Clinical Standard Operating Procedure (SOP)

STROKE THROMBECTOMY

SETTING	Service-wide
FOR STAFF	All staff
PATIENTS	Patients requiring mechanical thrombectomy for ischaemic stroke

Introduction

Mechanical thrombectomy (MT) for ischaemic stroke is provided by North Bristol NHS Trust (NBT) and University Hospitals Plymouth NHS Trust (UHP) for patients within the South West within two Integrated Stroke Delivery Networks (ISDN). The West of England ISDN and NBT MT network cover the Severn region of Retrieve and the SW Peninsula ISDN and UHP MT network cover the Peninsula region.

The aim of MT networks is to facilitate rapid patient transfer and safely minimise the time between onset of ischaemic stroke and reperfusion. Whilst much of this can be addressed by improving processes within acute stroke centres (referring hospitals), communication and within MT centres, there is perceived benefit in streamlining the time critical referral of these patients.

Retrieve work with NHS England, the West of England and Peninsula ISDNs and the NBT and UHP MT networks to improve the coordination and delivery of these time critical transfers.

Transfer of patients requiring MT

Patients requiring transfer between hospitals to receive MT are time critical. The majority (around 85%) require a time critical 999 SWASFT ambulance with a paramedic. Most patients receive IV rtPA (thrombolysis) which takes approximately 1 hour to deliver via infusion and, if this is to continue and complete during the transfer, these patients require an appropriately trained nurse escort from the acute stroke centre. **On its own, thrombolysis does not automatically place the patient into Retrieve's scope.**

Around 15% of MT patients require a critical care transfer as they are **high risk**. These include patients:

- Requiring blood pressure manipulation (up or down)
- Requiring, or likely to require, airway support owing to a low GCS
- Requiring ongoing seizure management
- With basilar infarcts who are significant risk of deterioration
- With vertebral artery dissection (who are at significant risk of deterioration).

Note that basilar infarcts and vertebral artery dissection patients (who are at significant risk of deterioration) may not be widely recognised as requiring a critical care escort by referring hospital critical care and anaesthesia staff.

From December 2021 to January 2024, Retrieve piloted a process of triaging and coordinating all MT calls regardless of risk stratification. Following extensive feedback, review and stakeholder engagement, this process was changed in January 2024 to place the onus on the referring clinician to risk stratify the patient and then contact Retrieve for high risk patients and SWASFT, via 999, for low risk patients (see poster in Appendix 1).

Referral process

Patients referred to Retrieve for coordination of time critical transfer should meet the following critieria:

- **Have been accepted by the MT centre stroke physician and/or interventional neuroradiologist on-call (depending on Derriford and Southmead processes).**
- **Are stratified as HIGH RISK using the criteria above by the referring clinician and/or MT centre team.**

Following acceptance at the MT centre, the stroke physician or interventional neuroradiologist will notify the referring hospital of this acceptance using the Referapatient system and request that they immediately contact Retrieve or SWASFT. Where possible, they will advise on risk stratification.

These patients are time-critical in nature and communication must be efficient during the referral process. If the referring clinician is unsure if the patient meets High Risk criteria (e.g. they are unfamiliar with this referral pathway), they should contact Retrieve for advice.

