

THROMBECTOMY IN ACUTE STROKE - REGIONAL PATHWAY AND GUIDELINES FOR REFERRAL

Author and Contact details:	Dr Martin Wilson, Divisional Clinical Director; Dr Arun Chandran, Consultant Interventional Neuroradiologist; Dr Richard Ellis, Consultant Neurologist; Dr Alak Sekhar, Consultant Neurologist. Tel: (0151) 556 3275 Email: martin.wilson@thewaltoncentre.nhs.uk	
Responsible Director:	Medical Director	
V1.0 Approved by and date:	IAT Delivery Board Meeting Clinical Effectiveness Services Group	May 2019 June 2019
Document Type:	POLICY	Version 1.5 (Oct 2021)
Target Audience:	All trust employees and referring Stroke teams.	
Document Approval, History/Changes	See Appendix 7 For further information contact the Governance Department on Tel: (0151) 556 3082	

Think of the environment...Do you have to print this out this document? You can always view the most up to date version electronically on the Trust intranet.



Executive Summary

This document outlines the Intra-Arterial Thrombectomy (IAT) referral pathway for patients from a Hyper Acute Stroke Unit (HASU) in the Cheshire & Merseyside or North Wales regions, and describes the arrangements for delivery of the IAT service at The Walton Centre.

Table of Contents

1.	Introduction	3
2.	Scope	3
3.	Definitions	3
4.	Duties	3
5.	Inclusion criteria	3
6.	Exclusion criteria	4
7.	Patient consent	4
8.	Patient pathway.....	4
9.	Ambulance transfer	5
10.	Post IAT care	6
11.	Standard practice for Anaesthesia	6
12.	Anti-coagulants & anti-platelets.....	6
13.	Hypertension management during and post IAT	6
14.	Potential Complications of IAT	8
15.	References.....	10
	Appendix 1 - Service Pathway	11
	Appendix 2 - IAT Transfer Procedure	13
	Appendix 3 - Scenarios on management of anti-coagulant during IAT	21
	Appendix 4 - Scenarios on management of anti-platelets during IAT	22
	Appendix 5 - Rapid reversal regime after intra or extracranial haemorrhage within 24hrs of IV thrombolysis and IAT	23
	Appendix 6 - Policy approval checklist.....	24
	Appendix 7 - Version Control	25
	Translation Service	26

1. Introduction

Intra-Arterial Thrombectomy (IAT) aims to restore normal blood flow to the brain, using a device to remove the blood clot from the artery. The patient first has cerebral angiography (a procedure using CT or MRI scanning that shows how blood flows through the arteries in the neck and brain) to see where the blood clot is.

The Thrombectomy procedure may be done with the patient under sedation but sometimes general anaesthetic is used. A catheter is inserted into an artery, usually in the groin, and moved to the site of the clot. The clot retrieval device is inserted through the catheter.

The treatment aims to remove the obstructing clot from arteries within the brain, restoring blood flow to the brain and minimising brain tissue damage.

The policy has been written to make explicit the referral process and arrangements for the delivery of the IAT service at The Walton Centre.

2. Scope

This policy applies to all Trust staff and all referring Stroke teams from Hyper Acute Stroke Units (HASU) in the Cheshire and Merseyside region, and North Wales.

3. Definitions

- **Ischaemic stroke:** a stroke caused by a blood vessel to the brain becoming blocked leading to death of brain cells.
- **Intra-Arterial Thrombectomy (IAT):** the technique of removing a blood clot from the artery through a catheter.
- **Intravenous (IV) thrombolysis:** giving a thrombolytic agent into a vein.

4. Duties

All staff have a duty for ensuring that the principles outlined within this document are universally applied.

5. Inclusion criteria

Intra-Arterial Thrombectomy is offered to all eligible patients with a large vessel occlusion.

The inclusion criteria are as follows:

- Age over 18 years (no upper age limit)
- Thrombectomy can be achieved within 6hrs of symptom onset – NB thrombectomy should also be considered up to 24 hours after onset or 'last seen well' only if advanced imaging (CT or MR perfusion) demonstrates potentially salvageable brain tissue
- National Institute of Health Stroke Score (NIHSS): >5
- CTA – Large vessel occlusion (LVO) (carotid/Terminal ICA/M1/Prox M2, or basilar artery)
- Pre morbid MRS <3

A CT and CTA scan must be completed at the referring HASU before a referral is made.

6. Exclusion criteria

6.1. Absolute criteria:

- CT head –major ischaemic changes or haemorrhage at referral
- Unknown time of stroke symptoms onset with LVO on CTA (unless perfusion imaging already performed and demonstrates salvageable brain)
 - Aspect (or eASPECT) <6 at referral (if available)
- Known allergy to radiological contrast

6.2. Relative criteria:

- Bilateral occluded common iliac or femoral artery
- Renal impairment – consider the risks of contrast medium needed for CTA and IAT, vs the benefits of thrombectomy on a case by case basis

The above list is not exhaustive. If in doubt, please contact the Walton Centre Neurology on-call team on 07779987168 to discuss the case.

7. Patient consent

Consent will be obtained from the patient when they arrive at the Walton Centre.

- Verbal consent should be obtained from the patient prior to IAT.
- If the patient lacks capacity to give their consent then a treatment decision should be made on their best interests. Where possible this should be discussed with their next of kin.
- Patient should be informed there are 1 in 2 chances of improvement, 1 in 20 chances of brain haemorrhage and 1 in 100 chances of death.
- A consent form 4/Green form should be completed for all patients irrespective of capacity before commencement of the procedure.
- Please use the patient information leaflet prior to the consenting process.

