Selected Routine Medical Therapies for STEMI

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Routine Medical Therapies

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Beta Blockers

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I IIa IIb III

Oral beta blockers **should be initiated in the first 24 hours in patients with STEMI** who do not have any of the following:

- Signs of HF.
- Evidence of a low output state.
- Increased risk for cardiogenic shock,*
- Other contraindications to use of oral beta blockers (PR interval >0.24 seconds, second- or third-degree heart block, active asthma, or reactive airways disease).

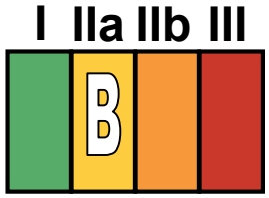
I IIa IIb III

Beta blockers **should be continued during and after hospitalization for all patients with STEMI** and with no contraindications to their use.

*Risk factors for cardiogenic shock (the greater the number of risk factors present, the higher the risk of developing cardiogenic shock) are age >70 years, systolic BP <120 mm Hg, sinus tachycardia >110 bpm or heart rate <60 bpm, and increased time since onset of symptoms of STEMI.

Beta Blockers

Patients with initial contraindications to the use of beta blockers in the first 24 hours after STEMI **should be reevaluated** to determine their subsequent eligibility.



It is reasonable to administer **intravenous beta blockers at the time of presentation to patients with STEMI** and no contraindications to their use who are hypertensive or have ongoing ischemia.

- The efficacy and safety of the early routine use of intravenous beta blockers were examined in COMMIT (Clopidogrel and Metoprolol in Myocardial Infarction Trial) .

- Early intravenous metoprolol followed by high-dose oral therapy had a **neutral effect** on the combined endpoint of death, recurrent MI, or cardiac arrest.

- There were **lower rates of recurrent MI and VF** in the treated group, outcomes that were balanced by a significantly **higher rate of cardiogenic shock** with metoprolol, especially on days 0 and 1.

- The likelihood of developing cardiogenic shock was increased in certain subgroups, including patients with:
  - Age 70 years
  - Systolic BP 120 mm Hg.
  - Presenting heart rate more than 110 or less than 60 bpm.
  - Increased time since onset of symptoms of STEMI.

- The benefit of beta blockers for secondary prevention has been established in numerous trials and appears to be greatest for patients with MI complicated by HF, LV dysfunction, or ventricular arrhythmias.

- The long-term duration of routine beta-blocker therapy after uncomplicated MI in patients without HF or hypertension has not been prospectively addressed.

- AHA/ACCF secondary prevention guidelines recommend a **3-year treatment course** in this patient subset.

Renin-Angiotensin-Aldosterone System Inhibitors

Renin-Angiotensin-Aldosterone System Inhibitors

An ACE inhibitor **should be administered within the first 24 hours to all patients with STEMI with**:

- Anterior location
- HF
- EF less than or equal to 0.40.

unless contraindicated.

An **ARB** should be given to patients with STEMI who have indications for but **are intolerant of ACE inhibitors**.

- Oral ACE inhibitors reduce fatal and nonfatal major cardiovascular events in patients with STEMI.

- Their protective effects have been demonstrated independent of the use of other pharmacotherapies (i.e., fibrinolytics, aspirin, and beta blockers).

- The magnitude of clinical benefit is greatest in high-risk patient subgroups (i.e., anterior MI, EF 0.40, HF, prior MI, and tachycardia).

- Demonstration of an **early benefit** (within the first 24 hours) supports the prompt use of these agents in patients without existing contraindications (hypotension, shock, bilateral renal artery stenosis or history of worsening of renal function with ACE inhibitor/ARB exposure, renal failure, or drug allergy).

- The role of **routine long-term ACE inhibitor therapy in low-risk patients after STEMI** who have been revascularized and treated with aggressive lipid-lowering therapies **is less certain.**

- ARBs are indicated for ACE inhibitor–intolerant patients. Specifically, valsartan was found to be noninferior to captopril in the VALIANT (Valsartan in Acute Myocardial Infarction) trial.

Renin-Angiotensin-Aldosterone System Inhibitors

An **aldosterone antagonist** should be given to patients with STEMI and no contraindications **who are already receiving an ACE inhibitor and beta blocker** and who have an **EF less than or equal to 0.40** and either symptomatic HF or DM.