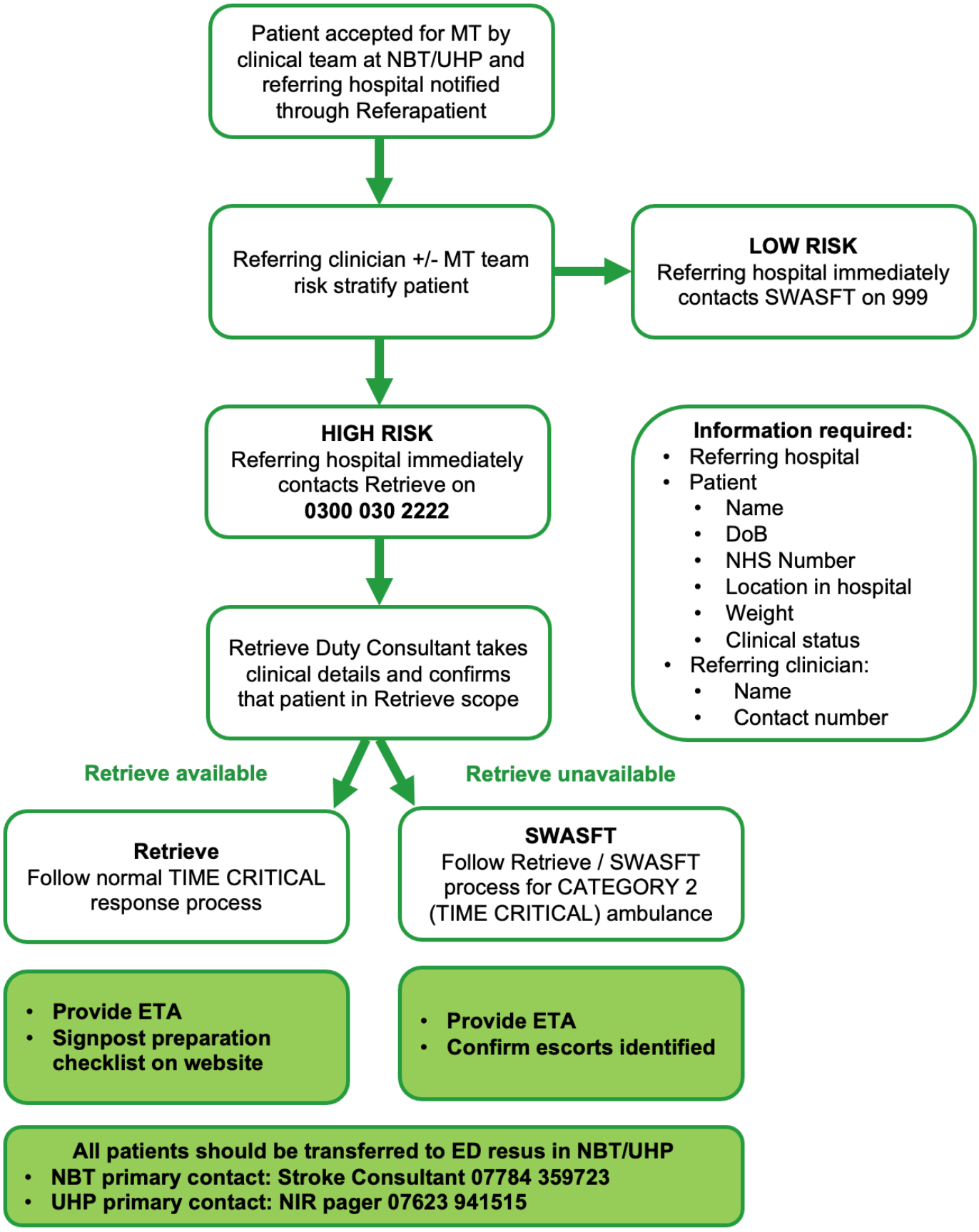
If a referring clinician contacts Retrieve for advice and the patient is deemed low risk **or** if the referring clinician erroneously contacts Retrieve, they will be directed to hang up and dial 999. This ensures that the governance and responsibility for these referrals remains with the referring clinician rather than Retrieve (**note that this is a change to the 2021-2024 pilot process**).

North Devon District Hospital

NDDH has an agreement with Devon Air Ambulance (DAAT) that, if certain criteria are met, air transfer of patients accepted for MT will be considered. This is only for patients who do not require critical car escort and so NDDH clinicians should contact SWASFT via 999 to arrange this if the following criteria are met:

- Patient weight <120kg
- No airway compromise or at imminent risk of compromise
- Patient not agitated, combative, confused, and able to lie still and remain compliant during air transfer.

Patients with posterior circulation strokes are not included in this agreement given their higher risk of deterioration.


