GUIDELINE FOR THROMBOLYTIC THERAPY (THROMBOLYSIS) IN THE TREATMENT OF ACUTE ISCHAEMIC STROKE

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

INTRODUCTION

Patients who present with sudden onset focal neurological symptoms suggestive of ischaemic stroke and who are independent may benefit from intravenous thrombolytic therapy (thrombolysis). Stroke patients who present and are fully assessed within 3 hours of symptom onset will be eligible for thrombolytic therapy (thrombolysis), provided a CT brain has been done to exclude intracerebral bleeding.

This guideline is for use by the following staff groups :

Medical and nursing staff directly involved in the management of acute stroke patients and with the necessary competencies (see page 2)

Lead Clinician(s)

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Key amendments to this guideline

Date	Amendment	By:
13/03/07	Guideline approved by	Medicines Safety Committee
18/05/07	Approved by Dr Pitcher (C.D) on behalf of	Directorate Executive Committee
18/05/10	Guideline approved by	Medicines Safety Committee
May 10	Change to competencies required section	Dr P Sanmuganathan
May 10	Change to primary indications and absolute contraindications	Dr P Sanmuganathan
May 10	Additional information added to treatment of complications or deteriorations section (anaphylaxis/suspected haemorrhage/cerebral oedema and elevated intracranial pressure/uncontrolled hypertension/hypotension)	Dr P Sanmuganathan
May 10	Change to nursing protocol for all patients who have suffered an acute ischaemic stroke receiving thrombolysis with alteplase	Dr P Sanmuganathan
May 10	Additional references added	Dr P Sanmuganathan
May 13	Discussed at Stroke Centralisation meeting and agreed to continue use whilst under review . Extend to the end of July 2013	Dr P Sanmuganathan
July 13	Amendment of Labetalol dosage to reflect network guidelines	Caroline Gibson (pharmacist)
August 2015	Document extended for 12 months as per TMC paper approved on 22nd July 2015	TMC
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Guideline For Thrombolytic Therapy (Thrombolysis) In The Treatment Of Acute Ischaemic Stroke

The reader should also make themselves aware of the entries within the latest edition of the British National Formulary (BNF) or for more detailed information contact the Medicines Information Department within the Pharmacy (ext 30235).

Introduction

Stroke is a medical emergency. Thrombolytic therapy (thrombolysis) increases the chances of an independent existence after stroke by a third in patients who present early. Treatment has to be initiated within 3 hours of symptom onset and a CT brain is mandatory to exclude haemorrhage prior to treatment. Intravenous thrombolytic therapy (thrombolysis) in stroke patients can lead to systemic bleeding complications as well as haemorrhagic transformation of cerebral infarction if appropriate patients are not selected. Hence, it is important to adhere to strict selection criteria and close monitoring is essential to allow immediate identification and treatment of any complications.

Competencies Required

Treatment will only be initiated by a clinician who has undertaken specific training in the delivery of thrombolytic therapy to acute stroke patients and trained to use National Institute of Health Stroke Scale (NIHSS) assessment tool.

Nursing staff will initiate the infusion once the dose is calculated and the 10% bolus dose is given intravenously by the clinician deciding to thrombolyse. The remainder of the infusion is then administered as an intravenous infusion over 60 minutes.

Neurological and cardiovascular monitoring will be done according to nursing protocol set out in the after care for thrombolysis (See Appendix 1).

Patient Consent

The Consultant Physician initiating thrombolytic therapy (thrombolysis) will discuss the benefits and harm from bleeding complications with the patient to obtain consent. Where appropriate the planned treatment will be explained to relatives/carers, assent will be required in aphasic patients. Patients with receptive dysphasia without relatives present will be thrombolysed by the, clinician if benefits of doing so is in the best interest to the patient.

Patients Covered

Patients who present within 3 hours of onset of symptoms of acute ischaemic stroke with intra-cranial haemorrhage excluded by CT scan. Those patients presenting after 3 hours of onset may be suitable for recruitment into the IST3 trial.

Guideline

1. Indications

1.1 Primary indication

- Ischaemic strokes presenting within 3 hours of symptom onset, in patients aged 18 - 80 years and haemorrhage ***excluded*** by CT scan.

