American Heart Association

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ACC/AHA 2007 STEMI Focused Update Slide Set
Based on the ACC/AHA 2007 Focused Update of the Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction (STEMI)

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This slide set was adapted from the ACC/AHA 2007 Focused Update of the 2004 Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction (Circulation 2007 116: 0000-0000)
ACC/AHA 2007 Focused Update of the 2004 Guidelines for the Management of Patients With ST-Elevation Myocardial Infarction

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These updated guidelines reflect a consensus of expert opinion following a thorough literature review that consisted primarily of late-breaking trials identified through a broad-based vetting process.

It is important to note that this update takes into account recent data and further refines the 2004 guidelines. It is not meant to be an all-inclusive document.
Applying Classification of Recommendations and Level of Evidence
## Size of Treatment Effect

<table>
<thead>
<tr>
<th><strong>CLASS I</strong></th>
<th>Benefit &gt;&gt; Risk</th>
<th>Procedure/Treatment SHOULd be performed/administered</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL A</strong></td>
<td>Multiple (3-5) population risk strata evaluated*</td>
<td>General consistency of direction and magnitude of effect</td>
</tr>
<tr>
<td>Recommendation that procedure or treatment is useful/effective</td>
<td>Sufficient evidence from multiple randomized trials or meta-analyses</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL B</strong></td>
<td>Limited (2-3) population risk strata evaluated*</td>
<td>Limited evidence from single randomized trial or nonrandomized studies</td>
</tr>
<tr>
<td>Recommendation that procedure or treatment is useful/effective</td>
<td>Limited evidence from single randomized trial or nonrandomized studies</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL C</strong></td>
<td>Very limited (1-2) population risk strata evaluated*</td>
<td>Only expert opinion, case studies, or standard-of-care</td>
</tr>
<tr>
<td>Recommendation that procedure or treatment is useful/effective</td>
<td>Only expert opinion, case studies, or standard-of-care</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CLASS IIa</strong></th>
<th>Benefit &gt;&gt; Risk</th>
<th>Additional studies with focused objectives needed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL A</strong></td>
<td>Multiple (3-5) population risk strata evaluated*</td>
<td>General consistency of direction and magnitude of effect</td>
</tr>
<tr>
<td>Recommendation in favor of treatment or procedure being useful/effective</td>
<td>Some conflicting evidence from multiple randomized trials or meta-analyses</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL B</strong></td>
<td>Limited (2-3) population risk strata evaluated*</td>
<td>Limited evidence from single randomized trial or nonrandomized studies</td>
</tr>
<tr>
<td>Recommendation in favor of treatment or procedure being useful/effective</td>
<td>Some conflicting evidence from single randomized trial or nonrandomized studies</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL C</strong></td>
<td>Very limited (1-2) population risk strata evaluated*</td>
<td>Only expert opinion, case studies, or standard-of-care</td>
</tr>
<tr>
<td>Recommendation in favor of treatment or procedure being useful/effective</td>
<td>Only diverging expert opinion, case studies, or standard-of-care</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CLASS IIb</strong></th>
<th>Benefit ≥ Risk</th>
<th>Additional studies with broad objectives needed; additional registry data would be helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL A</strong></td>
<td>Multiple (3-5) population risk strata evaluated*</td>
<td>General consistency of direction and magnitude of effect</td>
</tr>
<tr>
<td>Recommendation's usefulness/efficacy less well established</td>
<td>Greater conflicting evidence from multiple randomized trials or meta-analyses</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL B</strong></td>
<td>Limited (2-3) population risk strata evaluated*</td>
<td>Limited evidence from single randomized trial or nonrandomized studies</td>
</tr>
<tr>
<td>Recommendation's usefulness/efficacy less well established</td>
<td>Greater conflicting evidence from single randomized trial or nonrandomized studies</td>
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</tr>
<tr>
<td><strong>LEVEL C</strong></td>
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<td>Recommendation's usefulness/efficacy less well established</td>
<td>Only diverging expert opinion, case studies, or standard-of-care</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>CLASS III</strong></th>
<th>Risk ≥ Benefit</th>
<th>No additional studies needed</th>
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</thead>
<tbody>
<tr>
<td><strong>LEVEL A</strong></td>
<td>Multiple (3-5) population risk strata evaluated*</td>
<td>General consistency of direction and magnitude of effect</td>
</tr>
<tr>
<td>Recommendation that procedure or treatment is not useful/effective and may be harmful</td>
<td>Sufficient evidence from multiple randomized trials or meta-analyses</td>
<td></td>
</tr>
<tr>
<td><strong>LEVEL B</strong></td>
<td>Limited (2-3) population risk strata evaluated*</td>
<td>Limited evidence from single randomized trial or nonrandomized studies</td>
</tr>
<tr>
<td>Recommendation that procedure or treatment is not useful/effective and may be harmful</td>
<td>Limited evidence from single randomized trial or nonrandomized studies</td>
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<tr>
<td><strong>LEVEL C</strong></td>
<td>Very limited (1-2) population risk strata evaluated*</td>
<td>Only expert opinion, case studies, or standard-of-care</td>
</tr>
<tr>
<td>Recommendation that procedure or treatment is not useful/effective and may be harmful</td>
<td>Only expert opinion, case studies, or standard-of-care</td>
<td></td>
</tr>
</tbody>
</table>

