



# ESSENTIAL MESSAGES FROM ESC GUIDELINES

Committee for Practice Guidelines

To improve the quality of clinical practice and patient care in Europe



## AMI - STEMI

GUIDELINES FOR THE MANAGEMENT OF ACUTE  
MYOCARDIAL INFARCTION IN PATIENTS PRESENTING  
WITH PERSISTENT ST-SEGMENT ELEVATION

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# ESC ESSENTIAL MESSAGES

## ESC GUIDELINES FOR THE MANAGEMENT OF ACUTE MYOCARDIAL INFARCTION IN PATIENTS PRESENTING WITH ST-SEGMENT ELEVATION\*

The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology

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# ESSENTIAL MESSAGES FROM THE ESC GUIDELINES FOR THE MANAGEMENT OF ACUTE MYOCARDIAL INFARCTION IN PATIENTS PRESENTING WITH ST-SEGMENT ELEVATION

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# Take home messages

## Emergency care

- Management, including diagnosis and treatment, starts at the point of first medical contact.
- A 12-lead ECG must be obtained as soon as possible, with a target delay of  $\leq 10$  min.
- ECG monitoring must be initiated as soon as possible in all patients with suspected STEMI.
- In patients with signs and symptoms of ongoing myocardial ischemia, atypical ECG presentations deserve prompt management.
- The pre-hospital management of STEMI patients must be based on regional networks designed to deliver reperfusion therapy expeditiously and effectively, with efforts made to make primary PCI available to as many patients as possible.
- Primary PCI-capable centres must deliver 24/7 service, be able to start primary PCI as soon as possible and within 60 min from the initial call.
- All hospitals and EMSs participating in the care of patients with STEMI must record and monitor delay times and work to achieve and maintain the following quality targets:
  - ◆ First medical contact to first ECG  $\leq 10$  min;
  - ◆ First medical contact to reperfusion therapy;  
For fibrinolysis  $\leq 30$  min;  
For primary PCI  $\leq 90$  min ( $\leq 60$  min if the patient presents within 120 minutes of symptom onset or directly to a PCI-capable hospital).

## Reperfusion therapy

- Reperfusion therapy is indicated in all patients with symptoms of  $<12$  hours duration and persistent ST-segment elevation or (presumed) new LBBB.
- Reperfusion therapy (preferably primary PCI) is indicated if there is evidence of ongoing ischaemia, even if symptoms may have started  $>12$  hours beforehand or if pain and ECG changes have been stuttering.

## Primary PCI

- Primary PCI is the recommended reperfusion therapy over fibrinolysis if performed by an experienced team within 120 minutes of FMC.
- Primary PCI is indicated for patients with severe acute heart failure or cardiogenic shock, unless the expected PCI related delay is excessive and the patient presents early after symptom onset.
- Stenting is recommended (over balloon angioplasty alone) for primary PCI.
- Routine PCI of a totally occluded artery  $>24$  hours after symptom onset in stable patients without signs of ischaemia (regardless of whether fibrinolysis was given or not) is not recommended.
- If the patient has no contraindications to prolonged DAPT and is likely to be compliant, DES should be preferred over BMS.
- Dual antiplatelet therapy with aspirin and an ADP-receptor blocker is recommended with
  - ◆ Prasugrel in clopidogrel-naïve patients, if no history of prior stroke/TIA and age  $<75$
  - ◆ Ticagrelor
  - ◆ or Clopidogrel, if prasugrel or ticagrelor are not available or contraindicated
- An injectable anticoagulant must be used
  - ◆ Bivalirudin is preferred over heparin and a GPIIb/IIIa blocker
  - ◆ Enoxaparin may be preferred over unfractionated heparin
  - ◆ Unfractionated heparin must be used in patients not receiving either bivalirudin or enoxaparin