- Patients with a stroke whose severity falls between 4 and 25 on the NIHSS assessment tool

1.2 A combination of the following signs and symptoms are suggestive of localised permanent damage to an area of brain consistent with acute ischaemic stroke:

- Speech impairment
- Unilateral facial palsy
- Unilateral arm/leg weakness
- Visual disturbances – diplopia, field defects
- Swallowing difficulties
- Unsteadiness

2. Absolute Contraindications

- Evidence of intracranial haemorrhage on CT scan
- Time of symptom onset is unknown (e.g. patient wakes up with symptoms)
- Complete resolved neurological symptoms, i.e. transient ischaemic attack (TIA)
- Clinically severe stroke as assessed by an NIHSS >25
- GCS < 8
- Seizure at onset of stroke
- Myocardial infarction in last three months – check 12 lead ECG (risk of cardiac rupture)
- Previous history of intra-cranial haemorrhage or arteriovenous malformation (AVM)
- Symptoms suggestive of subarachnoid haemorrhage, even if CT normal
- Administration of low molecular weight heparin (LMWH) within previous 48 hours (but in case of unfractionated heparin thrombolytic therapy can proceed if APTT is normal)
- Warfarin or chronic liver disease with INR $\geq$ 1.7 (PTT $\geq$ 15sec)
- Stroke or head injury with loss of consciousness within the last 3 months
- Platelet count < 100 000/mm^3
- Systolic BP > 185 or diastolic BP > 110 mmHg, in-spite of intravenous antihypertensive therapy
- Hypo or hyperglycaemia with blood glucose < 2.7 or > 22.0 mmol/L
- Known intracranial neoplasm
- Active clinically apparent bleeding (except menses)
- Active peptic ulceration
- Pericarditis or infective endocarditis
- Patients with any history of prior stroke and concomitant diabetes

3. Cautions / Relative Contraindications

- Symptoms of ischaemic stroke beginning more than 3 hours before the start of the infusion. Those patients presenting after 3 hours of onset may be suitable for recruitment into the IST3 trial. The use of alteplase beyond 3 hours is currently an unlicensed indication up to 4.5 hrs.
- Head injury within 1 month
- GI bleed / trauma / surgery- within previous 1 month
- Vascular surgery within previous 3 months
- Prolonged, traumatic CPR (more than 15 min +/- rib fractures, more than one attempt at central line insertion)
- Severe, uncontrolled hypertension with systolic BP > 185/110 mmHg. Consider risks and benefits of BP reduction BP with IV Labetalol and/or intravenous nitrate prior to initiation of thrombolytic therapy. Aim for BP of <185/110 mmHg
- Acute pancreatitis
- Pregnancy or breast feeding
- Neoplasms with increased risk of bleeding

Risk of haemorrhagic complication must be assessed and weighed against the potential benefit of using thrombolytic therapy.

If any of the above applies, discuss without delay with a stroke physician.

4. Other Special Warnings

- Aspirin or any antiplatelet agent should not be given within 24 hours of thrombolysis
- Patients pre-treated with aspirin may have a greater risk of intracerebral haemorrhage.
- Reperfusion of the ischaemic area may induce cerebral oedema in the infarcted zone.

5. Decision To Give Thrombolytic Therapy

Thrombolytic treatment with alteplase should only be given provided that:

- It is administered within 3 hours of onset of stroke symptoms
- Haemorrhage has been excluded by CT scan

Stroke patients who present early are most likely to benefit from thrombolytic therapy up to 3 hours of symptom onset. Treatment initiated later that 3 hours after onset of stroke symptoms is currently being tested on a large scale multicentre randomised controlled trial (International Stroke Trial 3 (IST3).

Worcestershire Royal Hospital is a recruiting centre for IST3; therefore, patients who present later than 3 hours and up to 6 hours from the onset of symptoms can be randomised onto the trial after obtaining written consent from patients and/or relatives. Stroke patients, who present within 3 hours and where the clinician who is considering thrombolysis is uncertain regarding benefit, are also eligible to be randomised into IST3.

- The use of alteplase beyond 3 hours is currently an unlicensed indication. However, there is evidence to support its use up to 4 and a half hours; thrombolysis beyond 3 hours may be undertaken at the discretion of a stroke physician.

