HYPERACUTE STROKE – ALTEPLASE GUIDANCE FOR PATIENTS REQUIRING THROMBOLYSIS – ALTERNATIVE TO TENECTEPLASE

TARGET AUDIENCE	Stroke Nurses, ED Physicians/ANPs, Radiography/Radiology Clinicians and Stroke Physicians
PATIENT GROUP	This guidance should be used when patients are not suitable for treatment with tenecteplase e.g. confirmed allergy to gentamicin.

CONTENTS

CLINICAL GUIDELINES SUMMARY

- Alteplase dosing, administration and reconstitution guidance for patients who require thrombolysis and are unsuitable for treatment with tenecteplase.

- Alteplase is indicated for acute ischaemic stroke (under specialist stroke physician only). This must be administered as soon as possible within 4 ½ hours of symptom onset and when intracranial haemorrhage excluded by imaging.

CONTRAINDICATIONS TO ALTEPLASE

ABSOLUTE CONTRA-INDICATIONS

- Symptoms beginning more than **4 ½** hours prior to infusion start or when time of symptom onset is unknown (unless advanced CT perfusion imaging suggests salvageable penumbra)
- Symptoms suggestive of subarachnoid haemorrhage, even if CT scan is normal
- Evidence of intracranial haemorrhage (ICH) on the CT scan
- Manifest or recent severe or dangerous bleeding
- Known clotting disorder
- Patients receiving new oral anticoagulants, e.g., Apixaban, Dabigatran and Rivaroxaban and who are compliant with prescription.
- Patients receiving Warfarin unless INR ≤ 1.7
- Patients with confirmed or high clinical suspicion of bacterial endocarditis
- Suspicion of acute aortic dissection, until dissection excluded

RELATIVE CONTRA-INDICATIONS – these are only relative contraindications. If benefits still appear to outweigh risks, treatment can still go ahead provided that the patient or carer accepts the increased bleeding risk.

- Systolic blood pressure > 185 or diastolic BP > 110 mmHg, or aggressive management (IV medication) necessary to reduce BP to these limits. Using IV medication to reduce BP to these targets is out with the product licence.
- Patients receiving new oral anticoagulants, e.g., Apixaban, Dabigatran and Rivaroxaban and the patient is known to be non-compliant.
- Known history of, or suspected, intracranial haemorrhage
- Administration of IV heparin within the previous 48 hours AND an APTT exceeding the upper limit of normal.
- Treatment dose LMWH
- Any history of central nervous system damage (i.e. neoplasm, intracranial or spinal surgery)
- Recent (less than 10 days) traumatic external heart massage, obstetric delivery or puncture of a non-compressible vessel.
- Pericarditis
- Acute pancreatitis
- Documented ulcerative gastrointestinal disease during the last 3 months
- Neoplasm with increased bleeding risk
- Severe liver disease, including hepatic failure, cirrhosis, portal hypertension (oesophageal varices) and active hepatitis
- Major surgery or significant trauma in past 1 month
- Minor neurological deficit (NIHSS ≤ 4) or symptoms rapidly improving before start of infusion
- Pre-presentation Rankin Score ≥ 4 indicating significant disability, especially if due to previous stroke.
- Seizure at onset of stroke
- Platelet count of below 100 x 10^9/L
- Uncorrected blood glucose < 2.8mmol/L

NHS Lanarkshire

BODY WEIGHT/DOSE CHART FOR ALTEPLASE (ACTILYSE) 1MG/ML

DOSING TABLE FOR ACUTE ISCHAEMIC STROKE

The recommended standard concentration of alteplase is 1mg/ml. Therefore, the dose stated below (in mg) will be equivalent to the volume being administered (in ml). For example, if you are administering 3.6mg, this will equate to 3.6ml.

Weight (kg)	Total Dose (mg)	Bolus Dose (mg)	Infusion Dose* (mg)
40	36.0	3.6	32.4
42	37.8	3.8	34.0
44	39.6	4.0	35.6
46	41.4	4.1	37.3
48	43.2	4.3	38.9
50	45.0	4.5	40.5
52	46.8	4.7	42.1
54	48.6	4.9	43.7
56	50.4	5.0	45.4
58	52.2	5.2	47.0
60	54.0	5.4	48.6
62	55.8	5.6	50.2
64	57.6	5.8	51.8
66	59.4	5.9	53.5
68	61.2	6.1	55.1
70	63.0	6.3	56.7
72	64.8	6.5	58.3
74	66.6	6.7	59.9
76	68.4	6.8	61.6
78	70.2	7.0	63.2
80	72.0	7.2	64.8
82	73.8	7.4	66.4
84	75.6	7.6	68.0
86	77.4	7.7	69.7
88	79.2	7.9	71.3
90	81.0	8.1	72.9
92	82.8	8.3	74.5
94	84.6	8.5	76.1
96	86.4	8.6	77.8
98	88.2	8.8	79.4
100+	90.0	9.0	81.0

*given in a concentration of 1mg/mL over 60 min as a constant rate infusion.