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Suggested phrases for writing recommendations:

- should
- is recommended
- is indicated
- is useful/effective/beneficial
- is reasonable
- can be useful/effective/beneficial
- is probably recommended or indicated
- may/might be considered
- may/might be reasonable
- usefulness/effectiveness is unknown/unclear/uncertain or not well established
- is not recommended
- is not indicated
- should not
- is not useful/effective/beneficial
- may be harmful

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ACC/AHA Update of the Guidelines for the Management of Patients with ST-Elevation Myocardial Infarction
Analgesia

Morphine sulfate (2 - 4 mg IV with increments of 2 - 8 mg IV, repeated at 5 - 15 minute intervals) is the analgesic of choice for STEMI-associated pain management

No change in recommendation

Patients routinely taking NSAIDs (except for aspirin), both non-selective as well as COX-2 agents, should have those agents discontinued at the time of presentation with STEMI due to increased risk of mortality, reinfarction, hypertension, heart failure and myocardial rupture associated with their use

New recommendation
NSAIDS (except for aspirin), both non-selective as well as COX-2 selective agents, should not be administered during hospitalization for STEMI patients due to the increased risk of mortality, reinfarction, hypertension, heart failure, and myocardial rupture associated with their use. **New recommendation**
Beta-Blockers

Oral beta-blocker therapy should be initiated in the first 24 hours for patients who do not have the following:

- Signs of heart failure
- Evidence of low output state
- Increased risk for cardiogenic shock
  - Age >70 years
  - Systolic blood pressure <120 mm Hg
  - Sinus tachycardia (heart rate >110 or <60 bpm)
- Increased time since onset of symptoms of STEMI
- Relative contraindications to beta-blockade
  - PR interval >0.24 seconds
  - Second- or third-degree heart block
  - Active asthma or reactive airway disease

*Modified recommendation*
Beta-Blockers

Patients with early contraindications within the first 24 hours of STEMI should be reevaluated for candidacy for beta-blocker therapy as secondary prevention.

*No change in recommendation*

Patients with moderate or severe LV failure should receive beta-blocker therapy as secondary prevention with a gradual titration.

*No change in recommendation*
It is reasonable to administer an IV beta-blocker at the time of STEMI presentation to patients who are hypertensive and who do not have any of the following:

- Signs of heart failure
- Evidence of low output state
- Increased risk for cardiogenic shock
- Other relative contraindications to beta-blockade

*No change in recommendation (text modified)*

IV beta blockers should not be administered to patients who have any of the following:

- Signs of heart failure
- Evidence of low output state
- Increased risk of cardiogenic shock
- Other relative contraindications to beta-blockade

*New recommendation*
Reperfusion

STEMI patients presenting to a hospital with PCI capability should be treated with primary PCI within 90 minutes of first medical contact.