6. Management Of Severe Hypertension Before Initiation Of Thrombolytic Therapy

- If systolic >185mmHg or diastolic >110 mmHg, give labetolol 10-20mg as intravenous bolus over 1 to 2 minutes
  Or
- administer intravenous GTN infusion in a syringe pump at a rate of 0.6 to 12ml/hr. Titrate the dose according to patient response.

- If asthma, CCF or second degree heart block only use GTN infusion.
- Repeat Labetolol once - 10 minutes later if BP is still elevated >185/110mmHg.
- If the patients' blood pressure is not adequately controlled after two doses of labetolol then the patient is not eligible for thrombolytic therapy even if other inclusion criteria are met.
- If unable to reduce BP to ≤180/110 within 3 hours of symptom onset thrombolytic therapy should be abandoned.

Acute lowering of BP in the presence of an ischaemic stroke can reduce cerebral reperfusion and increase the risk of ischaemia.

7. Choice of Thrombolytic Agent

Alteplase is the only thrombolytic agent licensed for use in ischaemic strokes.

8. Dose

The recommended dose is 0.9mg/kg of alteplase (maximum of 90mg). 10% of the total dose should be administered as an initial intravenous bolus and the remainder infused intravenously over 60 minutes.

Reconstitute the contents of an alteplase vial (20 or 50mg) with water for injection according to the following table to obtain a final concentration of either:

- 1mg alteplase/ml or
- 2mg alteplase/ml

Alteplase vial and strength	***Volume of water for injection to be added to dry powder***	***Final concentration***
20mg vial	20ml	1mg alteplase/ml
50mg vial	50ml	

Alteplase vial and strength	***Volume of water for injection to be added to dry powder***	***Final concentration***
20mg vial	10ml	2mg alteplase/ml
50mg vial	25ml	

The reconstituted solution may be further diluted with 0.9% sodium chloride up to a minimal concentration of 0.2mg/ml.

9. Adjunctive Therapy

Administration of aspirin, low molecular weight heparin or unfractionated heparin should be avoided in the first 24 hours after thrombolysis.

Other anti-platelet agents, including dipyridamole m/r and clopidogrel, should not be initiated within the first 24 hours following thrombolytic therapy due to an increased risk of haemorrhage.

10. Management After Thrombolytic Therapy

After administration of thrombolytic therapy:

- Always give a guarded prognosis, especially within the first 48 hours.
- Ensure close patient observation
- Ensure vital signs and GCS are monitored every 15 minutes for 2 hours, then half hourly for 6 hours, then 4 hourly for 36 hours
- Ensure that no intramuscular injections are administered

- Monitor patient for potential problems, e.g.:

    - Haemorrhage (be aware of the risk of needles, especially arterial puncture or central venous cannulation)
    - Acute hypotension (suspect occult bleeding)
    - Allergy and anaphylaxis
    - Reperfusion cerebral oedema

If any of the above mentioned problems occur, contact the clinician that initiated thrombolytic therapy.

11. Treatment Of Complications Or Deterioration

Anaphylaxis

The incidence may be as high as 1.5%
Indicated by:

- Rapid fall in blood pressure
- Urticarial rash
- New wheezing or breathlessness

Anaphylaxis is likely when all 3 of the following are met:

- sudden onset and rapid progression
- life threatening airway and/or breathing and/or circulation problem
- skin and/or mucosal changes (urticaria, flushing, angioedema)

Remember:

- skin or mucosal change alone are not signs of anaphylactic reaction
- skin or mucosal reactions can be subtle or absent in 20% of cases (some patients only have a drop in blood pressure)
- there can also be gastrointestinal problems (vomiting, abdominal pain and incontinence)

Management Plan

- **Stop** alteplase infusion
- **Call emergency medical team via switchboard - 2222**
- **Assess** airway, breathing and circulation and initiate appropriate intervention. Follow anaphylactic reaction guideline (WAHT-ANA-012) and administer:
  - **Oxygen** via high flow reservoir mask
  - **Adrenaline**
    - if possible avoid intramuscular route in thrombolysis patients consider:
    - Adrenaline nebuliser 1:1000 5mls (5 ampoules of 1ml 1:000) and/or
    - Adrenaline by slow intravenous bolus 1-5mls of 1 in 10 000 (held in the resuscitation drug box on the emergency trolley) with cardiac monitoring and full resuscitation facilities available.
    - Intravenous adrenaline needs to be given with caution.
    - Further doses of adrenaline may be necessary.
  - **Chlorphenamine** 10mg as slow intravenous injection
  - **Hydrocortisone** 200mg as slow intravenous injection
  - If clinical manifestations of shock do not respond to these drugs then give an IV fluid challenge of **500-1000ml 0.9% sodium chloride** (avoid hypotonic fluids such as Hartmans, 0.45% sodium chloride and 5% dextrose).
  - Nebulised therapy for bronchospasm may also be considered.