8. Patient pathway

The full patient pathway flowchart is outlined in [Appendix 1](#).

The service is available 24 hrs, 7 days a week.

In order to make a referral, the referring Stroke Physician from a local HASU should contact the on-call Neurology Registrar on **07779987168**.

The Neurology Registrar will ask the referring Stroke team to confirm eligibility criteria, referrer demographics and patient referral information. If referral criteria are met, the referral will be accepted and stroke team instructed to arrange urgent ambulance transfer

9. Ambulance transfer

Once the referral has been accepted, the IAT Transfer Procedure is activated and the referring Stroke team should follow the steps and guidance detailed in this document regarding inter-hospital patient transfer. A summary of the procedure is outlined in Appendix 2.

The referring Stroke team should ring NWAS on **0345 140 0144** and request a '**emergency transfer, acute stroke patient for thrombectomy**', specify the level of transfer (see below) and declare the number of escorts to NWAS. The patient must be ready for immediate transfer once the ambulance arrives.

It is essential that the level of patient transfer required has been determined **before** the ambulance is booked.

In summary, the levels of transfer are as follows:

- **Level 1** – Paramedic crew. No nurse escort needed. Thrombolysis completed prior to transfer. No complications noted. Patient deemed low risk.
- **Level 2** – Paramedic crew. No nurse escort needed. Thrombolysis completed prior to transfer. Complications acknowledged during thrombolysis. Complications rectified prior to transfer. Higher risk of complications.
- **Level 3** – Paramedic crew. A ~~Stroke~~ nurse escort needed. Presentations will include either thrombolysis in situ and running, patients currently with an infusion in situ or any patients with ongoing complications since thrombolysis.
- **Level 4** – EMT crew. Nurse and Anaesthetist escort needed (emergency transfer or stroke nurse). Patient deteriorating GCS </ 8 (airway assistance needed) – anaesthetist required for both non intubated and intubated patients.

The majority of patients will require a Level 1-2 transfer. If a thrombolysis infusion is still running, this should be discontinued on ambulance arrival so as not to delay transfer unless a nurse escort from stroke team can accompany the patient (i.e. Level 3 transfer)

The ambulance service requires that a transfer checklist (see page 16) is completed prior to any patient transfer. A member of the clinical team at the referring HASU should complete and ask the attending Paramedic (or anaesthetist) to sign the completed checklist before departure. If the HASU nurse is not travelling (Level 1 and 2) the handover of the checklist becomes the responsibility of the transferring Paramedic and will be handed to the medical team on reaching WCFT.

10. Post IAT care

It is the responsibility of the referring Stroke team to ensure that a HASU level bed is available at the referring Trust so that the patient can be repatriated immediately following the thrombectomy procedure, if clinically appropriate.

If the patient requires overnight admission to the Walton Centre for any reason other than the clinical condition of the patient then a bed at the referring Trust must be held overnight so that the patient can be repatriated the next morning.

The Neurology Registrar at the Walton Centre will book a 'Priority 3 Transfer' for repatriation once the post-procedure CT (which rules out any procedural complications and clinical assessment) is complete. If the patient is sedated under GA, the patient will also be re-assessed by the Anaesthetist post-procedure to confirm stability for repatriation. A Priority 3 transfer aims to provide ambulance transport within 2 hours.

If immediate repatriation is considered unsafe, or not the best option for the patient, the patient will be admitted to an appropriate bed at the Walton Centre. In that event, the Neurology team will contact the referring Stroke team to inform them that the patient will not be repatriated back immediately and will provide them with an estimate as to when the patient will be repatriated back to the referring HASU. A detailed transfer summary will accompany with the patient at the time of the transfer.

24 hours after the procedure, the Vascular Neurology StR will contact the referring stroke team to check on the condition of the patient and any early complications. This will be recorded for later discussion at regional IAT MDTs. All relevant SSNAP data must also be recorded and submitted.

11. Standard practice for Anaesthesia

- All IAT cases to be performed only in the presence of Anaesthetic team
- WHO IAT team brief to be performed prior to arrival of patient
 - In case of carotid occlusion GA is preferred
 - An arterial line is not essential
 - A urinary catheter is not essential
 - Non-invasive vitals monitoring in all patient
 - Bear hugger for patient under GA

12. Anti-coagulants & anti-platelets

Patients presenting as an acute stroke with large vessel occlusion also have other comorbidities necessitating them being on oral anti-coagulants. This includes Warfarin and Direct Oral Anticoagulants (DOACS) used as a prophylaxis for AF, PE and DVT. An INR >1.7 is an absolute contraindication for IV thrombolysis.

See [Appendix 3](#) for scenarios on management of anti-coagulant during IAT guidance. See [Appendix 4](#) for advice regarding anti-platelet medications.

13. Hypertension management during and post IAT

The following recommendations are made based on absence of intracranial haemorrhage.

- Prior and during IAT blood pressure of 220/110 mmHg is acceptable (helps in collateral circulation and reduces core infarct volume)
- Post Thrombectomy:
 - **BP to be monitored every 15 mins for 3hrs**
 - **Then every 30 mins for 3hrs and hourly after**
 - **Aim for a BP not more than 185/110mm Hg**

If there is sudden increase in blood pressure with new headache, drop in GCS by 2 points, with or without unequal pupils and low pulse rate, suspect intracranial haemorrhage

- Inform ITU/Critical Care registrar - follow ITU/Critical Care protocol for BP reduction
- Contact Neurology and Neurosurgical registrar on-call
- Decision for urgent CT head examination
- Positive CT finding of haemorrhage – Discuss with Neurology consultant

14. Potential Complications of IAT

For certain patients, a DNAR to be considered in case of severe complication during or post procedure whilst not withholding active medical management.

