CLINICAL GUIDELINE

Tenecteplase (metalyse) Thrombolysis in Acute Ischaemic Stroke

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Important Note:

The online version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Tenecteplase: Thrombolysis in Acute Ischaemic Stroke

AIM/OBJECTIVE OF GUIDELINE

This guideline is intended to guide clinicians in prescribing and administration of Tenecteplase as a thrombolysis agent in Acute Ischaemic Stroke. It aims to support the selection of the most appropriate dose for body weight, preparation and administration advice in line with national guidance. This protocol is for guidance only and is not intended to serve as a standard of medical care or be applicable in every situation. Decisions regarding the treatment of individual patients must be made by the clinician considering that patient's presenting clinical condition and with reference to current good medical practice.

NHS Greater Glasgow and Clyde	NHS Greater Glasgow and Clyde Stroke Services Protocol for the use of Tenecteplase in Acute Ischaemic Stroke
Background:	Tenecteplase has been shown to be a safe and effective agent for thrombolysis in acute ischaemic stroke. It replaces Alteplase as the agent of choice as it offers more consistent dosing, preparation and administration techniques. The bolus dosing regimen can be given by local stroke thrombolysis teams and should reduce time to treat and facilitate timely transfer to HASU for ongoing stroke management.
Agent and route:	Tenecteplase (Metalyse) 25mg (5000units) Powder for solution for IV injection
Patient Population applicable to:	Tenecteplase is indicated in adults for the thrombolytic treatment of acute ischaemic stroke within 4.5 hours from last known well with CT- imaging to exclude intracranial haemorrhage.
Authorised and designated areas applicable to:	Tenecteplase for thrombolysis in Acute Ischaemic Stroke is authorised for use by designated Thrombolysis teams at Queen Elizabeth University Hospital, Glasgow Royal Infirmary and Royal Alexandra Hospital. Thrombolysis treatment areas may vary across sites depending on where the patient presents with first symptoms. In most cases this will be within the Emergency Department. It may also be within designated Hyper Acute Stroke Units (HASU) or general ward settings where the specialist team attend and review the patient.
Indication and place in therapy:	Tenecteplase is approved by the SMC and within NHS GGC as the treatment of choice for thrombolysis in acute ischaemic stroke. Clinical trials have shown that Tenecteplase in not inferior to alteplase but has advantages relating to ease of administration, administration time and facilitates transfer to specialist stroke units.
Dose, duration and administration	**Dosing:** For acute ischaemic stroke Tenecteplase is dosed at 0.25mg/kg to a maximum dose of 25mg. The manufacturers suggest weight-banded dosing as below:

Patient's body weight category (kg)	Tenecteplase (U)	Tenecteplase (mg)	Corresponding volume of reconstituted solution (mL)
< 60*	3 000	15.0	3.0
≥ 60 - <70	3 500	17.5	3.5
≥ 70 - <80	4 000	20.0	4.0
≥ 80 - <90	4 500	22.5	4.5
≥ 90	5 000	25.0	5.0

*Limited data for dosing when weight ≤ 50kg so benefit-risk should be carefully evaluated.

Duration:

Tenecteplase for acute ischaemic stroke is a one-off stat dose and should be administered only once for the acute episode.

Administration:

To reconstitute:

- Slowly add 5mL of water for injection to the vial.
- Then swirl gently to avoid foaming.
- Once reconstituted the Tenecteplase solution should be a clear and colourless to slightly yellow solution.
- Do not use if the vial contains particles.
- The strength of the reconstituted solution is 5mg (1000 units) per 1mL.

To administer:

- Transfer the required dose to a syringe for administration.
- Tenecteplase is given as an IV bolus slowly over 10 seconds.

The batch number and expiry date of each vial should be recorded in each patient's notes.

Monitoring:

Prior to administration:

- See contraindications section below
- Check INR if on warfarin – see contraindications
- Check blood pressure - see contraindications
- Check blood glucose – see contraindications

After Administration:

- Blood pressure should be monitored regularly for up to 24 hours post-administration.
- Monitor for hypersensitivity/angio-oedema during administration and for up to 24 hours after. Treat as appropriate, using local protocols.
- Monitor closely for signs of bleeding.
- CT head should be carried out 24 hours post-administration.

