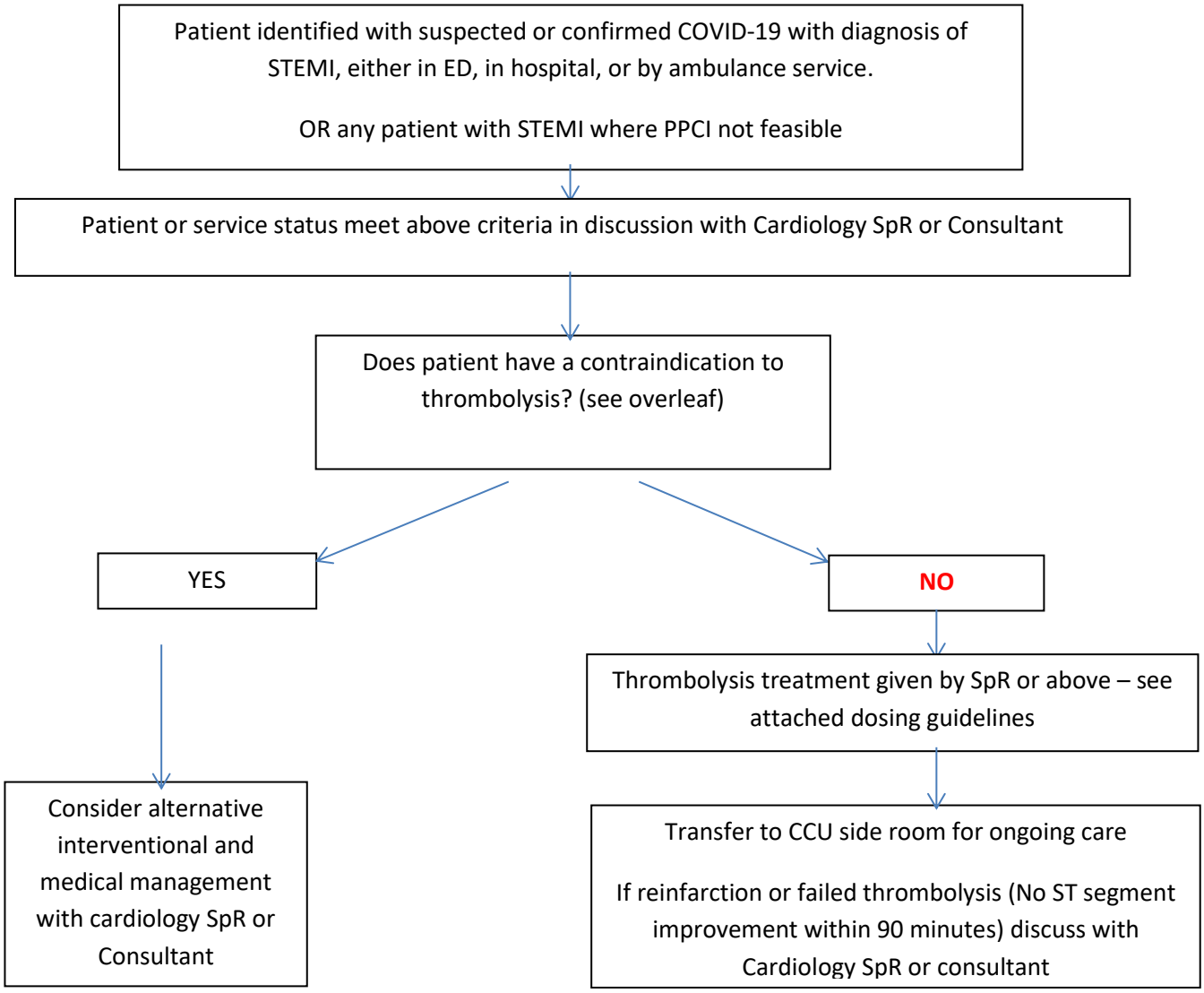
Brighton and Sussex University Hospitals NHS Trust

Alternative protocol for patients with acute myocardial infarction with suspected or definite COVID or when Primary PCI (PPCI) not possible or feasible

This guideline will apply to:

1. Infected COVID patients who are too unwell to undergo PPCI as ventilated and on haemodynamic support
2. An inability to provide PPCI as insufficient staff in catheter labs to provide the service safely
3. An insufficient supply of PPE to protect cardiac catheter lab staff



Note:
If STEMI identified and patient not already in RSCH, thrombolysis to be delivered in local DGH and only transferred to RSCH for cases of failed lysis in discussion with Cardiology SpR/Consultant

Thrombolysis pathway March 2020: Vicky Parish, Alison Warren, Sarah Connop, Sarah Young, Tim Williams, James Cockburn

Agree by Medical Pharmacy Governance (Jo Pendlebury) March 18th 2020. For review September 2020

Alteplase for STEMI

Alteplase is indicated for thrombolysis in ST elevation myocardial infarction (STEMI). **Within BSUH thrombolysis will only be considered if primary angioplasty is not available *and* on the advice of the cardiology consultant or cardiology SpR**

For all thrombolytic agents the conventional **indications** are:-

- Clinical evidence acute MI **plus**
- Admission within 12 hours of the onset of major symptoms **plus**

ST elevation=1mm or more in relevant limb leads **or** =2 mm or more in contiguous precordial leads **or** new bundle branch block.