14.1. Intra cranial bleeding during and post IAT

Intracranial bleeding should be suspected in those who experience any of the following:

- Sudden neurological deterioration (drop in GCS of 2 or more, increase in NIHSS of 4 or more)
- New headache
- Acute rise in blood pressure
- Nausea and vomiting

If intracranial bleeding occurs during Thrombectomy:

- Look for active contrast extravasation
- Stop further attempt at clot removal
- Embolise the bleeding artery if it was due to vessel rupture
- Consider intubating the patient on table if unstable
- CT head on table to assess haemorrhage and mass effect

If CT confirms symptomatic parenchymal haemorrhage or SAH and if this is within 24hrs since IV thrombolysis then **rapid reversal** regime may be required (see Appendix 5):

- Discuss with Neurology Consultant about whether a referral to Neurosurgery is required.
- Consider 1g/kg 20% Mannitol at 10ml/min if CT shows evidence of midline shift secondary to oedema

14.2. Puncture site or retroperitoneal haemorrhage

- All femoral cases; the puncture site to be sealed with closure devices
- Brachial/carotid puncture site may not be sealed with closure device due to risk of distal ischaemia depending on vessel calibre

Extracranial bleeding is not always obvious but should be suspected if:

- Signs of shock
- Drop in BP
- Evidence of blood loss

Steps to manage access site haemorrhage:

- Manual compression for at least 30 mins
- Inform Neurology registrar on-call
- In the meantime resuscitate the patient as required
- Repeat FBC, Coagulation, group and save and cross match
- If no haemostasis, consider CT arterial study to see active contrast leak, if positive immediately follow rapid reversal regime (see Appendix 5).
- Contact local vascular surgeon on-call for surgical closure of the vascular injury at the puncture site.

14.3. Cerebral Oedema

Raised Intracranial Pressure may be indicated by:

- Unequal pupils
- Drop in GCS
- Nausea and vomiting
- High BP and low pulse rate

An urgent CT Head should be arranged if cerebral oedema is suspected and if confirmed, immediately discuss with senior clinical staff:

- Avoid excessive fluid administration
- Consider administration of 1g/kg 20% Mannitol over 1 hour.

14.4. Malignant MCA Syndrome

Neurosurgical referral for consideration of a Decompressive Hemicraniectomy is required if a patient has suffered a large MCA territory stroke and meets the following criteria:

- No significant pre-stroke disability (modified Rankin Score <2)
- Neurological deficit consistent with an MCA stroke
- NIHSS > 15
- Signs on CT of an infarct involving over 50% of the MCA territory or an infarct volume of greater than 145 cm³ on diffusion-weighted MRI images.
- Within 48hours of stroke onset

Do not wait for a drop in GCS before making neurosurgical referral.

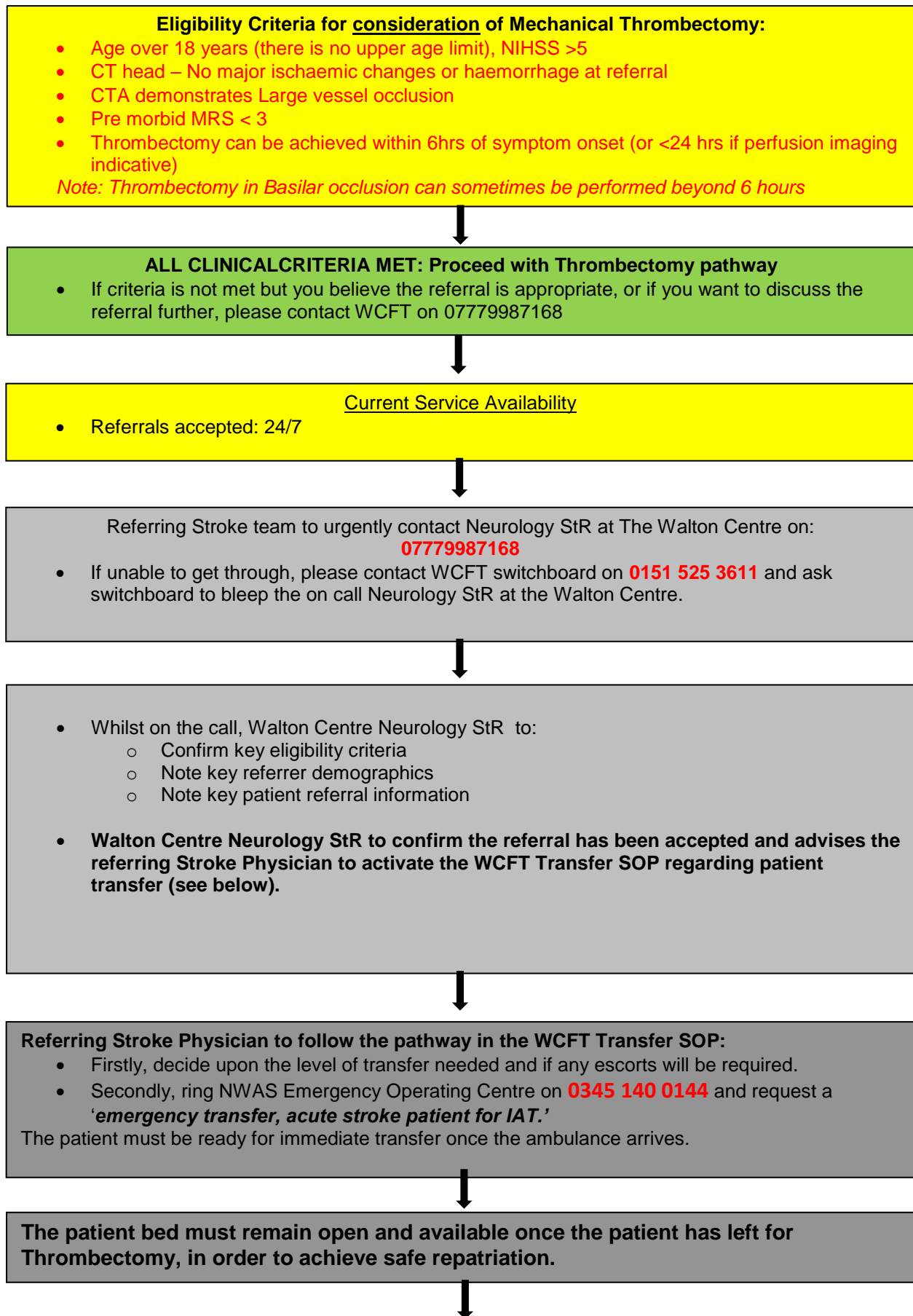
Exclusion criteria for decompressive Hemicraniectomy include:

- Both pupils fixed and dilated
- Haemorrhagic transformation of the infarct
- Life expectancy < 3 years
- Significant co-morbidities
- Note that outcomes in patients >60 years old are known to be worse, and craniectomy may not be offered by the neurosurgical team – please refer to NICE treatment decision aids for patients [under](#) and [over](#) 60

15. References

- NICE (2017) Stroke and transient ischaemic attack in over 16s: diagnosis and initial management (Clinical Guideline CG68)
- Evans M, White P, Cowley P, Werring D (2017) Revolution in acute ischaemic stroke care: a practical guide to mechanical Thrombectomy
- Royal College of Physicians Intercollege Stroke Working Party (2016) National Clinical Guideline for Stroke 5th edition.
- NICE (2016) Mechanical clot retrieval for acute ischaemic stroke for treating acute ischaemic stroke. (Interventional procedures guidance – [IPG548])
- Kitchen, S., Gray, E., Mackie, I., Baglin, T., Makris, M. and the BCSH committee (2014) Measurement of non-Coumarin anticoagulants and their effects on tests of Haemostasis: Guidance from the British Committee for Standards in Haematology. Br J Haematol, 166:830-841.
- Yaghi S, Eisenberger A, Willey JZ (2014) Symptomatic intracerebral haemorrhage in acute ischemic stroke after thrombolysis with intravenous recombinant tissue plasminogen activator: a review of natural history and treatment. JAMA Neurol, 78 (9): 1181-5
- NICE (2012). Alteplase for treating acute ischaemic stroke (Technology appraisal guidance TA264)

Appendix 1 - Service Pathway



On arrival:

- Confirm major stroke by neglect, gaze, hemiplegia, aphasia.
 - Document NIHSS score.
- M1 and ICA clots – conscious sedation
- Carotid occlusions – GA
- No radial arterial line or urinary catheters required

On arrival, if the patient's symptoms have improved during transfer, or if IAT is no longer appropriate, the patient will be held at The Walton Centre whilst an ambulance is located for repatriation. The patient will be repatriated straight back to the referring HASU in order for their stroke care to continue.

- The Walton Centre Neurology Registrar will contact the referring Stroke team and inform them that the referral is no longer appropriate and that the patient is being prepared for immediate repatriation.

Once the procedure has been completed, a CT scan will be done in the Angio Suite to rule out any procedural complications.

If post-Thrombectomy CT head confirms no symptomatic complication, the Neurology StR to contact NWAS to book post-procedure inter-facility transfer.

If post-Thrombectomy CT head demonstrates a symptomatic complication, the patient will need to be admitted to Walton Critical Care – **The Neurology Team will need to discuss this with the Critical Care Team to check bed availability.**

Neurology StR to contact NWAS on **0151 261 4322 and ask for a 'Priority 3 Transfer.'** Need to provide NWAS with the following information, in order to determine required skill mix of NWAS crew:

- Key patient post-procedure information
- Repatriation demographics
- The time the patient will be ready for repatriation.
- If it is known whether at least once paramedic will definitely be needed or if an EMT II crew is sufficient. **If unsure, please refer to the NWAS Staffing for Transfer and Transportation flowchart.**

Please provide as much information as possible.

Neurology StR to contact Referring Stroke Physician and inform that the patient will remain in Walton Critical Care for approximately (X) amount of time.

IF NO ITU BED IS AVAILABLE, THE PATIENT WILL BE 'TREATED AND TRANSFERED' – preferably to the ITU of referring hospital.

Neurology Registrar to contact the referring Stroke team and confirm repatriation.

Whilst on the call, Neurology Registrar to confirm with the Stroke team that a bed is available and note repatriation instruction to pass onto NWAS. A detailed transfer summary will be provided during this transfer.

The ambulance will then collect to patient from the Walton Centre and transfer back to the referring HASU. A copy of the patient's care summary record needs to be handed over to NWAS to pass onto the referring HASU.