- If airway involvement is suspected, involve anaesthetic / ITU team early.

Suspected Haemorrhage

Intracranial

- Neurological deterioration – see box,
- New headache,
- Acute hypertension,
- Nausea,
- Vomiting

Neurological deterioration:
either
a drop of 2 points on the eye or motor GCS scale
or
worsening of stroke signs (NIHSS increased by 4 or more points)

Management Plan

- **Stop** alteplase infusion
- **Urgent CT brain** if suspected bleeding is intracranial
- Check INR, APTT, FBC, fibrinogen and G&S

CT brain scan shows haemorrhage

- Consider consulting Neurosurgeon.
- Evaluate blood results and consult haematologist to discuss giving platelets / cryoprecipitate / factor concentrates.
- Tranexamic acid 1gram intravenously three times a day in 100ml sodium chloride solution 0.9% over 15 minutes.

No Haemorrhage on CT brain scan

- Do not recommence alteplase infusion
- Consider other causes for deterioration:

  eg. sepsis, recurrent ischaemic stroke, pulmonary embolus, extracranial bleeding (eg GI tract), metabolic upset, drug reaction, epilepsy, worsening of other conditions e.g. Diabetes

Extracranial

e.g. Gastrointestinal bleed

- Evaluate blood results and consult haematologist to discuss giving platelets / cryoprecipitate / factor concentrates.
- Tranexamic acid 1gram intravenously three times a day in 100ml 0.9% sodium chloride solution over 15 minutes.
- Do not recommence alteplase infusion.
- Consider other causes for deterioration eg.sepsis, recurrent ischaemic stroke, pulmonary embolus,
- extracranial bleeding (e.g. GI tract), metabolic upset, drug reaction, epilepsy, worsening of other conditions
  e.g. Diabetes

Cerebral Oedema and Elevated Intracranial Pressure

The risk of cerebral oedema is highest following an occlusion of a large artery such as MCA (middle cerebral artery).
Peak oedema occurs between 48 and 72 hours post stroke; however a subset may deteriorate sooner.
About 10% of AIS patients will have an MCA infarction that almost always leads to severe potentially fatal cerebral oedema.

Raised intracranial pressure can be indicated by:

- Unequal pupils
- Sudden drop in GCS
- Onset of drowsiness
- Onset of nausea and vomiting, sometimes photophobia
- Rising blood pressure and falling pulse

Management Plan

- Arrange urgent CT brain, if not already done.
- Initial bolus dose of 20% Mannitol 0.5-1.0g/kg intravenously over 30 – 60 minutes.
- Check serum osmolality after 1 hour then 4-6 hourly aiming for 300-320 mOsm/l
- Repeat bolus doses of 20% mannitol 0.25-0.5g/Kg can be given if the serum osmolality is below target range. Repeat if necessary once or twice after 4 – 8 hours.
- Monitor urine output and electrolytes during mannitol administration as profound diuresis may lead to hypovolaemia, renal failure and CVS collapse, if fluid and electrolytes are not carefully replaced.
- If refractory to above consider hypertonic saline or thiopentone in consultation with ICU team.
- **Neuroprotective measures** may help limit cerebral oedema and raised ICP
  - monitor temperature and treat any pyrexia 37.0^0C or above with paracetamol
  - control blood sugar and treat if above 11.0mmol/l – start insulin sliding scale
  - keep head of the bed at 30^o tilt and neck in midline position
- Avoid hypotonic fluids such as Hartmans, 0.45% sodium chloride and 5% dextrose.
- Consider seeking Neurosurgical advice for **Decompressive Hemicraniectomy** if MCA infarction is present and all of the criteria below are met:
  - Age 60yrs or under
  - Clinical deficit suggestive of an infarction in the region of the MCA and NIHSS score >15
  - Decrease in level of consciousness to give a score of 1 or more on item 1a of the NIHSS
  - Signs on CT scan of at least 50% MCA territory, with or without additional infarction in the territory of the anterior or posterior cerebral artery, on the same side, or infarct volume greater than $145cm^3$ as shown on a diffusion weighted MRI.
  - Referral should be within 24 hours of onset of symptoms and surgery within 48 hours.
- Neurosurgical advice may be appropriate in acute hydrocephalus (ventricular drain) and if cerebellar swelling is present.