- The EPHESUS (Eplerenone Post-Acute Myocardial Infarction Heart Failure Efficacy and Survival) study established the benefit of an aldosterone antagonist, eplerenone, added to optimal medical therapy in eligible patients (creatinine 2.5 mg/dL in men and 2.0 mg/dL in women, potassium 5.0 mEq/L) **3 to 14 days after STEMI with EF 0.40 and either symptomatic HF or diabetes mellitus**.

- A post hoc analysis of the EPHESUS trial suggested a **time-dependent treatment effect of eplerenone.**

- Earlier initiation of the drug (7 days) significantly reduced the rates of all-cause mortality, sudden cardiac death (SCD), and cardiovascular mortality/hospitalization, whereas initiation 7 days had no significant effect on outcomes .

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Lipid Management

Lipid Management

High-intensity statin therapy should be initiated or continued in all patients with STEMI and no contraindications to its use.

It is reasonable to obtain a fasting lipid profile in patients with STEMI, preferably within 24 hours of presentation.

- Treatment with statins in patients stabilized after an ACS, including STEMI, lowers the risk of coronary heart disease death, recurrent MI, stroke, and the need for coronary revascularization.

- More intensive statin therapy, compared with less intensive therapy, appears to be associated with an additional lowering of nonfatal clinical endpoints.

- Statin therapy after ACS is beneficial even in patients with baseline low-density lipoprotein cholesterol levels 70 mg/dL.

- Improved compliance with therapy is a strong rationale for timing the initiation of lipid-lowering drug therapy before discharge after STEMI.

- Among currently available statins, only high-dose atorvastatin (80 mg daily) has been shown to reduce death and ischemic events among patients with ACS.

- Cardiovascular event rates were not significantly reduced with a tiered strategy of simvastatin (40-mg daily for 1 month followed by 80 mg daily) in the A to Z Trial (Aggrastat to Zocor), and concerns have been raised recently about the safety of high-dose simvastatin (i.e., 80 mg daily).

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Calcium Channel Blockers

- An overview of 28 RCTs involving 19,000 patients demonstrated **no beneficial effect** on infarct size or the rate of reinfarction when calcium channel blocker therapy was initiate during either the acute or convalescent phase of STEMI.

- Calcium channel blockers **may be useful** to relieve ischemia, lower BP, or control the ventricular response rate to AF **in patients who are intolerant of beta blockers.**

- Caution is advised in patients with LV systolic dysfunction.

- The use of the **immediate-release nifedipine is contraindicated in patients with STEMI** because of hypotension and reflex sympathetic activation with tachycardia.

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Nitrates

- Although nitroglycerin can ameliorate symptoms and signs of myocardial ischemia by reducing LV preload and increasing coronary blood flow, it **generally does not attenuate the myocardial injury** associated with epicardial coronary artery occlusion unless vasospasm plays a significant role.

- Intravenous nitroglycerin may be **useful to treat patients with STEMI and hypertension or HF**.

- Nitrates **should not be given to** patients with:
  - Hypotension
  - Marked bradycardia or tachycardia
  - RV infarction
  - 5 phosphodiesterase inhibitor use within the previous 24 to 48 hours.

- There is **no role for the routine use of oral nitrates in the convalescent phase of STEMI**.

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Analgesics

Morphine, Nonsteroidal Anti-Inflammatory Drugs, and Cyclooxygenase II Inhibitors

- In the absence of a history of hypersensitivity, **morphine sulfate is the drug of choice for pain relief in patients with STEMI,** especially those whose course is complicated by acute pulmonary edema.

- It can alleviate the work of breathing, reduce anxiety, and favorably affect ventricular loading conditions.

- The dose of morphine sulfate needed to achieve adequate pain control will vary depending on patient age, body size, BP, and heart rate.

- **Naloxone** can be administered in doses of 0.1 to 0.2 mg IV every 15 minutes when indicated to reverse the narcotic effects of morphine, and atropine 0.5 to 1.5 mg IV may be administered to counter excessive morphine-related bradycardia.

- Epidemiological studies and retrospective analyses of RCTs have suggested that **nonsteroidal anti-inflammatory drugs** and selective cyclooxygenase II enzyme (COX-2) inhibitors may be associated with an increased risk of death, reinfarction, cardiac rupture, hypertension, renal insufficiency, and HF.

- **Nonsteroidal anti-inflammatory drugs and COX-2 inhibitors are contraindicated in patients with STEMI.** They should not be initiated in the acute phase and should be discontinued in patients using them before hospitalization.

Thank you!