- Post-procedure care of the patient will be placed under the care of the referring Stroke team.

Appendix 2 - IAT Transfer Procedure



Cheshire and Merseyside IAT Network

Title	IAT transfer procedure for Cheshire and Merseyside stroke pathway patients
Description	Cheshire and Merseyside (C&M) stroke pathway for patients accepted for transfer to the Intra-Arterial Thrombectomy receiving unit
Applicable to	All staff involved in the transfer of IAT patients between units
Author	WCFT and NWAS
Date and Version	Jan 2020 Version 2.0
Document ID	
Date of issue	Author to update
Point of contact	
Date for formal review	Author to update

Document History:

Date/Version	Reason for change	Changes made
15/03/2018 V 1.0	N/A	First agreed draft
27/01/2020	Changes to NWAS procedures / contact numbers	

1. Ambulance booking procedure

1.1 **Once the patient has been accepted for IAT by WCFT** via telephone discussion, the transport should immediately be booked by the referring Stroke Consultant at the HASU by ringing NWS on **0345 140 0144** and request **'emergency transfer, acute stroke patient for thrombectomy'**.

1.2 The transfer will be by an emergency ambulance (Levels 1-4) with a Paramedic on board (Levels 1-3). In case of ongoing IV thrombolysis therapy, infusion therapy or ongoing complications there will be the need for a Stroke nurse to accompany the patient (Level 3 & 4). In case of the patient being ventilated and intubated prior to transfer then the critical care transfer policy of each of the PSC and NWS needs to be followed.

1.3 Transfer levels of care include;

Level 1 – Paramedic crew. No nurse escort needed. Thrombolysis completed prior to transfer. No complications noted. Patient deemed low risk.

Level 2 – Paramedic crew. No nurse escort needed. Thrombolysis completed prior to transfer. Complications acknowledged during thrombolysis. Complications rectified prior to transfer. Higher risk of complications.

Level 3 – Paramedic crew. A nurse escort needed. Presentations will include either thrombolysis in situ and running, patients currently with an infusion in situ or any patients with ongoing complications since thrombolysis.

Level 4 – EMT crew. Nurse and Anaesthetist escort needed (emergency transfer or stroke nurse). Patient deteriorating GCS </ 8 (airway assistance needed) – anaesthetist required for both non intubated and intubated patients.

Please see Section 11 for transfer flowchart.

1.4 If, whilst the ambulance is enroute to the HASU, the patient deteriorates beyond the stability for transfer or if the transfer becomes inappropriate please contact the ambulance service on 999 to cancel the transfer and stand the ambulance down. Additionally the referring HASU will need to update WCFT on (**07779987168**).

1.5 The patient must be ready for **immediate** transfer once the ambulance arrives. Ambulances must not be held waiting for any longer than 15 minutes. If the patient is unable to be transferred, then the ambulance should be cancelled and released.

1.6 It is beneficial that a Next of Kin (NOK) or carer accompanies the patient to WCFT to ensure appropriate discussion of the risks/benefits and for procedural consent. Please see point 7.2 for further clarification on escorts.

2. Pre transfer checklist

2.1 Prior to transfer, measures must be taken to ensure the patient's condition is stable. Meticulous resuscitation and stabilisation will reduce complications during the journey, although this needs to be balanced against the need for immediate IAT transfer.

2.2 Prior to departure, where IV thrombolysis is in situ, the escorting stroke nurse should ensure they check and have available the appropriate transfer bag and associated equipment.

2.3 The HASU Staff nurse involved in the direct care of the patient should be the primary member of staff transferring the patient to WCFT when thrombolysis is active. This aids continuity of the patient's treatment.

2.4 In the instance whereby 6.3 is not possible. Staff members transferring the patient who have not been involved in direct care should familiarise themselves with the patient's history, treatment and investigations undertaken.

2.5 A member of the clinical team at the referring HASU should complete and ask the attending Paramedic and anaesthetist to sign the completed checklist (Section 9) before departure. If the HASU nurse is not travelling (Level 1 and 2) the handover of the checklist becomes the responsibility of the transferring Paramedic and will be handed to the medical team on reaching WCFT.

2.6 In the instance when IV thrombolysis has finished before the ambulance transfer has arrived, the transfer can take place without an accompanying nurse as long as there are no immediate ongoing complications post thrombolysis (Level 1 & 2).

2.7 The transferring NWAS crew will follow current NWAS pre alert procedures and pre alert the receiving IAT centre before leaving the scene. This procedure will be followed even in the instance where the PSC indicates that the IAT centre is expecting the patient. This allows for tracking on the hospital arrival screens based within WCFT.

2.8 Critical care transfer policy - Patients at the HASU with any deterioration in clinical signs prior to transfer will need to have a rapid anaesthetic assessment at the HASU and if needed, to have rapid Induction GA prior to transfer. The transfer policy as per NWAS for inter-hospital transfer is attached.

2.9 If the patient is ventilated and intubated at the HASU prior to transfer then the patient needs to be accompanied by an Anaesthetist from the PSC and an adequately trained nurse from the PSC (such as an emergency care centre nurse) - Level 4.

3. Management during the transfer

3.1 The patient will be transferred on the ambulance stretcher and it will become the responsibility of the crew to ensure the level of seat belt restraints is appropriate for the transfer.

