Doncaster and Bassetlaw Teaching Hospitals
NHS Foundation Trust

Formulary Guidance: Thrombolysis

Alteplase is the fibrin specific thrombolytic of choice in the trust for STEMI

Percutaneous coronary intervention is preferred over fibrinolytic therapy in the treatment of STEMI to restore patency to an occluded coronary artery.

Fibrinolysis should only be offered to people presenting within 12 hours of the onset of symptoms if primary PCI cannot be delivered within 120 minutes.

The benefit of thrombolysis is time dependent with an increase of 1.6 deaths per hour of delay so once the decision has been made that thrombolysis is indicated this should be administered without delay.

Absolute contraindications for thrombolysis include recent haemorrhage, trauma or surgery, coma, ischaemic stroke within three months, aortic dissection, bleeding diatheses, known structural cerebrovascular lesions including neoplasms, and any prior intracerebral haemorrhage. A full list of contraindications can be found in the BNF.

In patients who cannot receive primary PCI within 120 minutes and who are being considered for thrombolysis, approximately 40–50% of patients are deemed ineligible for thrombolytic therapy. This is most often (in 35% of ineligible patients) due to delayed presentation (>12 hours from symptom onset). The thrombolysis checklist can be used to assess your patient for relative and absolute contra-indication to thrombolysis.

Alteplase Dosing information for thrombolysis in STEMI

There are two recommended regimens for thrombolysis of patient's with STEMI. Therefore it is important to ascertain how long it has been since the patient had initially presented with symptoms, and treat as below:

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a) Accelerated dose regime (90 minutes): For patients with acute myocardial infarction, in whom treatment can be started within 6 hours after symptom onset.

	≥65kg	**<65kg**
Alteplase (**accelerated regimen**) The maximum total dose of alteplase is 100mg.	**Step 1:** 15mg IV bolus	**Step 1**: 15mg IV bolus
	Step 2: 50mg IV infusion over 30 minutes	**Step 2:** 0.75mg/kg (Max 50mg) IV infusion over 30 minutes
	Step 3: 35mg IV infusion over 60 minutes	**Step 3:** 0.5mg/kg (Max 35mg) IV infusion over 60 minutes

b) For patients presenting 6-12 hours after the onset of symptoms, then use the 3 hour dosing regimen (See BNF for details on dosing).

Adjunctive therapy for alteplase in STEMI:

Anticoagulation:

Antithrombotic adjunctive therapy with platelet inhibitors and anticoagulants should be administered for the management of patients with ST-elevation myocardial infarction.

Currently the anticoagulant therapy of choice for patients prescribed alteplase for thrombolysis is unfractionated intravenous (IV) heparin. Heparin should be administered immediately before the alteplase, and continued for at least 48 hours, on a body weight adjusted basis, until revascularisation (if performed), or for the duration of the hospital stay (Up to 8 days).

Dosing information for IV unfractionated heparin:

- 60 units/kg IV bolus (maximum 4000 units), followed by an infusion of 12 units/kg per hour (maximum of 1000 units/hour), adjusted to target aPTT of 1.5-2 times that of control.
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For patients already receiving heparin treatment, the initial bolus should not be given.

Fondaparinux:

Fondaparinux in STEMI is only to be used where thrombolysis is **not** possible i.e. if patient presents > 12 after the initiation of symptoms or indicated for other reperfusion therapy, and is **not** to be prescribed if thrombolysis treatment has been initiated.

Antiplatelet therapy:

Co- administer dispersible Aspirin 300mg + Clopidogrel 300mg as a STAT dose. This should then be followed by a daily dose of 75mg OM for both antiplatelet agents. Alternative antiplatelet agents can be used in line with the antiplatelet guidance (see below).

Clopidogrel is the preferred ADP inhibitor of choice in thrombolysis. Consider switching to Ticagrelor after 48 hours if indicated.

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Dosage Information in Acute Stroke:

Acute Stroke (treatment must begin within 4.5 hours of symptom onset) – 900micrograms/kg (max. 90mg); the total dose is administered over 60 minutes, with the initial 10% of the dose given by intravenous injection.

The regional guidance on stroke thrombolysis should be followed and used to guide decisions for this indication. Stroke guidance can be found via:

https://extranet.dbth.nhs.uk/stroke-protocols-and-policies/

See also NICE Stroke Guidance March 2017

Dosage information in Massive Pulmonary Embolism (PE)

A total dose of alteplase of 100mg is administered over 2 hours using the following regime (if weight less than 65kg, the total dose should not exceed 1.5mg/kg):

- 10mg as a single bolus over 1 to 2 minutes
- followed by an intravenous infusion of 90mg over 2 hours.

Each 50mg vial should be reconstituted with 50ml water for injections as detailed within the packaging.

In situations when cardiac arrest is imminent, a bolus dose of 50mg of alteplase intravenously has been recommended by the BTS Guidelines for the Management of Pulmonary Embolism.

Adjunctive therapy in PE*:* After treatment with alteplase heparin therapy should be initiated (or resumed) when aPTT values are less than twice the upper limit of normal. The infusion should be adjusted to maintain aPTT between 50 to 70 seconds (1.5 to 2.5 fold of the reference value). This should be used until deemed appropriate to switch to an alternative anticoagulation (e.g Treatment dose LMWH or oral anticoagulation).

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Obtaining alteplase in an emergency

In an emergency when alteplase is required urgently, staff are advised to go to the closest department that stocks it.

Alteplase is held as a stock item on the following wards:

1. Accident and Emergency, Bassetlaw Hospital
2. Accident and Emergency, DRI
3. CCU, DRI
4. CCU, Bassetlaw
5. Ward 16, DRI

If for any reason any difficulties in obtaining this product (or any other urgently needed item) during pharmacy opening hours the responsible pharmacist/workload coordinator on duty should be contacted informing them of the clinical urgency of the supply (or your ward pharmacist if they are already on the ward):

Doncaster ext 644339
Bassetlaw ext 572465

Out of hours, Alteplase may be obtained directly from the Emergency Drug Cupboard. It is important to ensure that the supply is documented to ensure stock is replaced.

Alteplase is also available in the following Emergency Cupboards

1. Doncaster Royal Infirmary: In the Emergency Drug Cupboard. This is located in the emergency cupboard in the pharmacy department (old waiting area). The key is held by the nursing staff on AMU.

2. Bassetlaw Hospital: In the Emergency Drug Cupboard. This is located inside the first set of double doors leading in to the pharmacy department. A key is held by the nursing staff on ITU and on the ATC

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