*Modified recommendation*

STEMI patients presenting to a hospital without PCI capability and who cannot be transferred to a PCI center for intervention within 90 minutes of first medical contact should be treated with fibrinolytic therapy within 30 minutes of hospital presentation, unless contraindicated.

*Modified recommendation*
Onset of symptoms of STEMI

Call 9-1-1

Call fast

9-1-1 EMS Dispatch

EMS on-scene

- Encourage 12-lead ECGs
- Consider prehospital fibrinolytic if capable and EMS-to-needle within 30 min

EMS Triage Plan

EMS Transport: EMS-to-Balloon

EMS Transport: EMS-to-Balloon

Patient self-transport: Hospital Door-to-Balloon

Goals

Patient 5 min after symptom onset

Dispatch 1 min

EMS on scene Within 8 min Prehospital fibrinolysis: EMS-to-Needle within 30 min

EMS transport Total ischemic time: Within 120 min*

*Golden Hour = First 60 minutes
Facilitated PCI

Facilitated PCI using regimens other than full-dose fibrinolytic therapy might be considered as a reperfusion strategy when the following are present:

- Patients at high risk
- PCI is not immediately available within 90 minutes
- Bleeding risk is low
  - Younger age
  - Absence of poorly controlled hypertension
  - Normal body weight

*Modified recommendation*

A planned reperfusion strategy using full-dose fibrinolytic therapy followed by immediate PCI may be harmful.

*Modified recommendation*
Immediate or Emergency Invasive Strategy and Rescue PCI

Coronary angiography with intent to perform PCI (or emergency CABG) is recommended for patients who have received fibrinolytic therapy and have any of the following:

- Cardiogenic shock in patients less than 75 years who are suitable candidates for revascularization.
- Severe congestive heart failure and/or pulmonary edema (Killip class III).
- Hemodynamically compromising ventricular arrhythmias.

*Modified recommendation*
**Immediate or Emergency Invasive Strategy and Rescue PCI**

<table>
<thead>
<tr>
<th>Level</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Coronary angiography with intent to perform PCI (or emergency CABG) is reasonable in patients 75 years or older who have received fibrinolytic therapy, and are in cardiogenic shock, provided that they are suitable candidates for revascularization.</td>
</tr>
<tr>
<td>IIa</td>
<td><em>Modified recommendation</em></td>
</tr>
<tr>
<td>IIb</td>
<td>It is reasonable to perform rescue PCI for patients with hemodynamic or electrical instability or persistent ischemic symptoms.</td>
</tr>
<tr>
<td>III</td>
<td><em>No change in recommendation</em></td>
</tr>
<tr>
<td>IIa</td>
<td>Coronary angiography with intent to perform rescue PCI is reasonable for patients in who fibrinolytic therapy has failed:</td>
</tr>
<tr>
<td>IIb</td>
<td>- ST-segment elevation &lt;50% resolved after 90 minutes following initiation of fibrinolytic therapy</td>
</tr>
<tr>
<td>III</td>
<td>- Moderate or large area of myocardium at risk</td>
</tr>
<tr>
<td>IIa</td>
<td><em>New recommendation</em></td>
</tr>
</tbody>
</table>
Immediate or Emergency
Invasive Strategy and Rescue PCI

Coronary angiography with intent to perform PCI in the absence of one or more of the above Class I or IIa indications might be reasonable in moderate- and high-risk patients, but its benefits and risks are not well established. The benefits of rescue PCI are greater the earlier it is initiated.

*Modified recommendation*

Coronary angiography with intent to perform PCI (or emergency CABG) is not recommended in patients who have received fibrinolytic therapy if further invasive management is contraindicated.