Contraindications	• Hypersensitivity to Tenecteplase or any excipients • Hypersensitivity to gentamicin Treatment is contraindicated in the following situations: • Known history of or suspected intracranial haemorrhage • Symptoms suggestive of subarachnoid haemorrhage, even if CT scan is normal • Severe stroke as assessed clinically (e.g. NIHSS > 25) and/or by appropriate imaging techniques • Symptoms of stroke beginning more than 4.5 hours prior to injection or symptoms for which the onset time is unknown and could potentially be more than 4.5 hours ago • Acute ischaemic stroke without disabling neurological deficit, or symptoms rapidly improving before start of injection • Significant bleeding disorder either at present or within the past 6 months • Patients with effective anticoagulation (e.g. INR > 1.3 or recent DOAC ingestion) • Administration of heparin within the previous 48 hours and a thromboplastin time exceeding the upper limit of normal for laboratory • Seizure at onset of stroke • Patients with any history of prior stroke and concomitant diabetes • Prior stroke within the last 3 months • Any history of central nervous system damage (i.e. neoplasm, aneurysm, intracranial or spinal surgery) • Known haemorrhagic diathesis • Severe uncontrolled arterial hypertension • Major surgery, biopsy of a parenchymal organ, or significant trauma within the past 2 months • Recent trauma to the head or cranium • Prolonged cardiopulmonary resuscitation (> 2 minutes) within the past 2 weeks • Acute pericarditis and/or subacute bacterial endocarditis • Acute pancreatitis • Severe hepatic dysfunction, including hepatic failure, cirrhosis, portal hypertension (oesophageal varices) and active hepatitis • Active peptic ulceration • Arterial aneurysm and known arterial/venous malformation • Neoplasm with increased bleeding risk • Platelet count of below 100 000/mm3, expressed as: 100 x10^9/l • Systolic blood pressure > 185 mmHg or diastolic BP > 110 mmHg, or aggressive management (intravenous pharmacotherapy) necessary to reduce BP to these limits • Blood glucose < 2.8 mmol/L or > 22.2 mmol/L

Cautions:	Treatment must not be initiated later than 4.5 hours after last known well because of unfavourable benefit/risk ratio as positive treatment effects decrease over time. The benefit/risk ratio is considered less favourable (but still positive) in patients that have had a prior stroke or in those with known uncontrolled diabetes **Bleeding risk:** Thrombolytic therapy requires careful attention to all possible bleeding sites; including catheter insertion sites. The use of rigid catheters as well as intramuscular injections and non-essential handling of the patient should be avoided in the course of treatment with Tenecteplase. In the following conditions, the benefit-risk should be carefully evaluated: • Recent intramuscular injection or small recent traumas, puncture of major vessels or cardiac massage for resuscitation • Conditions with an increased risk of haemorrhage (other than those listed in contraindications) • Low body weight < 60 kg • Patients receiving oral anticoagulants: thrombolysis may be considered when appropriate test(s) show no clinically relevant activity on the coagulation system (e.g. INR ≤ 1.3 for vitamin K antagonists)(or locally agreed time limits relating to DOAC ingestion) **Intracranial haemorrhage risk:** The risk of ICH (intracranial haemorrhage) in patients with acute ischaemic stroke may be increased with Tenecteplase, in particular: • patients who have received aspirin may have a greater risk of ICH, particularly if Tenecteplase treatment is delayed • Tenecteplase should be administered with caution in the elderly (> 80 years) due to a higher bleeding risk **Special groups at reduced benefit/risk:** **Cerebral oedema:** Reperfusion of the ischaemic area may induce cerebral oedema in the infarcted zone. **Paediatric population:** Safety and efficacy data in children below 18 years of age are not available for Tenecteplase. Therefore, Tenecteplase is not recommended for use in children below 18 years of age
Strength of preparation used:	Tenecteplase, as Metalyse, 25mg (5000 unit) powder and solvent for solution for injection vials Reconstituted solution contains 5mg (1000 unit) per 1mL solution
Licensed Status:	Tenecteplase is a licensed medication in the UK.

	Marketing Autorisation holder: Boehringer Ingelheim International GmbH Binger Strasse 173 55216 Ingelheim am Rhein Germany Marketing Authorisation Number: PLGB 14598/0240
Authorised prescribers:	Tenecteplase may be prescribed by qualified members of the specialist stroke and thrombolysis team.
Authorised for administration:	Tenecteplase may be administered by members of the stroke thrombolysis team in accordance with local training for preparation and administration of intravenous medicines. Preparation and administration should be carried out after completion of pre agreed training specific to Tenecteplase. Boehringer provide the following training video and pdf: https://go.boehringer.com/R95yZ https://go.boehringer.com/RTz
Authorised for Preparation in clinical area:	Yes
Authorised for storage in clinical areas:	Yes
References:	SMC – tenecteplase (Metalyse) Summary Product Characteristics - Metalyse 5 000 units (25 mg) powder for solution for injection - Summary of Product Characteristics (SmPC) - (emc) (medicines.org.uk) Tenecteplase – Medusa IV Guide, accessed 30/10/24 Injectable Medicines Guide - Display - Tenecteplase - Intravenous - Version 5 - IVGuideDisplayMain.asp (medusaimg.nhs.uk)
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