## A. Service Specification

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| **Service Specification No:** | 1868 |
| **Service** | Stroke Thrombectomy Service for Acute Ischaemic Stroke - delivered in a non-neuroscience centre. (Adults) |
| **Commissioner Lead** | *For local completion* |
| **Provider Lead** | *For local completion* |

## 1. Scope

### 1.1 Prescribed Specialised Service

This service specification covers the provision of stroke thrombectomy services for adults in England that should be available within a limited number of centres that deliver integrated stroke services, rather than in a specialised neuroscience centre. This is a service contracted by NHS England/Improvement that sits outside of a neuroscience centre where there is poor geographical access for thrombectomy. It is estimated that the required number of these centres is between 4-7 nationally to provide geographical coverage and rapid access to thrombectomy, with some access solutions being rapid helicopter transfer for remote areas.

### 1.2 Description

Neuroimaging services are essential to the delivery of thrombectomy services and are a subspecialty of radiology which involves the investigation and treatment of patients with neurological diseases. It is important that neuroimaging and thrombectomy services are managed safely within a service that is fit for purpose. These geographically placed thrombectomy services that are delivered outside of a neuroscience centre must have a service level agreement in place with a neuroscience centre to provide, training, skills maintenance, and provide access to a regular multi-disciplinary team meeting to discuss cases, treatment received and outcomes.

## 2. Care Pathway and Clinical Dependencies

Imaging in the management of acute and chronic neurological disease is reflected in increased demand for neuroimaging which is now required on a 24/7 basis.

A stroke thrombectomy service for acute ischaemic stroke must provide thrombectomy within a structured and networked model that also provides an integrated stroke service. The service will be organised in conjunction with a Neuroscience Centre partner and must include details of the referring providers within the network.

The requirements to do this include:

- Immediate (neuro)critical care support co-located on the same site as the stroke thrombectomy service with the facility to transfer to the neuroscience centre if required including:
  - Trained team of Neurointerventionists (minimum 5 for 24/7 service); supported by Interventional X-Ray nursing & radiographic staff.
  - Theatre anaesthetist & ODP rota that can support immediate response required to deliver mechanical thrombectomy (akin to crash Caesarean Section calls).
  - Stroke Physician (Consultant at least available by phone).
  - Appropriately staffed Recovery facility.
  - Critical Care Consultants & nursing staff.

- 24-hour access to the appropriate diagnostic modalities with staff cover to enable this service to be provided safely and robustly including:
    - Immediate/next available slot access to multi-slice CT (16 slice or greater), with dedicated, or priority access agreed for stroke emergencies
    - 24/7 access (on site) to a high field strength MRI scanner with Echo Planar Imaging and multichannel head coils
    - Additional equivalent CT and MR scanners should be available on site to support downtime and periods of increased demand
    - There must be appropriate access to high resolution biplane digital angiographic equipment with rotational 3D capability and appropriate software for image manipulation
    - On site access to an appropriate second (back-up) angiographic facility is required to cover any necessary unavoidable periods of down time (this back-up may be in Radiology/Cardiology & need not be biplane)
    - Appropriate IT infrastructure in place to include adequate access to home workstations and remote visualisation of imaging studies in support of a hub and spoke neuroscience service models

There must be a Service Level Agreement (SLA) and clear arrangement in place that documents the working relationship between the thrombectomy centre and a partner neuroscience centre, including joint MDT arrangements to provide networked clinical governance and ongoing continuing professional development (CPD) that will involve direct input into confirming maintenance of competency/validation.