*New recommendation*
# Short-Term Death in Patients Treated with Facilitated or Primary PCI


<table>
<thead>
<tr>
<th></th>
<th>Facilitated intervention (n/N; %)</th>
<th>Primary intervention (n/N; %)</th>
<th>Death</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platelet glycoprotein lib/lla inhibitor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>van’t Hof, et al (On-TIME) (39)</td>
<td>9/245 (4%)</td>
<td>2/247 (1%)</td>
<td></td>
<td>0.032</td>
</tr>
<tr>
<td>Lee, et al (TIGER-PA) (40)</td>
<td>1/50 (2%)</td>
<td>1/50 (2%)</td>
<td></td>
<td>1.00</td>
</tr>
<tr>
<td>Mesquida Gabriel, et al (ERAMI) (41)</td>
<td>4/36 (11%)</td>
<td>5/38 (13%)</td>
<td></td>
<td>0.79</td>
</tr>
<tr>
<td>Amtz, et al (REOMOBILE) (42)</td>
<td>0/52</td>
<td>1/48 (2%)</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Zorman, et al (43)</td>
<td>0/56</td>
<td>4/56 (7%)</td>
<td>0.067</td>
<td></td>
</tr>
<tr>
<td>Cutlip, et al (44)</td>
<td>0/28</td>
<td>1/30 (3%)</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td>Gyanogosi, et al (ReoPro-BRIDGING) (45)</td>
<td>0/28</td>
<td>0/27</td>
<td>0.99</td>
<td></td>
</tr>
<tr>
<td>Zeymer, et al (INTAMI) (46)</td>
<td>2/53 (4%)</td>
<td>2/49 (4%)</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Bellandi, et al (47)</td>
<td>1/27 (4%)</td>
<td>1/26 (4%)</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>17/575 (3%)</td>
<td>17/573 (3%)</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Thrombolytic therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Van de Werf, et al (ASSENT-4 PCI) (5)</td>
<td>50/828 (6%)</td>
<td>32/836 (4%)</td>
<td></td>
<td>0.039</td>
</tr>
<tr>
<td>O’Neill, et al (SAM1) (48)</td>
<td>0/58</td>
<td>0/63</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>Widimsky, et al (PRAGUE) (49)</td>
<td>12/103 (12%)</td>
<td>7/101 (7%)</td>
<td>0.22</td>
<td></td>
</tr>
<tr>
<td>Vermeer, et al (LIMI) (50)</td>
<td>6/74 (8%)</td>
<td>5/75 (7%)</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>Ross, et al (PACT) (51)</td>
<td>11/302 (4%)</td>
<td>10/304 (3%)</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Fernandez-Avalos, et al (GRACIA-2) (52)</td>
<td>3/104 (3%)</td>
<td>5/108 (5%)</td>
<td>0.51</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>82/1466 (6%)</td>
<td>59/1487 (4%)</td>
<td>0.042</td>
<td></td>
</tr>
<tr>
<td>Combination therapy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADVANCE-MI (53)</td>
<td>5/69 (7%)</td>
<td>0/77</td>
<td>0.026</td>
<td></td>
</tr>
<tr>
<td>Kastrat, et al (BRAVE) (54)</td>
<td>2/125 (2%)</td>
<td>2/128 (2%)</td>
<td>0.98</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td>7/194 (4%)</td>
<td>2/205 (1%)</td>
<td>0.44</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>106/2235 (5%)</td>
<td>78/2265 (3%)</td>
<td>0.04</td>
<td></td>
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</tbody>
</table>
### Efficacy End Points for Rescue PCI Versus Conservative Therapy

**Mortality**

<table>
<thead>
<tr>
<th>Study</th>
<th>PCI</th>
<th>Control</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bellenke et al.</td>
<td>1/16</td>
<td>4/12</td>
<td>0.19 (0.02-1.47)</td>
</tr>
<tr>
<td>RESCUE</td>
<td>4/78</td>
<td>7/73</td>
<td>0.53 (0.16-1.75)</td>
</tr>
<tr>
<td>TAMI</td>
<td>3/49</td>
<td>1/59</td>
<td>3.61 (0.39-33.64)</td>
</tr>
<tr>
<td>RESCUE II</td>
<td>1/14</td>
<td>0/15</td>
<td>3.20 (0.14-72.62)</td>
</tr>
<tr>
<td>MERLIN</td>
<td>15/153</td>
<td>17/154</td>
<td>0.89 (0.46-1.71)</td>
</tr>
<tr>
<td>REACT</td>
<td>9/144</td>
<td>10/141</td>
<td>0.49 (0.23-1.05)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>33/454</td>
<td>47/454</td>
<td>0.59 (0.46-1.05)</td>
</tr>
</tbody>
</table>

