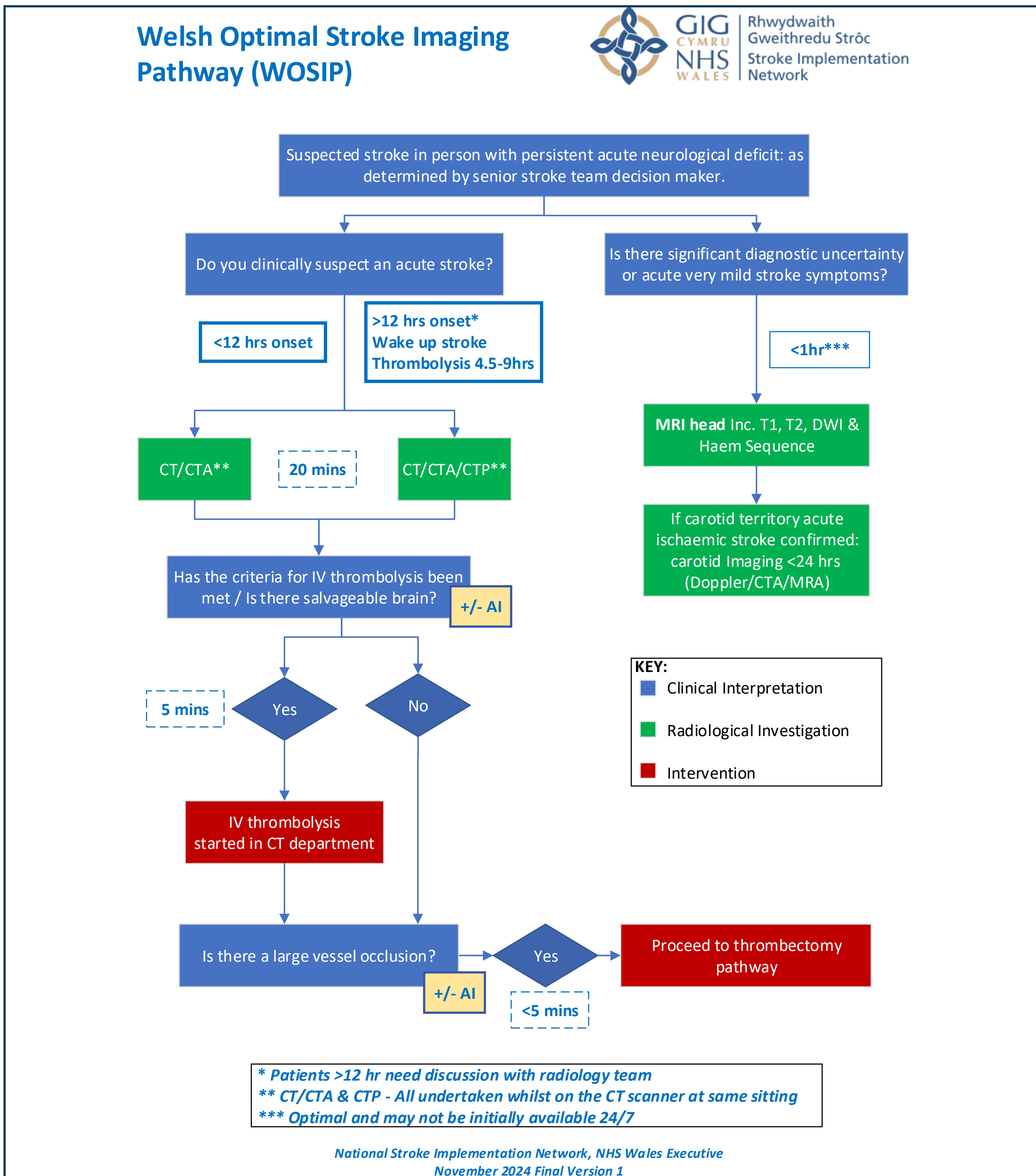
3.7. Life after stroke

This section of the standards is currently under development.

Throughout the collaborative process of creating these standards, the importance of including people with lived experience has been recognised. As a result, this section of the standards will be developed in partnership with stroke survivors and their caregivers, ensuring their insights and perspectives are directly incorporated into the design of life after stroke services in Wales.

Co-producing these standards highlights the necessity for them to be relevant, practical, and person-centred, ensuring the needs and experiences of stroke survivors and their families are at the heart of service delivery.

Appendix 1 - Welsh Optimal Stroke Imaging Pathway (WOSIP)



IMPORTANT: Patients should not be transferred from an Acute Stroke Centre (ASC) to Comprehensive Stroke Centre (CSC) for initial diagnostic imaging. It is acknowledged that not all elements of the WOSIP will be deliverable immediately at all centres.

Why is imaging important for patients with stroke like symptoms?