Absolute Contra-Indications

- Hypersensitivity to the active ingredient or gentamicin
- Recent major trauma/surgery/head injury (within preceding month)
- Gastro-intestinal bleeding within the last month
- Known bleeding disorder (e.g. haemophilia)
- Possible dissection of the aorta
- Central nervous system trauma, neoplasm or AV malformation
- History or suspected intracranial haemorrhage, subarachnoid haemorrhage or haemorrhage from cerebral aneurysm
- Haemorrhagic stroke (or stroke of unknown origin) at any time
- Ischaemic stroke in the last 6 months
- Non-compressible punctures (e.g. liver biopsy, lumbar puncture)
- Severe liver disease including hepatic failure, oesophageal varies, cirrhosis, portal hypertension or active hepatitis
- Traumatic or prolonged resuscitation

Relative contra-indications

- Transient ischaemic attack in preceding 6 months
- Warfarin/anti-coagulant therapy or oral direct acting anticoagulant (apixaban, dabigatran edoxaban or rivaroxaban)
- Refractory hypertension (SBP> 180 mmHg and /or DBP > 110 mmHg)
- Advanced liver disease, acute pancreatitis
- Infective endocarditis, pericarditis
- Pregnancy or within 10 days post-partum
- Active peptic ulcer disease

Decisions will depend on clinical presentation

Contact cardiology SpR or Cardiology consultant for further advice

SUPPLIES AVAILABLE FROM (RSCH AND PRH):

A&E, Level 6a (CCU) PHARMACY, EMERGENCY DRUG CUPBOARD (PHARMACY)

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Alteplase for STEMI

Dosage is determined by the patient's body weight with a maximum total dosage of 100mg.
Ideally the patient should be weighed in order to calculate the dose however where this is not feasible an appropriate estimation of the weight must be made. **Administration of doses greater than recommended lead to an increase in risk of cerebral haemorrhage.**

Reconstitute each 50mg vial with 50mls of water for injection
(resultant concentration is 1mg alteplase /ml). Then dose as below:

Weight	Initial bolus	1st infusion	Followed immediately by 2nd infusion	Total dose
≥65kg (≥ 10stone 3lbs)	15mg	50mg over 30 minutes	35mg over 1 hour	100mg
<65kg (<10stone 3lbs)	15mg	0.75mg/kg over 30 minutes (Maximum dose = 50 mg)	0.5mg/kg over 1 hour Maximum dose = 35mg)	Not more than 100mg

Concomitant therapy (with thrombolysis for STEMI)
In the absence of contra-indications current guidelines at BSUH are:

Aspirin 300mg loading dose and then 75mg OD (continued lifelong)
Clopidogrel If < 75 years: 300mg loading dose then 75mg OD. If ≥75 years: 75mg OD (no loading dose) then 75mg OD

If loaded in the community with Ticagrelor, no further clopidogrel to be given in ED. Cardiology to decide on antiplatelet regime ongoing.

LMWH: Enoxaparin should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.

	Loading dose	Continued treatment CrCl >30ml/min	Continued treatment CrCl 15-30ml/min
Age < 75 years	Give 30mg IV enoxaparin as a bolus	Start 15 mins after IV loading dose. Give 1mg/kg SC enoxaparin **twice** daily (maximum dose for first two doses of 100mg/dose) until revascularisation or discharge (max 8 days)	Start 15 mins after IV loading dose. Give 1mg/kg SC enoxaparin **once** daily (maximum dose for first two doses of 100mg/dose) until revascularisation or discharge (max 8 days)
Age ≥ 75 years	None	Give 0.75mg/kg SC enoxaparin **twice** daily (maximum dose for first two doses of 75mg/dose) until revascularisation or discharge (max 8 days)	Give 0.75mg/kg SC enoxaparin **once** daily (maximum dose for first two doses of 75mg/dose) until revascularisation or discharge (max 8 days)

If eGFR <15ml/minute or cardiogenic shock give IV UFH as per trust IV heparin protocol

For administration of IV enoxaparin use the prefilled syringe, expel the excessive volume and give the remaining 30mg directly into the IV line. Enoxaparin should not be mixed or co-administered with other medications. Flush well after administration with sodium chloride 0.9% or glucose 5%.

Glycoprotein IIb/IIIa inhibitors : on advice of cardiology SPR/Consultant only. Concomitant use increases bleeding risk.
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Alteplase for STEMI

Failed thrombolysis?
An ECG should be repeated 90 minutes after administration to assess thrombolysis success. If the ST elevation has not decreased by 50% (in the lead of maximum ST elevation) this may indicate **failed thrombolysis**. The cardiology SpR/consultant should be contacted for further management decisions

For patients managed with PCI, if the last dose of enoxaparin was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last subcutaneous administration was given more than 8 hours before balloon inflation an intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin or UFH (as per usual lab procedures to be given.

Adverse effects/warnings

- As with other thrombolytic agents the most common adverse effect is bleeding. This may range from minor bleeding at puncture sites through to major bleeding including gastro-intestinal bleeding and intra-cerebral haemorrhage.

  In cases of serious bleeding stop heparin / low molecular weight heparin (administration of protamine should be considered) / glycoprotein IIb/IIIa receptor antagonists if currently prescribed and discuss with consultant cardiologist (+/- haematologist).

- Rarely allergic reactions have been reported. Symptoms have included rash, urticaria and laryngeal oedema.

- Arrhythmias may occur in association with therapy or re-perfusion.

- As with other thrombolytic agents bradycardia, hypotension, rhythm disorders and angina have been reported very commonly in patients where alteplase or has been administered for the treatment of acute myocardial infarction (>10% patients).

- Recurrent ischaemia, heart failure, re-infarction, cardiogenic shock, pericarditis and pulmonary oedema have been report in 1%-10% of patients.

- More rarely (>0.1%0 1%) cardiac arrest, mitral insufficiency, pericardial effusion, venous thrombosis, cardiac tamponade and cardiac rupture have been reported.

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