Absolute risk reduction 3% (95% CI 0%-7%)  
NNT 33  
Test for heterogeneity: \( \chi^2 = 6.1 \text{ df } 5 (p=0.30) \) F 18%

**Heart Failure**

<table>
<thead>
<tr>
<th>Study</th>
<th>PCI</th>
<th>Control</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESCUE</td>
<td>1/78</td>
<td>5/73</td>
<td>0.19 (0.02-1.56)</td>
</tr>
<tr>
<td>TAMI</td>
<td>9/49</td>
<td>14/59</td>
<td>0.77 (0.37-1.63)</td>
</tr>
<tr>
<td>MERLIN</td>
<td>37/153</td>
<td>46/154</td>
<td>0.81 (0.56-1.17)</td>
</tr>
<tr>
<td>REACT</td>
<td>7/144</td>
<td>11/141</td>
<td>0.62 (0.25-1.56)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>54/424</td>
<td>76/427</td>
<td>0.73 (0.54-1.00)</td>
</tr>
</tbody>
</table>

Absolute risk reduction 5% (95% CI 0%-9%)  
NNT 20  
Test for heterogeneity: \( \chi^2 = 2.0 \text{ df } 3 (p=0.57) \) F 0%

**Reinfarction**

<table>
<thead>
<tr>
<th>Study</th>
<th>PCI</th>
<th>Control</th>
<th>RR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAMI</td>
<td>7/49</td>
<td>10/59</td>
<td>0.84 (0.35-2.05)</td>
</tr>
<tr>
<td>MERLIN</td>
<td>11/153</td>
<td>16/154</td>
<td>0.69 (0.33-1.44)</td>
</tr>
<tr>
<td>REACT</td>
<td>3/144</td>
<td>12/141</td>
<td>0.24 (0.07-0.85)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>21/346</td>
<td>38/354</td>
<td>0.58 (0.35-0.97)</td>
</tr>
</tbody>
</table>

Absolute risk reduction 4% (95% CI 0%-9%)  
NNT 25  
Test for heterogeneity: \( \chi^2 = 2.7 \text{ df } 2 (p=0.25) \) F 27%

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Wijeysundera HC et al.  
PCI After Successful Fibrinolysis or for Patients Not Undergoing Primary Reperfusion

PCI of a hemodynamically significant stenosis in a patent infarct artery greater than 24 hours after STEMI may be considered as part of an invasive strategy.

*Modified recommendation*

PCI of a totally occluded infarct artery greater than 24 hours after STEMI is not recommended in asymptomatic patients with one- or two-vessel disease if they are hemodynamically stable and do not have evidence of severe ischemia.

*New recommendation*
Coronary arteriography may be considered as part of an invasive strategy for risk assessment after fibrinolytic therapy or for patients not undergoing primary reperfusion.
Anticoagulants as Ancillary Therapy

Patients undergoing reperfusion with fibrinolytics should receive anticoagulant therapy for a minimum of 48 hours, and preferably for the duration of the index hospitalization, up to 8 days.

**New Recommendation**

Regimens other than UFH are recommended if therapy is given for more than 48 hours because of risk of heparin-induced thrombocytopenia.