Uncontrolled Hypertension

Hypertension in the setting of stroke is common. It often resolves spontaneously / improves over time.
High blood pressures should not be treated within the first 24hours after ischaemic stroke, unless systolic >220, diastolic > 120, or mean >130mmHg.
However there are two exceptions:

1. Use of alteplase: BP should be lowered and maintained at <185/110mmHg.

2. Presence of myocardial infarction, aortic dissection or heart failure.

Management Plan

Patients eligible for thrombolysis and systolic >185mmHg or diastolic >110mmHg

- Give labetolol 10mg IV over 1-2 minutes or GTN infusion in a syringe pump at a rate of 0.6 to 12ml/hr.
- Repeat once - 10 min later if BP still >185/110mmHg.
- If >2 doses of labetolol are required to control BP then patient is not eligible for thrombolysis even if other inclusion criteria are met.
- If asthma, CCF or second degree heart block use GTN infusion instead.

During thrombolysis and for 24 hours afterwards:

- Measure BP every 15 minutes for the first 2 hours and subsequently every 30 minutes for the next 6 hours then hourly till 24 hours. Increase frequency of BP measurement if systolic >180mmHg or diastolic ≥105mmHg.

- BP should be managed to below 185/110 using the instructions below as necessary

- If systolic 180-230mmHg or diastolic 105-120mmHg administer labetolol 10mg iv over 1-2 minutes. This can be repeated every 10 minutes up to a maximum dosage of 200mg,

Or

- Use GTN infusion in a syringe pump at a rate of 0.6 – 12ml/hr.

Hypotension

This is often transient.

If the stroke patient presents with hypotension then these patients must be adequately hydrated (with 0.9% sodium chloride) to protect the ischaemic penumbra.

Consider other potential causes for hypotension:

- aortic dissection
- sepsis
- acute blood loss
- myocardial infarction or cardiomyopathy

Management Plan

- Head tilt if BP < 100 systolic
- Consider intravenous fluid challenge (with 0.9% sodium chloride) and monitor closely

Prescribe 0.9% sodium chloride 75-100ml/hour intravenously as routine hydration whilst patient does not have adequate oral intake.

Monitoring Tool

Consultant Stroke Physician will enter thrombolysed patients on to web based register – SITS-MOST

STANDARDS	%	CLINICAL EXCEPTIONS
Eligible patients should receive thrombolytic therapy within 3 hours of onset of stroke symptoms	70%	Radiology services out of hours will not be able to support
Haemorrhage excluded by CT scan prior to treatment	100%	

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Worcestershire NHS
Acute Hospitals NHS Trust

Nursing protocol for all patients who have suffered an acute ischaemic stroke receiving thrombolysis with alteplase

(Reproduced with kind permission from Sheffield Teaching Hospitals NHS Trust and Lothian University Hospitals NHS Trust – Elaine Stratford December 2006)

ACTION	RATIONALE
Ensure the bed space is appropriately equipped with: Oxygen Drip stand Oxygen saturation monitor Has the CT been undertaken?	Patients receiving thrombolysis can deteriorate very quickly, therefore it is essential that they are monitored closely and emergency equipment needs to be accessible
Syringe pump and attachments are stored on the stroke thrombolysis trolley	The patient needs close monitoring for 24 hours. All staff have easy access to equipment allowing prompt delivery of treatment
Record a full set of baseline neurological observations and vital signs. Document and record any unusual findings and inform the doctor in charge of the patients care	Baseline observations are necessary to detect early signs of deterioration during or after treatment
Ensure alteplase is prescribed on drug chart	In accordance with Trust policy all drugs should be prescribed
Following administration of treatment, vital signs and GCS need to be monitored as follows: • Every 15 minutes for 2 hours using manual BP cuff • Every 30 minutes for the next 6 hours • 4 hourly for the next 36 hours If there is any cause for concern, review, report, document and increase observation frequency accordingly	Close observation of vital signs and GCS are essential to detect any signs of early deterioration in the patient's condition. Deterioration may be due to an intracranial or extracranial haemorrhage.
Immediately report any signs of bleeding or deterioration in the patients condition to the clinician responsible for the patient's care	Ensure that early detection and prevention of serious bleeding or other complications may be prevented.
Avoid giving IM injections for 48 hours from time of treatment administration	IM injections can cause bleeding at the injection site in patients who have received thrombolysis
Avoid giving heparin or warfarin. Refer to Stroke Consultant before giving any anticoagulant therapy. Do not give aspirin,	Anticoagulants are contraindicated in patients who have received thrombolysis due to the increased risk of bleeding.

