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# **Managing Myocardial Infarction**

Position Responsible: Medical Director

CGC Approved: June 2016

Consent Policy

SOP 2.1 Advanced Life Support

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#### 1 Background

**Related Documents** 

- 1.1 For those patients suffering an acute myocardial infarction (AMI), it has been shown repeatedly that the time from onset of symptoms to undergoing therapy is a major determinant of mortality. Nearly half of potentially salvageable myocardium is lost within 1 hour of the coronary artery being occluded, and two-thirds are lost within 3 hours. National initiatives have aimed to provide primary percutaneous coronary intervention (PPCI) for acute ST-elevation MIs (STEMIs) a more effective treatment than thrombolysis with improved outcomes and shorter hospital stays.
- 1.2 Medical Team members may be asked to attend a patient with an AMI or give advice to paramedics at the scene on suitability for PPCI or attend patients post cardiac arrest due to an AMI.

#### 2 Recognising an acute MI

- 2.1 Patients usually present acutely with:
  - A history and symptoms that are suggestive of ischaemic chest pain
  - 12 lead ECG showing acute changes consistent with acute myocardial infarction;
    - ST elevation of 2mm or more in 2 or more contiguous chest leads, or
    - ST elevation of 1mm in 2 or more contiguous limb leads, or
    - ST depression of 1mm or more in leads V1-3 with a dominant R wave (consistent with a posterior MI)
    - New onset left bundle branch block

## 3 Management

- 3.1 On confirmation of an AMI, the PPCI Checklist should be used to assess patients for their suitability for undergoing PPCI (see appendix 1). Those eligible meet the following criteria:-
  - Proven to have an AMI on 12-lead ECG
  - Onset of pain/symptoms within 12hrs
  - NO absolute contra-indications to PPCI
  - Able to get to PPCI centre within 120minutes from the time of the 999 call
- 3.2 Whilst the checklist is being undertaken, all patients should have the following unless contraindicated:-
  - Oxygen (if SpO<sub>2</sub> < 94%)</li>

- Aspirin 300mg (not if intubated)
- GTN sublingual spray (not if intubated)
- 3.3 Patients may require opiates to ease the pain.
- 3.4 Patients will be monitored using a 3-lead ECG, non-invasive blood pressure and pulse oximeter.

#### 4 Eligible for PPCI

- 4.1 Patients that are assessed as suitable for PPCI should receive;
  - 600mg clopidogrel orally (unless contraindicated or intubated)
- 4.2 Arrangement is made with ambulance control to expedite transport of the patient to the nearest Heart Attack Centre. This can be usually undertaken by a paramedic crew without Medical Team escort.
- 4.3 It is unlikely that STEMI patients being conveyed to Heart Attack Centres will need to be conveyed by air. In many cases, secondary road transfer is required to reach the centre, often negating the time and safety advantages of air transfer. The main exceptions to this may be;
  - STEMI patients in Suffolk, who require transfer to either Norwich, Papworth or Basildon
  - Where the nearest Heart Attack Centre is unable to accept a patient on the basis of capacity or reduced service availability, requiring longer transfer times.
- 4.4 The Heart Attack Centre is called giving details of the patient and an estimated time of arrival.
- 4.5 This service is available at the following Heart Attack Centres 24/7:-

| 1 | Papworth            | 01480 364567 |
|---|---------------------|--------------|
| 2 | Norwich             | 01603 646599 |
| 3 | Basildon CTC        | 01268 394184 |
| 4 | Harefield           | 01895 824278 |
| 5 | Lister              | 01438 284668 |
| 6 | Kettering GH        | 01536 491458 |
| 7 | Lincoln             | 07964134417  |
| 8 | Leicester Glenfield | 01162563222  |
| 9 | Nottingham City     | 0115693995   |

## 5 Patients not eligible for PPCI

- 5.1 Those patients that are not eligible for PPCI are also unlikely to be eligible for pre-hospital thrombolysis.
- 5.2 If the patient will not arrive at a Heart Attack Centre within 120mins from the time of the 999 call, then pre-hospital thombolysis can be considered. This would be unusual in our area.
- 5.3 The following are contraindications to the administration of thrombolysis. Points with an asterisk may be considered as relative contraindications:
  - Active internal bleeding or uncontrollable external bleeding
  - Suspected aortic dissection
  - Uncontrolled blood pressure (systolic >200, diastolic >120mmHg)
  - Haemorrhagic stroke within the past 2 months
  - Recent head injury (2 weeks)
  - Active untreated diabetic haemorrhagic retinopathy
  - Intracranial neoplasms
  - Pregnancy \*
  - CPR > 5 minutes \*
  - Bleeding disorders \*
  - Anticoagulation or INR >1.8 \*
  - Recent surgery \*

Age is not a contraindication. Those over 75yrs old have been shown to particularly benefit from thrombolysis.

5.4 If thrombolysis is indicated and there are no contraindications, the patient should be consented for thrombolysis. Verbal consent should be taken by the Doctor and recorded on the PRF as detailed in the Magpas Consent Policy.

Following consent, thrombolysis can be given with monitoring attached.