# Take home messages

## Fibrinolytic therapy

- Fibrinolytic therapy is recommended within 12 hours of symptom onset in patients without contraindications if primary PCI cannot be performed by an experienced team within 120 min of first medical contact.
- In patients presenting early (<2 hours after symptom onset) with a large infarct and low bleeding risk, fibrinolysis should be considered if time from first medical contact to balloon inflation is >90 min.
- If possible, fibrinolysis should start in the pre-hospital setting.
- A fibrin-specific agent (tenecteplase, alteplase, reteplase) is recommended (over non-fibrin specific agents).
- Oral or i.v. aspirin must be administered. Clopidogrel is indicated in addition to aspirin.
- Anticoagulation is recommended in STEMI patients treated with lytics until revascularization (if performed) or for the duration of hospital stay up to 8 days. The anticoagulant can be:
  - ♦ Enoxaparin i.v followed by s.c. (preferred over unfractionated heparin),
  - ♦ Unfractionated heparin given as a weight adjusted IV bolus and infusion,
  - ♦ In patients treated with streptokinase, Fondaparinux i.v. bolus followed by s.c. dose 24 hours later.
- Transfer to a PCI-capable centre following fibrinolysis is indicated in all patients after fibrinolysis.
- Rescue PCI is indicated immediately when fibrinolysis has failed (<50% ST-segment resolution at 60 min).
- Emergency PCI is indicated in the case of recurrent ischaemia or evidence of re-occlusion after initial successful fibrinolysis.
- Emergency angiography with a view to revascularization is indicated in heart failure/shock patients after initial fibrinolysis.
- Angiography with a view to revascularization (of the infarct-related artery) is indicated after successful fibrinolysis.
- Optimal timing of angiography for stable patients after successful lysis: 3–24 hours.

## Special subsets

- Both genders must be managed in similar fashion.
- A high index of suspicion for MI must be maintained in women, diabetics and elderly patients with atypical symptoms.
- Special attention must be given to proper dosing of antithrombotics in elderly and renal failure patients.

## Logistics

- All hospitals participating in the care of STEMI patients should have a coronary care unit equipped to provide all aspects of care, including treatment of ischaemia, severe heart failure, arrhythmias and common comorbidities.
- Patients undergoing uncomplicated successful reperfusion therapy should be kept in the coronary care unit for a minimum of 24 hours, after which they may be moved to a step-down monitored bed for another 24–48 hours.

# Take home messages

## Risk assessment and imaging

- In the acute phase, when diagnosis is uncertain, emergency echocardiography may be useful. However, if inconclusive or unavailable and persistent doubt, emergency angiography should be considered.
- After the acute phase, all patients should have an echocardiography for assessment of infarct size and resting LV function, If echocardiography is not feasible, MRI may be used as an alternative.
- For patients with multivessel disease, or in whom revascularization of other vessels is considered, stress testing or imaging for ischaemia and viability is indicated.

## Long term therapies

- Risk factor control, particularly smoking, must be stringent.
- Antiplatelet therapy is indicated indefinitely.
- Dual antiplatelet therapy is indicated up to 12 months.
- Oral treatment with beta-blockers is indicated in patients with heart failure or left ventricular dysfunction.
- A fasting lipid profile must be obtained in all patients.
- A high-dose statin should be initiated or continued early after admission in all patients without contraindication or history of intolerance.
- ACE inhibitors are indicated in patients with heart failure, LV systolic dysfunction diabetes or an anterior infarct.
- An ARB is an alternative to ACE inhibitors.
- Aldosterone antagonists are indicated if EF  $\leq$ 40% or heart failure or diabetes, provided there is no renal failure or hyperkalaemia.

# Major gaps in evidence

- Strategies to minimize early cardiac arrest.
- Improving patient and public awareness of STEMI symptoms.
- Optimizing clinical pathways for high-quality, homogeneous early STEMI diagnosis and management.
- Reducing or minimizing myocardial injury and left ventricular dysfunction following STEMI.
- Defining the optimal management strategy for non-culprit vessels in primary PCI patients.
- Defining the optimal long-term antithrombotic regimen in patients receiving stents and who have an indication for oral anticoagulants.
- Defining the role for pre-hospital thrombolysis in patients presenting early.
- Defining the optimal combination and duration of antithrombotic therapies.
- Defining the optimal glucose-management goals and strategy in patients with known diabetes or acute hyperglycaemia.
- Developing percutaneous techniques for managing ventricular septal defects.
- Effective and safe of cell therapy to replace myocardium or minimize the consequences of myocardial injury.
- Strategy to minimize risk of sudden death in patients with ventricular tachycardia or ventricular fibrillation during or after STEMI.
- Effective strategies to achieve and maintain long-term effective risk factor control.



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