clopidogrel or dipyridamole MR for 24 hours post thrombolysis, and then only after checking with the stroke consultant	
Avoid urinary catheterisation or passing naso-gastric tubes for 24 hours. Check with medical staff if this is required	There is a risk of causing bleeding with these procedures
If haemorrhage is suspected send an urgent Full Blood Count, Clotting and Group and Save. Contact the stroke consultant immediately.	These results can enable early detection of abnormalities and prompt initiation of appropriate treatment
Blood pressure to be maintained below 180/110	To maintain adequate cerebral perfusion but reduce the risk of intracerebral bleeding due to hypertension
Signs of raised intracranial pressure/intracranial bleeding: • Unequal pupils • Sudden drop in GCS • Onset of drowsiness • Onset of nausea and vomiting, sometime photophobia • Rising BP and falling pulse	To detect whether there has been a further intracranial event and seek urgent assistance
In the event of a sudden drop in GCS or change in vital signs an urgent medical review is essential	Early detection and intervention can minimise complications. An urgent CT brain can be arranged to detect complications and initiate further treatment
If temperature is elevated above 37˚C, treat with PR oral or IV paracetamol 1g 4-6 hourly (max 4g/24hours). Report any sustained pyrexia	Increased temperature is detrimental to recovery of patents who have had a stroke
If BM>11.0 or patient is a known diabetic commence IV sliding scale insulin to keep BM between 4 and 11mmol/l	
Provide supplemental oxygen only if O_2Sats <94% on air	
Keep the patient well hydrated, commence IV Saline (not dextrose) at a rate that addresses any signs of dehydration and provides maintenance requirements until formal swallow assessment, NBM	
IF UNSURE SEEK HELP REMEMBER “TIME IS BRAIN”	Early intervention can limit complications

Nursing protocol for all patients who have suffered an acute ischaemic stroke receiving thrombolysis with alteplase

Recognising Complications

Anaphylaxis • Urticaria • Facial swelling • Rash • Difficulty breathing • Low blood pressure and thready pulse	Treatment • Call doctor • Stop Alteplase infusion • Airway, Breathing, Circulation 1. Adrenaline 5ml 1:1000 nebulised in 6 litres oxygen 2. Chlorphenamine 10mg Intravenously 3. Hydrocortisone 200mg Intravenously • Fluids
Intracranial bleeding • Falling Glasgow coma score • New onset of headache • Rising blood pressure • Abnormal ventilation pattern	Treatment • Call doctor • Stop Alteplase infusion • Urgent CT scan head • Intravenous fluids • DO NOT CORRECT COAGULATION ABNORMALITY • Contact person who administered thrombolysis • Liaise with haematology Consultant
Extracranial bleeding • Low blood pressure rapid thready pulse	Treatment • Call doctor • Stop Alteplase infusion • Apply direct pressure • Check coagulation and group or cross match • Intravenous fluids Evaluate blood results and consult haematologist to discuss giving platelets / cryoprecipitate / factor concentrates. ◘ Tranexamic acid 1gram intravenously three times a day in 100mls sodium chloride solution 0.9% over 15 minutes. ◘ Do not recommence alteplase infusion.