**New Recommendation**

Regimens with established efficacy include: UFH, enoxaparin, fondaparinux

*(see full text Update for dosing recommendations)*
Anticoagulants as Ancillary Therapy

For patients undergoing PCI after having received an anticoagulant, the following dosing recommendations should be followed:

For prior treatment with:

1. UFH - administer additional boluses of UFH as needed to support the procedure

2. Enoxaparin – if last dose was administered within prior 8 hours, no additional enoxaparin should be given; if last dose was 8 to 12 hours earlier an IV dose of 0.3 mg per kg should be given

3. Fondaparinux – administer additional IV treatment with an anticoagulant possessing anti-IIa activity

New recommendations

Because of the risk of catheter thrombosis, fondaparinux should not be used as the sole anticoagulant to support PCI. An additional anticoagulant with anti-IIa activity should be administered

New recommendation
Thienopyridines

Clopidogrel (75mg daily) should be added to aspirin in patients with STEMI regardless of whether or not reperfusion therapy is received.

*New recommendation*

Treatment with clopidogrel should continue for at least 14 days.

*New recommendation*

In patients taking clopidogrel in whom CABG is planned, the drug should be withheld for at least 5 days (preferably 7 days), unless the urgency for revascularization outweighs the risks of excess bleeding.

*No change in recommendation*
In patients <75 years who receive fibrinolytic therapy or who do not receive reperfusion therapy, it is reasonable to administer an oral loading dose of clopidogrel 300mg.

*New recommendation*

Longer-term maintenance therapy (e.g. 1 year) with clopidogrel is reasonable in STEMI patients regardless of whether or not they undergo reperfusion therapies

*New recommendation*
Anticoagulants

It is reasonable for patients with STEMI who do not undergo reperfusion therapy to be treated with anticoagulant therapy (non-UFH regimen) for the duration of the index hospitalization (up to 8 days). Convenient strategies include using LMWH or fondaparinux.

*Modified recommendation*
Secondary Prevention for Patients With Coronary and Other Vascular Disease
Ace inhibitors should be started and continued indefinitely in all patients recovering from STEMI with LVEF ≤ 40%, and for patients with preserved LVEF with hypertension, diabetes, or chronic kidney disease, unless contraindicated.

**Modified recommendation**

ACE inhibitors should be started and continued indefinitely in patients recovering from STEMI who are not lower risk unless contraindicated (low risk defined as those with normal LVEF in whom cardiovascular risk factors are well-controlled and revascularization has been performed).

**New recommendation**

Among lower risk patients recovering from STEMI, use of ACE inhibitors is reasonable.

**New recommendation**
Use of angiotensin receptor blockers is recommended in patients who are intolerant of ACE inhibitors and have HF or have had an MI with LVEF < 40%.

**Modified recommendation**

It is beneficial to use angiotensin receptor blocker therapy in other patients who are ACE-inhibitor intolerant and have hypertension.

**New recommendation**

Considering use in combination with ACE inhibitors in systolic dysfunction HF may be reasonable.

**New recommendation**
Aldosterone Blockade

Use of aldosterone blockade in post-MI patients without significant renal dysfunction or hyperkalemia is recommended in patients who:

- are already receiving therapeutic doses of an ACE inhibitor and beta blocker
- have a LVEF of less than or equal to 40%
- have either diabetes or HF

*Modified recommendation*
Beta-Blockers

It is beneficial to start and continue beta-blocker therapy indefinitely in all patients who have had MI, acute coronary syndrome or LV dysfunction with or without HF symptoms, unless contraindicated.

*Modified recommendation*
New Recommendations in 2007
Update for Lipid Management

A fasting lipid panel should be assessed in all patients and within 24 hours of hospitalization, and lipid-lowering medication should be initiated prior to discharge.

LDL-C should be <100mg/dL, and further reduction to <70mg/dL is reasonable.

If baseline LDL-C is 70 - 100 mg/dL, it is reasonable to treat to <70 mg/dL.
New Recommendations in 2007
Update for Lipid Management

Adding plant stanol/sterols (2g per day) and/or viscous fiber (>10 g per day) is reasonable to further lower LDL-C.

If triglycerides are 200 - 499 mg/dL, further reduction of non-HDL cholesterol to <100mg/dL is reasonable.