PATIENTS MUST BE MONITORED PRIOR TO AND DURING DRUG ADMINISTRATION AND FOR AT LEAST 24 HOURS FOLLOWING ADMINISTRATION.

1. Total dose: 0.9mg/kg, based on actual body weight. **Maximum total dose is 90mg**.
2. Reconstitute 50mg Alteplase vial(s) with 50mls of Water for Injection via the transfer spike to give a solution with concentration 1mg/ml.
3. Initial 10% of total dose given as an IV manual push over 2 minutes.
4. Commence pump immediately after initial bolus. Give remaining 90% of dose IV over 60 minutes via an infusion pump (**If infusion dose is >60ml, second syringe required**).

PREPARATION AND ADMINISTRATION ADVICE:

Reconstitute with the water for injections provided.

To obtain a final concentration of 1mg alteplase in 1mL reconstitute with water for injections as follows:

- 10mg vial - add 10mL using a syringe
- 20mg vial - add 20mL using the transfer cannula
- 50mg vial - add 50mL using the transfer cannula

When reconstituting alteplase, the mixture should only be agitated gently until completely dissolved. Slight foaming may occur, however, the bubbles will dissipate after standing for several minutes. To prevent foam formation, avoid vigorous/excessive agitation and shaking. The reconstituted preparation is a clear and colourless to pale yellow solution. Do not dilute with glucose 5%. Expiry time to write on label of continuous infusion - 8 hours.

ACUTE ISCHAEMIC STROKE (under a specialist in neurovascular care):

Treatment must be started within 4.5 hours of onset of stroke symptoms. Beyond 4.5 hours, there is a negative benefit risk ratio associated with alteplase administration and so it should not be administered unless supported by advanced perfusion imaging.

- Initial IV injection: give 10% of the dose over approximately 2 minutes.
- Followed by IV infusion: give the remainder of the dose over 60 minutes (see prescribing information for dose to be administered).
- **Maximum total dose: 90mg.**

ADVERSE EFFECTS AND SUGGESTED MONITORING:

Acute reactions: allergic reactions (rash, urticaria, bronchospasm, angio-oedema, anaphylaxis) If an anaphylactic reaction occurs, the infusion should be discontinued and appropriate treatment initiated.

Convulsions, nausea, vomiting, fever, reperfusion arrhythmias, recurrent ischaemia angina (when used for myocardial infarction) cerebral oedema (caused by reperfusion) increased risk of intracerebral/intracranial haemorrhage (when used in acute ischaemic stroke)

Monitor: injection site haemorrhage (puncture site haemorrhage, catheter site haematoma, catheter site haemorrhage) - consider discontinuation if severe, blood pressure during administration and for up to 24 hours after (for patients receiving alteplase for acute ischaemic stroke)

Extravasation during IV infusion of the drug can cause ecchymosis and/or inflammation. Management consists of terminating the infusion at that IV site and application of local therapy. The infusion should be re-commenced using a different site.

Do not store above 25°C. Store in the original package in order to protect from light. Once reconstituted the solution should be used immediately.

REFERENCES/EVIDENCE:

1. BNF: https://www.medicinescomplete.com/#/content/bnf/_169791712?hspl=Alteplase (Accessed 28/02/2025)
2. Alteplase SPC: https://www.medicines.org.uk/emc/product/898/smpc#gref (Accessed 28/02/2025)
3. MEDUSA: https://www.medusaimg.nhs.uk/IVGuideDisplay.asp (Accessed 28/02/2025)
4. Electronic medicines compendium – Alterplase 20mg SPC – Changes history (dated 20/02/2023 – 07/03/2023) - https://www.medicines.org.uk/emc/product/10360/smpc/history (Accessed 28/02/2025)

APPENDICES:

1. Governance information for Guidance document

Lead Author(s):	Gary Lynas (Stroke Pharmacist)
Endorsing Body:	ADTC
Version Number:	1.1
Approval date	July 2025
Review Date:	July 2028
Responsible Person (if different from lead author)	Mark Barber (Lead Stroke Consultant UHM)

CONSULTATION AND DISTRIBUTION RECORD	
Contributing Author/Authors	Mark Barber (Lead Stroke Consultant UHM)
Consultation Process/Stakeholders:	Stroke MCN Anthony Carson (Head of Pharmacy UHH) Michael Hillhouse (Lead Stroke Pharmacist UHM)
Distribution	Circulate with the stroke units at all three sites (UHH, UHM, UHW).

2. You can include additional appendices with complimentary information that doesn't fit into the main text of your guideline, but is crucial and supports its understanding.

e.g. supporting documents for implementation of guideline, patient information, specific monitoring requirements for secondary and primary care clinicians, dosing regimen/considerations according to weight and/or creatinine clearance