Imaging is a fundamental component of the initial assessment of patients suspected of suffering a stroke. It is crucial that individuals suspected of having a stroke are given the most appropriate brain scan to identify the group amenable to time critical therapy. Imaging is also vital in distinguishing between those patients who have symptoms suggestive of stroke but actually have a non-stroke diagnosis.

Why speed is crucial?

Individuals with suspected acute stroke should be given brain imaging as soon as possible. The benefit from reperfusion therapy decreases with each minute diagnosis and treatment is delayed.

What is the WOSIP (Welsh Optimal Stroke Imaging Pathway)?

A pathway designed to guide the efficient use of radiology resources and reduce duplication, providing rapid diagnosis of acute stroke and stroke mimics and ensuring access to the time dependant treatments of IV Thrombolysis and Thrombectomy (T)

How has the WOSIP been developed?

The WOSIP has been developed in line with the National Clinical Guideline for Stroke for the United Kingdom and Ireland.

Why is the WOSIP important for patients?

It is expected that adherence to this pathway will both increase the number of patients eligible for recanalisation therapy and reduce the time to intervention. This will reduce the numbers of patients living with life changing disability following a stroke. It is expected that there will also be an overall reduction in length of stay for patients presenting with stroke like symptoms due to early diagnosis and treatment.

Will there be an increase in the volume of MRI scanning?

The GIRFT review in NHS England suggests that 12% (8,850 /yr) of patients admitted with a confirmed stroke have both a CT and MRI within 24hrs, on admission. Whilst some of this dual investigation may be justified, it is envisaged that the vast majority of initial CT scans may be avoided if MRI was available first line. There are at least the same number of additional patients who also have duplication of CT and then MRI but who end up with a non-stroke diagnosis confirmed; these patients in particular will benefit from a first to MRI policy. Total volume of MRI scanning is not expected to increase significantly but there will be an expected release of up to 890 plain CT scans / year in Wales.

What Is the Role of Artificial intelligence (AI) in stroke imaging?

AI should be used as a decision support tool only. It should not be used to substitute expert interpretation. Its use should support systems in the rapid assessment and selection of patients for recanalisation intervention in line with its licence or as part of a clinical trial only.

Abberviations and glossary

MRI Magnetic Resonance Imaging	**DWI** Diffusion-Weighted Imaging sequence
T1/T2 MRI imaging sequences	**Haem** haemorrhage identification series
CT Computerised Tomography	**IV** Intravenous

Glossary

Adult Mouth Care Assessment	A structured assessment within the Welsh Nursing Care Record used to evaluate an adult patient's oral health, comfort, and ability to maintain mouth care. It identifies risks and support needs to inform a personalised mouth care plan, promoting hygiene, nutrition, and overall well-being.
AI Software	Artificial Intelligence Software: Used to assist clinicians in interpreting imaging quickly and accurately.
Assistive Technology	Equipment and systems used to aid independence, including: • Environmental controls • Communication aids • Rehabilitation technologies (e.g. Functional Electrical Stimulation)
Atrial Fibrillation (AF)	A common cardiac arrhythmia that significantly increases the risk of embolic stroke. It is characterised by irregular and often rapid heart rate and requires appropriate anticoagulant management to reduce stroke risk.
Computed Tomography (CT)	An X-ray technique used to examine the brain.
CT Angiogram (CTA)	A CT scan that looks at blood vessels in the brain.
CT Perfusion (CTP)	A CT technique that evaluates blood flow to the brain.
Door-in-Door-out Time	The time a patient spends at the referring hospital before transfer for thrombectomy.

Door-to-Groin Time	The time from hospital arrival to the start of thrombectomy procedure.
Emergency Stroke Pathway	A time-sensitive clinical care route that ensures rapid assessment, diagnosis, imaging, and initiation of treatment for patients presenting with symptoms suggestive of stroke.
Early Supported Discharge (ESD)	An intervention delivered by a coordinated, stroke specialist, multi-disciplinary team that facilitates the earlier transfer of care from hospital into the community and provides responsive (within 24 hours) and intensive stroke rehabilitation in the patient's place of residence (usually over a time-limited period).
Face Arms Speech Time (FAST) test	A test used to screen for the possibility of a stroke or TIA.
(Fibreoptic Endoscopic Evaluation of Swallow (FEES)	A procedure where a tiny camera is inserted through the nose to see how a person swallows food, liquids or saliva.
Glasgow Coma Scale (GCS)	A clinical scale to assess a person's level of consciousness.
Integrated community stroke service (ICSS)	Community based specialist rehabilitation services capable of meeting the specific health, social and vocational needs of people with stroke of all ages, including provision of early supported discharge to enable people with stroke to receive intensive rehabilitation, and community-based specialist rehabilitation services capable of meeting the person's needs in a variety of community settings including their own home, gyms or community centres, or outpatient clinics.
Multidisciplinary Team (MDT)	A group of health professionals from different disciplines working collaboratively to deliver coordinated patient care and rehabilitation.
Magnetic Resonance Imaging (MRI)	A scan that uses magnetic fields to create detailed brain images.
Modified Rankin scale (mRs)	A disability scale used to measure level of dependence after stroke.
Nasogastric (NG) feeding tube	A method of feeding support achieved by passing a thin tube through the nose and into the stomach to deliver nutrition, liquids and medications in someone who cannot eat or drink adequately.