More intense LDL-C lowering is indicated if further reduction of non-HDL-C is warranted.
Aspirin

All post-PCI STEMI stented patients without aspirin resistance, allergy, or increased risk of bleeding should be given aspirin 162 mg to 325 mg daily for at least 1 month after BMS, 3 months after sirolimus-eluting stent, and 6 months after paclitaxel-eluting stent, after which long-term aspirin use should be continued indefinitely at 75 mg to 162 mg daily.

**Modified recommendation**

In patients for whom the physician is concerned about risk of bleeding, lower-dose 75 mg to 162 mg of aspirin is reasonable during the initial period after stent implantation.

**New recommendation**
Clopidogrel

For all post-PCI patients receiving a DES, clopidogrel 75 mg daily should be given for at least 12 months, if not at high risk of bleeding. For post-PCI patients receiving a BMS, it should be given for a minimum of 1 month and ideally up to 12 months (unless patient is at increased risk of bleeding).

Modified recommendation

For all STEMI patients not undergoing a stent placement (medical therapy alone or PTCA without stenting), treatment with clopidogrel should continue for at least 14 days.

New recommendation

Long-term maintenance therapy (e.g. 1 year) with clopidogrel is reasonable in STEMI patients, regardless of whether or not they undergo reperfusion therapies.

New recommendation
Managing warfarin to an INR equal to 2.0 - 3.0 for paroxysmal or chronic atrial fibrillation or flutter is recommended, and in post-MI patients when clinically indicated.

*Modified recommendation*

Use of warfarin in conjunction with aspirin and/or clopidogrel is associated with an increased risk of bleeding and should be monitored closely.

*New recommendation*

In patients requiring warfarin, clopidogrel, and aspirin therapy, an INR of 2.0 - 2.5 is recommended with low dose aspirin (75 mg - 81 mg) and 75 mg of clopidogrel daily.

*New recommendation*
2007 Goals: Secondary Prevention

**Smoking:** Complete cessation, no exposure to environmental tobacco smoke.

**Blood Pressure Control:** <140/90 mmHg or <130/80 mmHg if patient have diabetes or chronic kidney disease.

**Physical Activity:** 30 minutes, 7 days per week (minimum 5 days per week).
2007 Goals: Secondary Prevention

Weight Management:
Goals: BMI 18.5 - 24.9 kg/m² and
Waist circumference in men <40 in;
women <35 in

Diabetes Management:
HbA1c less than 7%.

Influenza Vaccination:
Patients with cardiovascular disease should have an annual influenza vaccination.
Treatment of Musculoskeletal Pain

At the time of discharge, the patient’s need for treatment of chronic musculoskeletal pain should be assessed and a stepped-care approach to pain management should be used for selection of treatments. Pain relief should begin with acetaminophen or aspirin, small doses of narcotics, or non-acetylated salicylates.

New recommendation

It is reasonable to use non-selective NSAIDs, such as naproxen, if initial therapy with acetaminophen, small doses or narcotics, or non-acetylated salicylates are insufficient.

New recommendation

NSAIDs with increasing degrees of relative COX-2 selectivity may be considered for pain relief only for situations where intolerable discomfort persists despite attempts at stepped-care.

New recommendation

NSAIDs with increasing relative COX-2 selectivity should not be given to STEMI patients when other agents provide acceptable levels of pain relief.

Modified recommendation
Stepped-Care Approach to Management of Musculoskeletal Symptoms

- Acetaminophen, ASA, tramadol, narcotic analgesics (short term)
  - Nonacetylated salicylates
- Non COX-2 selective NSAIDs
  - NSAIDs with some COX-2 activity
    - COX-2 Selective NSAIDs
- Select Patients at low risk of thrombotic events
- Prescribe lowest dose required to control symptoms
- Add ASA 81 mg and PPI to patients at increased risk of thrombotic events *

- Regular monitoring for sustained hypertension (or worsening of prior blood pressure control), edema, worsening renal function, or gastrointestinal bleeding
  - If these occur, consider reduction of the dose or discontinuation of the offending drug, a different drug, or alternative therapeutic modalities, as dictated by clinical circumstances
The full-text guideline is also available on the American Heart Association Web site:
www.american-heart.org