- 5.5 All patients who are thrombolysed in the community should be identified with a specific wrist band detailing name and treatment given.
- 5.6 The preferred thrombolytic is tenecteplase. Its dose is calculated based upon the estimated body weight of the patient and is given as a bolus over 10 seconds (see table) **preceded** by a bolus of heparin 5000IU.

| Body weight | Tenecteplase dose<br>(units) | Tenecteplase<br>dose<br>(mg) | Tenecteplase dose<br>(ml of reconstituted<br>solution) |
|-------------|------------------------------|------------------------------|--|
| <60         | 6000                         | 30                           | 6  |
| 60 – 70     | 7000                         | 35                           | 7  |
| 70 – 80     | 8000                         | 40                           | 8  |
| 80 – 90     | 9000                         | 45                           | 9  |
| >90         | 10000                        | 50                           | 10   |

- 5.7 The most common side effects are reperfusion arrhythmias, hypotension, bleeding and stroke. These should be treated as clinically appropriate and the equipment for doing so should be readily available.
- 5.8 Patients should then be transported to the nearest Emergency Department by ambulance; this does not normally require the medical team to escort the patient, unless the crew composition is unable to continue providing paramedic-level care.

#### 6 Cardiac arrest

- 6.1 Those patients that present with symptoms of an AMI that then proceed to cardiac arrest should be resuscitated as per SOP 2.1 Adult Cardiac Life Support.
- 6.2 If the patient regains a pulse and spontaneous breathing AND meets the criteria for PPCI, they should continue to the Heart Attack Centre with a pre-alert. The team should escort these patients to the PPCI centre following the ROSC Care Bundle targets.
- 6.3 If the patient regains a pulse but either requires assistance with ventilation or is intubated, the patient should be discussed with the on-call cardiology registrar (via the Heart Attack Centre phone line) at the Heart Attack Centre. The availability of ITU beds is often the limiting factor and may require transport to a more distant Heart Attack Centre.

### 7 Performance and monitoring

- **7.1** The aim is to reduce 'call to balloon' times as much as possible which has been shown to improve outcome. Delays at all stages should be reduced by the team.
- **7.2** There are occasions when the pathway does not meet the needs of the patient, eg refusal by the Heart Attack Centre of an intubated patient. These should be raised and monitored through the Magpas SER system.

## Appendix 1 – Primary PCI checklist

|  | of Birth   |   |  | NHS Trust                                       |  |
|--|--|---|--|---|--|
| Date   | Number   |   | 20 Cad No. Assessment an for PPCI  | d Checki  |  |
| IS   | PPCI INDICA  | TED?  |  |   |  |
|  | Peak onset<br>last 12 hour   | Peak onset of chest pain/cardiac symptoms typical of Acute Myocardial Infarction in the last 12 hours and is there <u>one</u> of the following patterns on the 12 lead ECG: |  |   |  |
|  |  | (a)   | ST elevation 2mm or greater in 2 or more adjacent chest leads  | YON   |  |
|  | OR   | (b)   | ST elevation 1mm or greater in 2 or more adjacent limb leads (there will usually be reciprocal depression in either 1 or AVL)  | _ Y _ N   |  |
|  | OR   | (c)   | RBBB with ST elevation in either of the 2 patterns above   | Y N   |  |
|  | OR   | (d)   | LBBB or paced rhythm with 'classic' clinical picture of AMI (grey, clammy, central crushing chest pain with radiation to jaw/arms)   | YN  |  |
|  | OR   | (e)   | Marked ST depression V1-3 and dominant R wave in V1 suggesting a<br>Posterior MI (they will often have suspicious inferior ECG changes)  | _ Y _ N   |  |
|  |  |   | hen PPCI is indicated.   |   |  |
| 1  | Is the pati  | ent un  | conscious? Exclude ventilated post ROSC STEMI patients - see below   | YN  |  |
| 2  | Is the pati  | ent ac  | tively bleeding? e.g. haematemesis, melaena  | Y N   |  |
| 3  | Have card  | Y N   |  |   |  |
| 4  | Has the patient been resuscitated from a cardiac arrest but the underlying diagnosis is uncertain?   |   |  | _ Y _ N   |  |
|  | immediate<br>dept.   | ely su  | any of the above questions is <u>YES</u> then the patient is not litable for PPCI and should be transferred to the nearest DGH A/E are all NO then go on to assess for <u>relative</u> contraindications   |   |  |
| 1  | Does the or pain wo  | YN  |  |   |  |
| 2  | 100000000000000000000000000000000000000  | 2000  | been involved in an incident causing traumatic bodily injury (not CPR)?  | □ Y □ N   |  |
| 3  | Does the I   | ECG s   | show LBBB or paced rhythm without a clinical picture of AMI?   | OY N  |  |
| If the   | patient is p   | ost R   | OSC and meets the PPCI criteria this should be discussed with the read patients to ensure that the centre has sufficient ITU capacity.   | espective centr                                 |  |
| If the<br>PPC<br>0126<br>relat<br>this<br>Also | e answer is Note to a second t | NO to<br>oworth<br>arran<br>dication  | all contra indication questions then transfer for PPCI is indicated cat no 01480 364567, Norwich 01603 646599, Harefield 01895 824278, or Bige transfer. If the answer is NO to absolute contraindications but YE ons telephone the Trust Clinical advisor on 07753 950843 to discuss e any other concerns regarding the patients condition, ECG or any of | asildon ECTC<br>S to any of the<br>management o |  |
| trans  | ferred to a PP   | CI Cer  | nsferred for PPCI, administer Aspirin 300mgs and Clopidogrei 600mgs. If the<br>intre please ensure the patient and any relatives/friends present are aware of<br>sheet given to the relatives/friends.   |   |  |
|  |  |   |  |   |  |