Neurovascular Clinic	A specialist outpatient service led by stroke clinicians for rapid assessment and management of patients with suspected TIA or minor stroke, typically accessed within 24 hours of referral.
Onset Time	The exact time when the individual was last known to be well prior to symptom onset. This is critical for determining eligibility for emergency stroke treatments such as thrombolysis or thrombectomy.
Orthotics	Medical devices such as splints, braces, or insoles used to support, align or improve limb and joint function.
Percutaneous Endoscopic Gastrostomy (PEG)	A feeding tube inserted directly into the stomach through the abdominal wall to provide liquid nutrition, fluids and medication.
Prehospital Video Triage	Technology-enabled consultation between ambulance clinicians and stroke specialists during prehospital care, allowing early clinical input, referral decisions, and activation of stroke pathways while the patient is still enroute.
Patient Reported Experience Measures (PREMS)	Standardised questionnaires used to capture patients' perspectives on their experiences of healthcare services. PREMs focus on aspects such as communication, involvement in decision-making, timeliness, respect, and overall satisfaction with care. They help organisations understand how patients perceive the quality of service delivery and are used to support quality improvement, service redesign, and person-centred care.
Primary Prevention	Strategies aimed at preventing the first occurrence of stroke through risk factor management, such as control of hypertension, management of atrial fibrillation, and lifestyle modifications.
Patient Reported Outcome Measures (PROMS)	Standardised tools used to assess patients' views on their health status, symptoms, and quality of life related to a condition or treatment. PROMs measure the outcomes of care from the patient's perspective, such as changes in physical function, pain levels, or emotional wellbeing. They are used to evaluate the effectiveness of treatments, support shared decision-making, and inform service improvement and clinical practice.
Providers	Organisations responsible for the direct delivery of stroke care and related services. They implement evidence-based care pathways, ensure services meet agreed national and local standards, and work in collaboration with Health Boards and other partners to provide safe, effective, and patient-centred care. Providers are accountable for service quality, workforce management, and performance reporting.

Recognition of Stroke in the Emergency Room (ROSIER) Tool	A validated assessment tool used by emergency department staff to support the rapid and accurate identification of suspected stroke cases during triage.
Service Allocators	National or regional bodies responsible for setting the strategic direction of services, distributing funding, and overseeing performance to ensure alignment with national policies and standards. They play a key role in enabling local delivery by ensuring the necessary infrastructure, workforce, and resources are in place, while also monitoring outcomes and ensuring accountability to the Welsh Government.
Sentinal Stroke National Audit Programme (SSNAP)	A national clinical audit programme that measures the quality and outcomes of stroke care in the UK. SSNAP collects detailed data on the entire stroke pathway, from admission to rehabilitation and discharge, enabling benchmarking of performance across organisations. The audit supports continuous improvement by providing insights into clinical outcomes, processes of care, and service delivery standards in stroke services.
Spasticity	Increased stiffness of the muscles that occurs in the paralysed limbs after stroke.
Stroke	A clinical syndrome, of presumed vascular origin, typified by rapidly developing signs of focal or global disturbance of cerebral functions lasting more than 24 hours or leading to death.
Stroke Specialist Clinician	A stroke specialist clinician is a Health Board designated clinician from any background discipline with approved stroke competencies who is authorised to decide the patient's diagnosis and to initiate their management plan – including, but not limited to reperfusion therapy, blood pressure lowering treatment and anticoagulant reversal.
Thrombectomy	The excision of a blood clot from a blood vessel.
Thrombolysis	The use of medicines to break up a blood clot. An example of a thrombolysis medicine is alteplase, also sometimes called tPA.
Transfer of Care	The planned and coordinated movement of a patient from one care setting or provider to another, ensuring continuity and appropriate follow-up.

Transient Ischaemic Attack (TIA)	An acute loss of focal cerebral or ocular function with symptoms lasting less than 24 hours and which is thought to be due to inadequate cerebral or ocular blood supply as a result of low blood flow, thrombosis or embolism associated with diseases of the blood vessels, heart, or blood.
Video Fluoroscopy (VF)	A moving Xray used to assess how a person swallows.
Vocational Rehabilitation	A coordinated plan to optimise a person's ability to participate in paid or voluntary work.
Voluntary Organisations	Non-profit entities that support stroke services by providing supplementary care, advocacy, and community-based support. They work in partnership with statutory bodies such as Health Boards to address service gaps, enhance patient experience, and promote equitable, person-centred care. These organisations may also lead outreach, education, and engagement activities, and contribute to service development through feedback and collaboration.
Wales Optimal Stroke Imaging Pathway (WOSIP)	A national framework guiding best practice for stroke imaging in Wales.

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