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Nursing protocol for all patients who have suffered an acute ischaemic stroke receiving thrombolysis with alteplase

Observations

- Respiration rate
- Blood pressure
- Pulse
- Glasgow coma score
- Neurological observations
- Oxygen saturations

❑ Prior to giving Alteplase

❑ Every 15 minutes for 2 hours

❑ Every 30 minutes for the next 6 hours

❑ Every hour for the next 6 hours

❑ Every 4 hours for the next 36 hours

If there is any cause for concern, review, report , document and increase observation frequency accordingly

- BM Stix

❑ On arrival to ward

❑ 4 times a day for 48 hours

❑ Twice a day after 48 hours

Other things to consider:

❑ Set pump rate at millilitres required for the dose prescribed over 1 hour

- ❑ Do not remove cannulas unless absolutely necessary for 24 hours
- ❑ Give gentle eye and mouth care with soft swabs for 24 hours
- ❑ Avoid arterial puncture and central venous access for 24 hours
- ❑ No wet shaving for 24 hours
- ❑ Avoid intramuscular injections for 48 hours
- ❑ Avoid anticoagulation therapy with warfarin/heparin
- ❑ Do not give any antiplatelet therapy (i.e aspirin, clopidogrel, dipyridamole) for 24 hours post thrombolysis
- ❑ Consider paracetamol if pyrexial

IF THERE ARE ANY SIGNS OF BLEEDING OR THE PATIENT DETERIORATES IN ANY WAY CALL THE DOCTOR WHO ADMINISTERED THE THROMBOLYSIS OR THE RESPONSIBLE MEDICAL TEAM

Nursing pathway summary

Prepare for arrival of patient to ward: **Minimum equipment required:**
• O_2 and O_2 saturation monitor
• Suction
• Drip stand
• Syringe pump and attachments
•

On arrival of patient record:	
• GCS	• Temperature
• BP	• BM
• Pulse	• Resp rate
• O_2 saturation	•

Next:
• Initial bolus of treatment given by doctor over 1-2 minutes
• Remainder of treatment to be given by syringe driver over 1 hour

Record Glasgow Coma Scale and vital signs:
• Every 15 minutes for 2 hours
• Every 30 minutes for the next 6 hours
• Hourly for a further 6 hours
• 4 hourly for the next 36 hours

IF THERE ARE ANY SIGNS OF BLEEDING OR THE PATIENT DETERIORATES IN ANY WAY, CALL THE SENIOR NURSE IN CHARGE AND THE CLINICIAN

In the 24 hours following treatment avoid	**NOTE:**
• Urinary catheterisation	• Avoid IM injections for 48 hours
• NG tube insertion	• Avoid anticoagulant therapy with warfarin and heparin
• Central venous access	• Do not give aspirin, clopidogrel or dipyridamole for 24 hours post thrombolysis
• Arterial puncture	•
If essential discuss with medical team first	

Supporting Document 1 - Equality Impact Assessment Tool

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

		Yes/No	Comments
1.	**Does the policy/guidance affect one group less or more favourably than another on the basis of:**		
	• Race	No	
	• Ethnic origins (including gypsies and travellers)	No	
	• Nationality	No	
	• Gender	No	
	• Transgender	No	
	• Religion or belief	No	
	• Sexual orientation including lesbian, gay and bisexual people	No	
	• Age	No	
	• Disability - learning disabilities, physical disability, sensory impairment & mental health problems	No	
2.	**Is there any evidence that some groups are affected differently?**	No	
3.	**If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?**	No	
4.	**Is the impact of the policy/guidance likely to be negative?**	No	
5.	**If so can the impact be avoided?**	No	
6.	**What alternatives are there to achieving the policy/guidance without the impact?**	No	
7.	**Can we reduce the impact by taking different action?**	No	

If you have identified a potential discriminatory impact of this key document, please refer it to Human Resources, together with any suggestions as to the action required to avoid/reduce this impact.

For advice in respect of answering the above questions, please contact Human Resources.

Supporting Document 2 – Financial Impact Assessment

To be completed by the key document author and attached to key document when submitted to the appropriate committee for consideration and approval.

	Title of document:	Yes/No
1.	Does the implementation of this document require any additional Capital resources	No
2.	Does the implementation of this document require additional revenue	No
3.	Does the implementation of this document require additional manpower	No
4.	Does the implementation of this document release any manpower costs through a change in practice	No
5.	Are there additional staff training costs associated with implementing this document which cannot be delivered through current training programmes or allocated training times for staff	No
	Other comments:	

If the response to any of the above is yes, please complete a business case and which is signed by your Finance Manager and Directorate Manager for consideration by the Accountable Director before progressing to the relevant committee for approval