3.2 It is desirable, if possible, for a relative / NOK to travel in the ambulance during the transfer. There will be space for one family member/carer in the ambulance if a nurse escort is present and two available seats if no nurse escort/student paramedic/observer is on board. Every effort should please be made by the HASU stroke team to obtain the relevant information for the relative/NOK of the patients. If the relative/NOK is not able to travel it is the responsibility of the stroke team at the HASU to obtain the relevant contact details for relative/NOK and assure they are available to contact. The stroke team at the HASU is responsible that this information is transferred with the patient and communicated to WCFT receiving IAT team.

3.3 During level 4 transfers there will be no room for a NOK within the ambulance. In this instance it is imperative the NOK contact details are completed on the transfer checklist form prior to departure.

3.4 Pressure areas should be appropriately protected and warming/insulating blankets should be used to keep the patient warm unless clinically contraindicated.

3.5 Indwelling lines and tubes should be secure, visible and accessible.

3.6 All equipment must be securely mounted/stowed. Equipment should be either fastened to the trolley or stored in lockers within the ambulance. Under no circumstances should equipment (e.g. syringe driver) be placed on top of the patient trolley. This may become a dangerous projectile in the event of a sudden deceleration. Gas cylinders must be held in secure housings at all times. Monitors should be clearly visible by the transferring team from their seated position.

3.7 During ambulance transfers external ambulance staff and escorts should remain seated at all times and wear available seat belts. When emergency patient intervention is required the ambulance must first be stopped. Adequately resuscitated and stabilised patients should not normally require any significant

changes to treatment during transport. If, however, despite meticulous preparation, unforeseen clinical emergencies arise and the patient requires intervention, this should not be attempted in a moving vehicle. The vehicle should be stopped in a safe place before administering treatment.

3.8 During the transfer, observations and notes will be recorded on both the patient report form by ambulance clinician (Level 1-4) and transfer document by escorting nurse (Level 3 & 4).

3.9 Observations will be continually monitored whilst in transfer. The ABC approach will be continually monitored and airway support given if deemed appropriate.

3.10 Whilst in transfer if any complications develop or observations are noted outside the parameters of the blood pressure target (Section 10) the transferring crew must call the Emergency Operations Centre (EOC), who will then inform WCFT by ringing the pre-alert contact number (07779987168). Please see Section 11 for transfer flow chart.

3.11 In the event of the patient going into cardiac arrest during the transfer the ambulance will divert to the nearest emergency department based on the current location.

4. Handover requirements at receiving IAT centre

4.1 On arrival at the ambulance bay at the front of WCFT, the crew and – if applicable – the transferring stroke nurse, will be met by the IAT team at the doors to the ambulance bay. The IAT team will direct the crew and patient into the Radiology Intervention Suite immediately to transfer onto a trolley.

4.2 The transferring nurse, and transferring anaesthetist for Level 4 transfers only, will at all times escort the patient when thrombolysis is present and handover to the IAT team on arrival at WCFT (Level 3 & 4). The Paramedic will hand over for Level 1 and Level 2 transfers.

4.3 Once the patient has been removed from the ambulance stretcher the crew will no longer be required and handover from an ambulance perspective will be deemed complete. The transfer checklist document must be handed to the IAT team on arrival. In level 1 & 2 transfers only, this will be the responsibility of the transporting Paramedic.

4.4 The nurse handover will be completed as quickly as deemed clinically appropriate and the nurse handover time documented on the transfer sheet.

4.5 The ambulance service will not be able to transfer the staff and equipment back to the initial transporting HASU, therefore staff should book their own hospital taxi back using their own Trust's taxi account.

If the patient has deteriorated or is rapidly deteriorating since acceptance via telephone has;

1. Anaesthetics been contacted
2. WCFT been re contacted on (07779987168) to discuss patients changing condition

5. Medication Transfer bag and equipment (Level 3 or 4 transfer only)

- Alteplase (if required > 50 mg)
- Transfer Grab bag
- Syringe driver must be working in order and Battery > 80%

6. Documentation

- ED Attendance record
- Copy ECG
- Copy of Blood results
- CT Report
- Observations Record

7. Next of Kin

- informed or accompanying

Relative/NOK details and contact number :

8. Is the patient a Level 4 transfer?

No Yes

If so

- Anaesthetist accompanies the patient
- Adequate trained nurse accompanies the patient

Signatures:

On departure - Nurse

On departure - Lead Paramedic

On departure (Level 4 transfer) - Anaesthetist.....

ANAPHYLAXIS & ANGIOEDEMA

OBSERVE for:

- Tongue Swelling
- Itching
- Facial flushing, wheals and hives
- Severe reaction
- Swelling
- Wheezing, difficulty in breathing
- Loss of colour, clammy and cold to touch
- Hypotension
- Collapse and loss of consciousness

INITIATE:

- CLINICAL ASSESSMENT – ABC management
- Initiate Anaphylaxis treatment if appropriate
- Adrenaline IM
- Hydrocortisone
- Chlorphenamine
- Update WCFT IAT Team on **07779987168**

HYPERTENSION

OBSERVE:

- If blood pressure (BP) rises above >185/110 mmHg, repeat reading at 5 minute intervals.
- If blood pressure >230/120 mmHg, on a single reading immediately contact WCFT IAT Team on **07779987168**

INITIATE:

- CLINICAL ASSESSMENT – ABC management
- Contact WCFT IAT Team on **07779987168** if second reading after 5 minutes >185/110mmHg

HYPOTENSION

OBSERVE:

- If blood pressure (BP) falls below <110/60
- Look for signs of systemic bleed

INITIATE:

- CLINICAL ASSESSMENT – ABC management
- Update WCFT IAT Team on **07779987168** if BP <110/60
- Administer fluid as per local NWS policy

SYMPTOMS TO MONITOR DURING TRANSFER

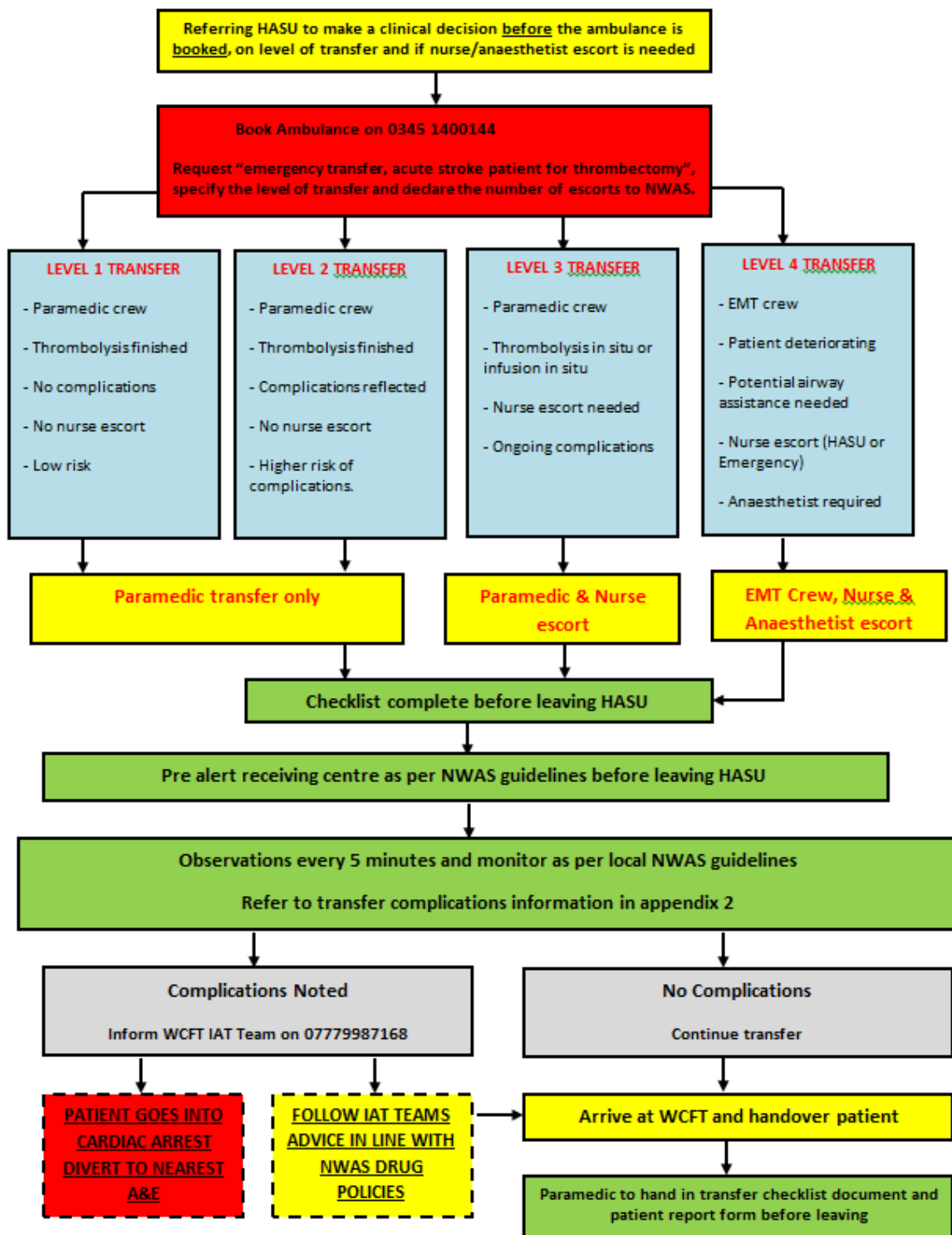
OBSERVE FOR:

- Fall/rise in temperature
- Haematemesis / Haemoptysis / Haematuria
- Shortness of Breath
- Abdominal distension (and/or) pain / Severe Bruising
- Unequal pupils
- Fall in GCS
- Nausea or vomiting

INITIATE:

- CLINICAL ASSESSMENT – ABC management
- Continue observations
- Contact WCFT IAT Team on **07779987168** with any concerns during the transfer

Transfer Flowchart



* Please print this flowchart for all Paramedics transferring IAT patients alongside the checklist and complications document/list.

Appendix 3 - Scenarios on management of anti-coagulant during IAT

Scenario 1: If the patient had IV- thrombolysis for the current stroke

- No intra-procedural IV heparin needed
- Avoid post-procedural prophylactic LMWH

Scenario 2: If the patient not had IV thrombolysis due to contraindications

- 5000IU Heparin IV bolus after groin puncture
- 1000IU Heparin IV /hr until procedure is completed
- Post procedural prophylactic LMWH advised

Scenario 3: If the patient not had IV thrombolysis due to contraindications but was on Warfarin for AF/Prosthetic heart valve

- If INR <1.5, follow instruction in scenario 2
- If INR >1.5, follow instruction in scenario 1

Scenario 4: If the patient not had IV thrombolysis due to contraindications but on new oral anti-coagulants

- If on Dabigatran (direct thrombin inhibitor)
 - Check Coagulation profile
 - If normal thrombin time and APTT, follow scenario 2
 - If elevated thrombin time and APTT, follow scenario 1
- If on Apixaban, Rivaroxaban, Edoxaban (anti-Xa agents)
 - Coagulation profile poor marker
 - If 24hrs elapsed since last dose, follow scenario 2
 - If 24hrs no elapsed since last dose, follow scenario 1

Scenario 5: If the patient not had IV thrombolysis due to contraindications but had therapeutic dose of low molecular weight heparin, follow scenario 1

Scenario 6: If the patient not had IV thrombolysis due to contraindications but on IV unfractionated heparin infusion.