Patient accepted for MT by clinical team at NBT/UHP and referring hospital notified through Referapatient
Referring clinician +/- MT team risk stratify patient
LOW RISK
Referring hospital immediately contacts SWASFT on 999
HIGH RISK
Referring hospital immediately contacts Retrieve on
0300 030 2222
Information required:
Referring hospital
Patient
Name
DoB
NHS Number
Location in hospital
Weight
Clinical status
Referring clinician:
Name
Contact number
Retrieve Duty Consultant takes clinical details and confirms that patient in Retrieve scope
Retrieve available
Retrieve unavailable
Retrieve
Follow normal TIME CRITICAL response process
SWASFT
Follow Retrieve / SWASFT process for CATEGORY 2 (TIME CRITICAL) ambulance
Provide ETA
Signpost preparation checklist on website
Provide ETA
Confirm escorts identified
All patients should be transferred to ED resus in NBT/UHP
NBT primary contact: Stroke Consultant 07784 359723
UHP primary contact: NIR pager 07623 941515

Clinical advice

Whilst neither the transfer of patients for MT, nor the use of Retrieve is new, it should be anticipated that the majority of referring clinicians will be relatively unfamiliar with Retrieve and critical care transfer processes.

It may be appropriate to offer some, or all, of the following advice:

- For all patients:
  - Emphasise the time criticality of the preparation and transfer.
  - Encourage (and support, as required) early and proactive conversation with local critical care unit / anaesthesia team when Retrieve are unavailable or offline overnight.
  - Provide sufficient information to ensure critical care is commenced as soon as possible – including airway management, seizure management and blood pressure control (see below).
  - Encourage pre-transfer preparation, in line with the 'Referring to Retrieve' SOP.
  - Ask for patient to be made 'nil by mouth'.
- Encourage discussion about rtPA infusions (thrombolysis) – these cannot be continued with a paramedic only escort (they are not authorised to use or trained on infusion pumps), so the infusion either needs to be completed or stopped unless a nurse escort is provided. This may require a pragmatic decision by the responsible clinician about the risks and benefits of any delay compared with the risks and benefits of expedited transfer by stopping the infusion early.
- **On its own, thrombolysis does not automatically place the patient into Retrieve's scope.**

MT centre contacts

Peninsula

- Duty interventional neuroradiologist pager at Derriford on 07623 941515 (leave message asking to call back immediately).
- If this person is not contactable please the Stroke Nurse on 07584531660 (or pager 1909 via UHP switchboard) or Stroke Registrar (pager 1908) via UHP switchboard 01752 202 082.

Severn

- Stroke Thrombectomy phone at NBT 07784 359723 (or 'Thrombectomy Consultant on-call' via NBT switchboard 0117 9505050).
- If this person is not contactable, use Stroke Consultant bleep 1290 or Stroke Registrar bleep 1490 or Neurology Registrar bleep 1636 via NBT switchboard 0117 9505050.

Transfer care

Usual critical care transfer principles apply to the treatment and transfer of these patients. The Association of Anaesthetists 'Safe transfer of the brain injured patient' guidelines from 2019 provide useful physiological parameters to aim for in acute ischaemic stroke:

- Systolic blood pressure:
  - If received rtPA: >140, <185mmHg
  - If not received rtPA: >140, <220mmHg
  - **For hypotension**: after correction of hypovolaemia or excess sedation, should be by small bolus of an α-agonist (metaraminol) followed by an infusion of metaraminol or noradrenaline.
  - **For hypertension**: labetalol infusion and appropriate increase in sedation, if necessary
- Ventilatory parameters:
  - SpO2 ≥95% (add O2 only if <95%)
  - $PaCO_2$ (if ventilated) 4.5-5.0kPa

Handover

The exact destination of patients being transferred for MT will be stated in the Referapatient reply to the referring hospital when the patient is formally accepted. Usually, it will be the Emergency Department so that time-critical imaging and rapid assessment can be carried out.