Selection of patients for mechanical thrombectomy for treating acute ischaemic stroke should be done by clinicians experienced in the use of thrombolysis for stroke and in interpretation of relevant imaging (for those patients with a delayed presentation [>6h] this may include CT or MR perfusion techniques)

Patient selection must comply with the criteria for treatment within the clinical policy. (https://www.england.nhs.uk/wp-content/uploads/2019/05/Mechanical-thrombectomy-for-acute-ischaemic-stroke-ERRATA-29-05-19.pdf)

The procedure should only be carried out by appropriately trained specialists with regular experience of intracranial endovascular interventions, with appropriate facilities and agreed and contracted neuroscience centre support. This must be embedded within appropriate network governance arrangements and training which should include an ongoing CPD programme

Patients must be cared for on a ward with specialist expertise in the care of acute stroke (either a hyperacute stroke unit (HASU) ward or equivalent); ensuring that early secondary prevention interventions are commenced as appropriate and that advice on secondary prevention is included in handover documentation for patients transferring back to local services. (For patients who are discharged home, or to community care, the stroke thrombectomy service for acute ischaemic stroke must ensure that comprehensive secondary prevention assessment, investigation and treatment are arranged.)

### 2.1 Care Pathways

**Thrombectomy for acute ischaemic stroke**

Patients will be admitted to their nearest emergency department with a HASU which will undertake the initial investigations including CT or MR angiography, start treatment with intravenous thrombolysis if that is appropriate, and then arrange time-critical transfer for thrombectomy for those who fulfil the criteria in the published policy. The patient travel transfer time to the thrombectomy centre should ideally not exceed 45 minutes. This is to ensure that the 6-hour, best outcomes, window for intervention from onset of symptoms is achievable in most cases that are referred. The patient would normally be repatriated for local rehabilitation and inpatient care, if needed, within 24-72 hours.

All images need to be made immediately available to the neuro-interventionist who will be planning and delivering treatment.

Referring units are responsible for 'door-in to door-out' (DIDO) time, defined as the duration of time from arrival at the first hospital to onward ambulance transfer to the receiving thrombectomy centre. Following acceptance for transfer, it is the referring unit's responsibility to ensure a safe, rapid transfer, if necessary via ambulance or helicopter, as clinically indicated and according to the time critical nature of the treatment.
Please note that access to treatment will be guided by any applicable NHS England national clinical commissioning policies.

### 2.2 Interdependence with other services

All centres delivering thrombectomy services for acute ischaemic stroke must be recognised by NHS England as one of their listed centres for neurointervention and specifically, in accordance with this service specification, should have regard for the standards for providing safe acute ischaemic stroke thrombectomy services produced by the joint specialist societies (White et al, 2017).

Most patients will be managed on the hyperacute stroke unit (HASU) after intervention, but a proportion will require ICU admission.

Thrombectomy centres must hold a service level agreement (SLA) with a geographically appropriate neuroscience centre and must be directly linked to the neuroscience centre for ongoing training and development. This SLA will also incorporate an agreement for joint MDT reviews and assessment of thrombectomies completed. Additionally all thrombectomy centres must have an agreement for access to advice and agreement for urgent transfer to neurosurgery where appropriate.

Participation in a network and clear pathways for patients both to a thrombectomy centre and for repatriation must be in place. Networked stroke units must receive clear pathway information for their thrombectomy service from the centre to cover all aspects of referral and transfer back after intervention.

### Staff

All centres delivering thrombectomy services for acute ischaemic stroke must have sufficient clinicians with appropriate competencies in place to be able to provide a 24/7 service or a clear implementation plan with deliverables and timescales over a five year plan, outlining how they will achieve a 24/7 service. Whilst extending hours consideration should be given to the fact that most eligible patients will present for treatment between 8 am and midnight.

Neuro-interventional operators should undertake a minimum of 40 Intracranial endovascular interventions per annum, of which a reasonable proportion are thrombectomy. It is essential that operators rotate into a neuro-interventional service delivered within a neuroscience centre (acting as the lead provider) to maintain core skills. A clear rota demonstrating competence and skill maintenance must be in place for each neuro-interventionist to enable achievement of the required 40 intracranial endovascular interventions per annum.