- If the APTT <1.2, follow scenario 2
- If the APTT >1.2, continue infusion and follow scenario 1
 - Re-assess the indication of heparin infusion
 - Discuss with Neurology consultant on-call

Under no circumstances should full IV Heparinisation be considered for failed recanalisation after IAT, considering risk of brain haemorrhage.

Appendix 4 - Scenarios on management of anti-platelets during IAT

If patient has received a standard thrombectomy procedure, use of antiplatelet agents is no different to standard stroke pathway post-thrombolysis.

Anti-platelets for patients who undergo carotid stenting as part of thrombectomy

Scenario 1: If the patient had IV thrombolysis for current stroke

- Aspirin 500mg IV prior to stent delivery
- Avoid post procedural prophylactic LMWH
- CT head at 24hrs since thrombolysis
 - If no symptomatic haemorrhage
 - Aspirin 75mg and clopidogrel 75mg for 6months
 - If symptomatic haemorrhage
 - No anti-platelets
 - Expect poor prognosis

Scenario 2: If the patient not had IV thrombolysis due to contraindications but on new oral anti-coagulants/IV heparin or therapeutic LMWH

- Aspirin 500mg IV prior to stent delivery
- CT head at 24hrs since thrombolysis
 - If no symptomatic haemorrhage
 - Clopidogrel 75mg started for 6 months
 - If symptomatic haemorrhage
 - No anti-platelets
 - Expect poor prognosis

Appendix 5 - Rapid reversal regime after intra or extracranial haemorrhage within 24hrs of IV thrombolysis and IAT

In case of intracranial haemorrhage or extracranial (access site or retroperitoneal bleed), follow the rapid reversal regime

- Rapid reversal is performed if this was within 24hrs of IV thrombolysis
 - Administer 1g Tranexamic Acid
 - If Fibrinogen is <1.5 requests and administer 2 pools of cryoprecipitate.
 - Recheck fibrinogen after Cryoprecipitate and discuss with Haematology On-Call if still <1.5.
 - Consider Tranexamic Acid Infusion (1g in 250ml 0.9% Saline over 8 hours)

Appendix 6 - Policy approval checklist

The Policy is presented to the IAT Delivery Board and Clinical Effectiveness Services Group for approval.

In order for this policy to be approved, the reviewing group must confirm in Table 1 below that the following criteria is included within the policy. Any policy which does not meet these criterion should not be submitted to an approving group/committee, the policy author must be asked to make the necessary changes prior to resubmission.

Policy review stage

Table 1

The reviewing group should ensure the following has been undertaken:	Approved?
The author has consulted relevant people as necessary including relevant service users and stakeholders.	Yes
The objectives and reasons for developing the documents are clearly stated in the minutes and have been considered by the reviewing group.	Yes
Duties and responsibilities are clearly defined and can be fulfilled within the relevant divisions and teams.	Yes
The policy fits within the wider organisational context and does not duplicate other documents.	Yes
An Equality Impact Assessment has been completed and approved by the HR Team.	Yes
A Training Needs Analysis has been undertaken (as applicable) and T&D have been consulted and support the implementation	Yes
The document clearly details how compliance will be monitored, by whom and how often.	Yes
The timescale for reviewing the policy has been set and are realistic.	Yes
The reviewing group has signed off that the policy has met the requirements above.	Yes
Reviewing group chairs name: A. Nicolson	Date: June 2019

Policy approval stage

<input type="checkbox"/> The approving committee/group approves this policy. <input type="checkbox"/> The approving committee/group does not approve the policy.	
Actions to be taken by the policy author:	
Approving committee/group chairs name:	Date:

Translation Service

This information can be translated on request or if preferred an interpreter can be arranged. For additional information regarding these services please contact The Walton centre on 0151 525 3611

Gellir gofyn am gael cyfieithiad o'r deunydd hwn neu gellir trefnu cyfieithydd ar y pryd os yw hynny'n well gennych. I wybod rhagor am y gwasanaethau hyn cysylltwch â chanolfan Walton ar 0151 525 3611.

هذه المعلومات يمكن أن تُترجم عند الطلب أو إذا فضّل المترجم يمكن أن يُرتَّب للمعلومة الإضافية بخصوص هذه الخدمات من فضلك اتّصل بالمركز ولتوّن على
0151 5253611

ئەم زانیاریە دەکریت وەرگێردریت کاتێک کە داوا بکریت یان ئەگەر بەباش زاندرە دەکریت
وەرگێرێک نامادە بکریت (پێک بخریت) ، بۆ زانیاری زیاتر دەربارەى ئەم خزمەتگوزاریانە تکایە
پەيوەندی بکە بە Walton Centre بە ژمارە تەلەفۆنی ۰۱۵۱۵۲۵۳۶۱۱ .

一旦要求，可对此信息进行翻译，或者如果愿意的话，可以安排口译员。如需这些服务的额外信息，请联络Walton中心，电话是：0151 525 3611。