- **Peninsula:** all patients to UHP should be transferred to the Emergency Department where they will be met by the Stroke Team and Neuroradiologist. A member of the UHP Stroke or Neuroradiology team will guide the escorting team from ED to the neurointerventional suite.
  - ED resus is first on the left after entering through the ambulance entrance.
  - The neurointerventional suites (IR rooms 4 and 6) are on level 6, X-Ray East.
- **Severn:** all patients to NBT should be transferred to the ED where they will be met by the Stroke Team.
  - ED resus is first on the left after entering through the ambulance entrance.
  - The neurointerventional radiology suite (IR Room 4) is located on Level 2 adjacent to Main Theatres.

A focussed handover must be given to the team present (radiology, stroke, anaesthesia) in line with the 'Handover' SOP. Pertinent details that should be included are:

- Time of onset of symptoms (or wake time)
- Treatments prior to Retrieve arrival (including thrombolysis)
- Treatments en-route
- Current GCS and any other relevant physiology

Review of process and cases

This process has been continually refined since the initial pilot launched in December 2021 through collaborative working with the West of England and South West Peninsula ISDNs, NHS England

and SWASFT. Stakeholders will continue to work together to learn from this latest iteration and continue to improve transfer care for all MT patients.

Document Change Control

Date of Version	Version Number	Lead for Revisions	Type of Revision	Description of Revision
09/25	3.2	Retrieve Clinical Director	Minor	Additional wording to aid decision making around thrombolysis
06/24	3.1	Retrieve Clinical Director	Minor	Update to blood pressure management section to reflect national guidelines
02/24	3.0	Retrieve Clinical Director	Major	Major changes in referral process 1. Low risk patient referral process changed. 2. Changes to referral flow diagram. 3. Removal of DAAT & NDDH air transfer flow chart 4. Removal of Retrieve MT call script Addition of ISDN MT poster, January 2024

Document Governance

REFERENCES	1. Association of Anaesthetists and Neuro and Anaesthesia Critical Care Society, 2019. Safe transfer of the brain injured patient: trauma and stroke, 2019. https://associationofanaesthetists-publications.onlinelibrary.wiley.com/doi/epdf/10.1111/anae.14866 (accessed 26/11/21)
RELATED DOCUMENTS AND PAGES	
AUTHORISING BODY	Division of Surgery, University Hospitals Bristol & Weston NHS Foundation Trust
SAFETY	
QUERIES AND CONTACT	Retrieve Leadership Team

Appendix 1 – ISDN MT poster, January 2024

NHS England South West

Transfer for Stroke Thrombectomy

Purpose: Management of transfers between Acute Stroke Centre (ASC) to Comprehensive Stroke Unit (CSC)

Scope: This document provides a breakdown of actions to follow once the decision has been made to clinically treat and manage a patient at the CSC.

Role and responsibilities: It is the responsibility of the referring clinician to determine whether the patient is low risk or high risk and who should undertake the transfer.

Version: 0.3 Final
Created on: 18th Jan 2024
Revision history: enhancements
Commence: 29th January 2024

Does your patient require mechanical thrombectomy at your local CSC? → If yes….. continue

Have you completed a ReferaPatient referral & this has been accepted by the CSC? → If yes, your request for transfer should be completed immediately

Does your patient meet any of the following criteria? (High risk)

- Requiring blood pressure manipulation (up or down)
- Requiring, or likely to require, airway support owing to a low GCS
- Requiring ongoing seizure management
- With basilar infarcts who are significant risk of deterioration
- With vertebral artery dissection (who are at significant risk of deterioration).

No

LOW RISK

and / OR

Has the CSC accepted your patient and confirmed them to be low risk?

Call SWASFT on 999

NHS South Western Ambulance Service NHS Foundation Trust

NB. All thrombectomy calls will be triaged as an IFT2.

Do not call SWASFT back regards ETA requests: this will reduce any extra demand on EMDs.

Yes

HIGH RISK (needing clinical escort)

and / OR

Has the CSC accepted your patient and confirmed them to be high risk?

Call RETRIEVE on 0300 030 2222

retrieve Adult Critical Care Transfer Service

All HIGH RISK patients require critical care escort. They have a significant risk of deterioration. Please contact your local intensive care / outreach service in addition to Retrieve.