The British Society of Neuroradiologists (BSNR) has produced "Training guidance for mechanical thrombectomy" (Lenthall R, McConachie N, White P, Clifton A, Rowland-Hill C. BSNR training guidance for mechanical thrombectomy. Clin Radiol 2017; 72(2): 175.e11–175.e18) which details the training that will be required for practitioners from different clinical backgrounds to achieve the necessary skills and experience to effectively contribute to the acute stroke service. This guidance will underpin all routes to increasing the workforce.

In order to support training, there should be a formal agreement in place with the employer/responsible organisation and, where necessary, across directorates and trusts to allow a period of additional training/mentoring for IRs or other specialist credentialing in thrombectomy. This agreement should define the likely duration of training, the number of sessions the consultant will spend in training per week, the criteria that determine when training is completed and any additional backfill or support that may be required during this period.

The supervising consultant and/or centre may also require additional support which will vary within units depending on the local infrastructure and manpower available. There should be a formal agreement in place regarding at what point the consultant can commence independent stroke thrombectomy and frequency of rotation to the neuroscience centre to maintain competency and skills, with the involvement of local healthcare governance. This should/will involve the local trainer, the training centre (a neuroscience centre) and clinical director/medical director.

Centres must have immediate access to:

- Appropriately trained nurses
- Radiographers
- Anaesthetists & Operating Department Practitioners with neuroscience experience

**Stroke pathway requirements (commissioned by CCGs)**

HASU Centres will need access to:

- CT angiography 24/7 (extended hours should be described and agreed whilst working towards 24/7 access). (HASU will already have access to 24/7 CT)
- Ambulance service agreement for critical patient transfers
- Acute and stroke rehabilitation services commissioned such that that they are available for patients to be transferred back for local care within 24 hours of request by the centre

## 3. Population Covered and Population Needs

### 3.1 Population covered by this Specification

This service specification covers adults.

### 3.2 Population Needs

There are approximately 80,000 stroke admissions in England per year. Currently, around 12% of all stroke patients receive intravenous thrombolysis and the majority of patients suitable for thrombectomy will come from this group. It is estimated that up to 8,000 patients per year are eligible for treatment in England.

### 3.3 Expected Significant Future Demographic Changes

It is recognised that the number of strokes will increase along with the increase in the older population with associated risk factors, but the expectation is such that this will be balanced by increasing improvements in preventative stroke care.

### 3.4 Evidence Base

The service description and key requirements are based on the joint societies' Standards for Providing Safe Acute Ischaemic Stroke Thrombectomy Services (September 2015) and the British Society of Neuroradiology guidance: BSNR training guidance for mechanical thrombectomy.

## 4. Outcomes and Applicable Quality Standards

### 4.1 Quality Statement – Aim of Service

The objective is to ensure evidence-based commissioning with the aim of improving outcomes for patients who experience a stroke and improve evidence-based access to procedures as soon as possible after the onset of stroke symptoms.

This service specification has considered the current stroke pathway, the need to ensure that investigations and treatment such as thrombolysis are carried out immediately and without delay, that the clinical commissioning criteria for thrombectomy are applied through the availability of the required imaging and expert assessment and that any intervention itself is provided by specialists with the required training and experience within appropriate units. The specification also recognises the need for patients having thrombectomy to receive care on a HASU or equivalent and to ensure that services are planned to ensure prompt transfer back to local inpatient or outpatient specialist rehabilitation services.

As part of their contracted reporting all centres must enter patients onto the Sentinel Stroke National Audit Programme (SSNAP) database, which is used to monitor and audit stroke treatment and outcomes.

**NHS Outcomes Framework Domains**

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|---|---|---|
| **Domain 1** | **Preventing people from dying prematurely** | √ |
| **Domain 2** | **Enhancing quality of life for people with long-term conditions** | √ |
| **Domain 3** | **Helping people to recover from episodes of ill-health or following injury** | √ |
| **Domain 4** | **Ensuring people have a positive experience of care** | √ |
| **Domain 5** | **Treating and caring for people in safe environment and protecting them from avoidable harm** | √ |

**4.2 Indicators Include:**

| Number | Indicator | Data Source | Outcome Framework Domain | CQC Key question |
|---|---|---|---|---|
| **Clinical Outcomes** | | | | |
| 101 | % patients undergoing thrombectomy | Sentinel Stroke National Audit Programme (SSNAP) | | |
| 102 | 30 day mortality post mechanical thrombectomy | SSNAP | 1,5 | effective, safe |
| 103 | Number of patients with post treatment symptomatic intracranial haemorrhage | SSNAP | 1,2,3,5 | effective, safe |
| 104 | Mean arrival to arterial puncture time | SSNAP | 1,2,3,5 | effective |
| 105 | Median disability score (modified Rankin) at discharge | SSNAP | 1,2,3,5 | effective |
| 106 | Median disability score (mRS) at 6 months | SSNAP | 2,3 | effective |
| **Patient Experience** | | | | |
| 201 | Patient receive written information | Self-declaration | 4, | responsive, caring |
| 202 | There is a mechanism for patient feedback | Self-declaration | 4 | responsive, caring |

| Structure and Process | | | | |
|---|---|---|---|---|
| 301 | There is specialist neurointervention team | Self-declaration | 1,3,5, | effective, safe |
| 302 | All neurointerventionists meet the minimum required procedures | Self-declaration | 1,3,5, | effective, safe |
| 303 | There is a 24/7 rota | Self-declaration | 1,3,5, | effective, safe |
| 304 | There are appropriate angiographic facilities | Self-declaration | 1,3,5, | effective, responsive |
| 305 | There is 24/7 access to diagnostics | Self-declaration | 1,3,5, | effective, responsive |
| 306 | There are processes in place for rapid transfer and review of imaging | Self-declaration | 1,3,5, | effective |
| 307 | There are clinical guidelines in place | Self-declaration | 1,3,5, | effective, safe |
| 308 | There are patient pathways in place<br><br>There is a permanent mechanism for governance review of the service in collaboration with a neuroscience centre | Self-declaration<br><br>Self-declaration | 1,3,5<br><br>2,3,4,5 | effective, safe<br><br>Effective, safe |

## 5. Applicable Service Standards

### 5.1 Applicable National Standards

NICE- Mechanical clot retrieval for treating acute ischaemic stroke - Interventional procedures guidance [IPG548]. Published date: February 2016

### 5.2 Other Applicable National Standards

Lenthall R et al: BSNR training guidance for mechanical thrombectomy. Clin Radiol 2016; 10.1016/j.crad.2016.11.007

NICE- NG128 Stroke and transient ischaemic attack in over 16s. Published date: May 2019

Royal College of Radiologists, Supplementary guidance to facilitate the training of interventional radiology (IR) consultants to undertake stroke thrombectomy, October 2017
https://www.rcr.ac.uk/sites/default/files/mt_interim_guidance_document_30-10-2017_final.pdf

White P et al. Standards for providing safe acute ischaemic stroke thrombectomy services (September 2015). Clin Radiol 2017; 10.1016/j.crad.2016.11.008

## 6. Designated Providers (if applicable)

Not applicable

## 7. Abbreviation and Acronyms Explained

**The following abbreviations and acronyms have been used in this document:**

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|---|---|
| ASU: | Acute Stroke Unit |
| BSNR: | British Society of Neuroradiology |
| CT: | Computed Tomography - The use of X-rays and a computer to create detailed images of the inside of the body |
| HASU: | Hyper Acute Stroke Unit |
| IT: | information technology |
| MDT: | multidisciplinary team - A group of health care workers and social care professionals who are experts in different areas with different professional backgrounds |
| mRS: | Modified Rankin scale - This is a functional assessment scale that measures the degree of disability or dependence of people who have suffered a stroke |
| MRI: | Magnetic resonance imaging - A technique that uses a magnetic field and radio waves to create detailed images of the organs and tissues within the body |
| SSNAP: | Sentinel Stroke National Audit Programme |

Date published: