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# 2009 STEMI and PCI Focused Update

**Update of the ACC/AHA 2004 Guideline and 2007 Focused Update for STEMI and the ACC/AHA/SCAI Guidelines on Percutaneous Coronary Intervention Updating the 2005 Guideline and 2007 Focused Update**

**Kushner et al. 2009 Focused updates of the ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction (updating the 2004 guideline and 2007 focused update) and the ACC/AHA/SCAI guidelines on percutaneous coronary intervention (updating the 2005 guideline and 2007 focused update): a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines. *Circulation*. 2009;120:•••–•••.**



## **STEMI**

**Frederick G. Kushner, MD, FACC, FAHA, Co-Chair**

**Mary Hand, MSPH, RN, FAHA, Co-Chair**

## **PCI**

**Sidney C. Smith, Jr, MD, FACC, FAHA, Chair**

**Spencer B. King III, MD, MACC, FSCAI, Co-Chair**

# **Writing Committees**

## **STEMI WRITING GROUP MEMBERS**

**Antman, EM., Bates, ER., Casey, Jr, DE., Green, LA., Hochman, JS., Krumholz, HM., Ornato, JP., Pearle, DL., Sloan, MA., & Smith, Jr, SC.**

## **PCI WRITING GROUP MEMBERS**

**Anderson, JL., Bailey, SR., Blankenship, JC., Jacobs, AK., Morrison, DA., Peterson, ED., Whitlow, PL., & Williams, DO.**

**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 previous guidelines. It is not meant to be an all-inclusive document.**



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# Applying Classification of Recommendations and Level of Evidence

SIZE OF TREATMENT EFFECT

ESTIMATE OF CERTAINTY (PRECISION) OF TREATMENT EFFECT

	<p><b>CLASS I</b> <i>Benefit &gt;&gt;&gt; Risk</i> Procedure/Treatment <b>SHOULD</b> be performed/administered</p>	<p><b>CLASS IIa</b> <i>Benefit &gt;&gt; Risk</i> <i>Additional studies with focused objectives needed</i> <b>IT IS REASONABLE</b> to perform procedure/administer treatment</p>	<p><b>CLASS IIb</b> <i>Benefit ≥ Risk</i> <i>Additional studies with broad objectives needed; additional registry data would be helpful</i> Procedure/Treatment <b>MAY BE CONSIDERED</b></p>	<p><b>CLASS III</b> <i>Risk ≥ Benefit</i> Procedure/Treatment should <b>NOT</b> be performed/administered <b>SINCE IT IS NOT HELPFUL AND MAY BE HARMFUL</b></p>
<p><b>LEVEL A</b> Multiple populations evaluated* Data derived from multiple randomized clinical trials or meta-analyses</p>	<ul style="list-style-type: none"> <li>■ Recommendation that procedure or treatment is useful/effective</li> <li>■ Sufficient evidence from multiple randomized trials or meta-analyses</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation in favor of treatment or procedure being useful/effective</li> <li>■ Some conflicting evidence from multiple randomized trials or meta-analyses</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation's usefulness/efficacy less well established</li> <li>■ Greater conflicting evidence from multiple randomized trials or meta-analyses</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation that procedure or treatment is not useful/effective and may be harmful</li> <li>■ Sufficient evidence from multiple randomized trials or meta-analyses</li> </ul>
<p><b>LEVEL B</b> Limited populations evaluated* Data derived from a single randomized trial or nonrandomized studies</p>	<ul style="list-style-type: none"> <li>■ Recommendation that procedure or treatment is useful/effective</li> <li>■ Evidence from single randomized trial or nonrandomized studies</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation in favor of treatment or procedure being useful/effective</li> <li>■ Some conflicting evidence from single randomized trial or nonrandomized studies</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation's usefulness/efficacy less well established</li> <li>■ Greater conflicting evidence from single randomized trial or nonrandomized studies</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation that procedure or treatment is not useful/effective and may be harmful</li> <li>■ Evidence from single randomized trial or nonrandomized studies</li> </ul>
<p><b>LEVEL C</b> Very limited populations evaluated* Only consensus opinion of experts, case studies, or standard of care</p>	<ul style="list-style-type: none"> <li>■ Recommendation that procedure or treatment is useful/effective</li> <li>■ Only expert opinion, case studies, or standard of care</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation in favor of treatment or procedure being useful/effective</li> <li>■ Only diverging expert opinion, case studies, or standard of care</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation's usefulness/efficacy less well established</li> <li>■ Only diverging expert opinion, case studies, or standard of care</li> </ul>	<ul style="list-style-type: none"> <li>■ Recommendation that procedure or treatment is not useful/effective and may be harmful</li> <li>■ Only expert opinion, case studies, or standard of care</li> </ul>

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

# New Recommendations



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<b>Use of Thienopyridines</b>	In STEMI patients with a prior history of stroke and transient ischemic attack for whom primary PCI is planned, prasugrel is not recommended as part of a dual-antiplatelet therapy regimen. Class III ( <i>Level of Evidence: C</i> )
<b>Use of Parenteral Anticoagulants</b>	In STEMI patients undergoing PCI who are at high risk of bleeding, bivalirudin anticoagulation is reasonable. Class IIa ( <i>Level of Evidence: B</i> )
<b>Triage and Transfer for PCI</b>	<p>Each community should develop a STEMI system of care that follows standards at least as stringent as those developed for the AHA's national initiative, Mission: Lifeline, to include the following:</p> <ul style="list-style-type: none"><li>● ongoing multidisciplinary team meetings that include emergency medical services, non-PCI-capable hospitals/STEMI referral centers, and PCI-capable hospitals/STEMI receiving centers to evaluate outcomes and quality improvement data;</li><li>● a process for prehospital identification and activation;</li><li>● destination protocols for STEMI receiving centers;</li><li>● transfer protocols for patients who arrive at STEMI referral centers who are primary PCI candidates, are ineligible for fibrinolytic drugs, and/or are in cardiogenic shock.</li></ul> <p>Class I (<i>Level of Evidence: C</i>)</p> <p>It is reasonable for high-risk patients who receive fibrinolytic therapy as primary reperfusion therapy at a non-PCI-capable facility to be transferred as soon as possible to a PCI-capable facility where PCI can be performed either when needed or as a pharmacoinvasive strategy. Consideration should be given to initiating a preparatory antithrombotic (anticoagulant plus antiplatelet) regimen before and during patient transfer to the catheterization laboratory. Class IIa (<i>Level of Evidence: B</i>)</p>

# New Recommendations



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<b>Intensive Glucose Control in STEMI</b>	It is reasonable to use an insulin-based regimen to achieve and maintain glucose levels less than 180 mg/dL while avoiding hypoglycemia* for patients with STEMI with either a complicated or uncomplicated course. Class IIa ( <i>Level of Evidence: B</i> )
<b>Thrombus Aspiration During PCI for STEMI</b>	Aspiration thrombectomy is reasonable for patients undergoing primary PCI. IIa ( <i>Level of Evidence: B</i> )
<b>Use of Stents in STEMI</b>	It is reasonable to use a DES as an alternative to a BMS for primary PCI in STEMI. Class IIa ( <i>Level of Evidence: B</i> )*
<b>PCI for Unprotected Left Main Coronary Artery Disease</b>	PCI of the left main coronary artery with stents as an alternative to CABG may be considered in patients with anatomic conditions that are associated with a low risk of PCI procedural complications and clinical conditions that predict an increased risk of adverse surgical outcomes. IIb ( <i>Level of Evidence: B</i> )



## Timing of Angiography and Antiplatelet Therapy in UA/NSTEMI

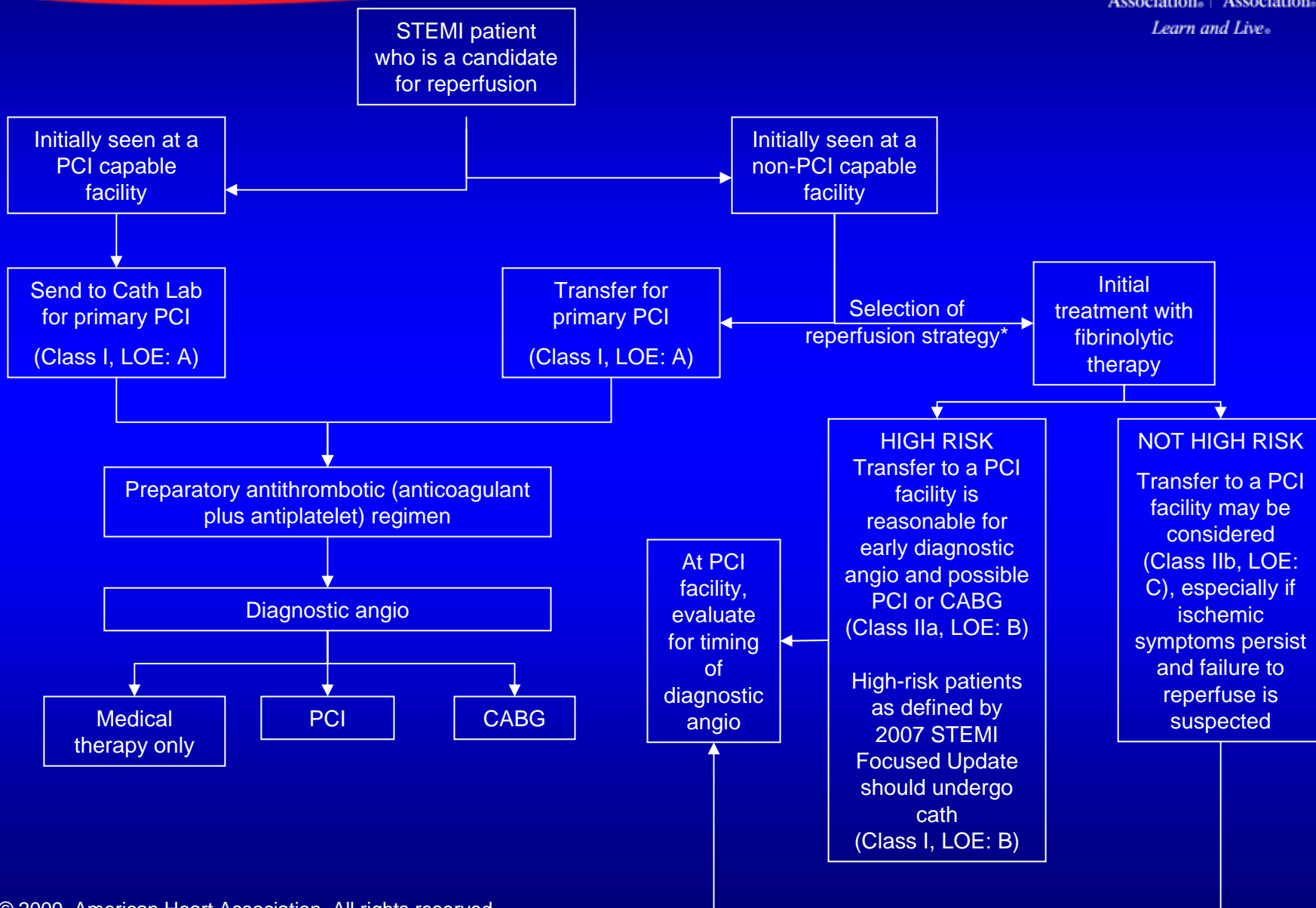
### Class I

Patients with definite or likely UA/NSTEMI selected for an invasive approach should receive dual-antiplatelet therapy. (*Level of Evidence: A*) Aspirin should be initiated on presentation. (*Level of Evidence: A*) Clopidogrel (before or at the time of PCI) (*Level of Evidence: A*) or prasugrel (at the time of PCI) (*Level of Evidence: B*) is recommended as a second antiplatelet agent.

### Class IIa

It is reasonable for initially stabilized *high-risk* patients with UA/NSTEMI (GRACE \_Global Registry of Acute Coronary Events\_ risk score greater than 140) to undergo an early invasive strategy within 12 to 24 hours of admission. For patients *not at high risk*, an early invasive approach is also reasonable. (*Level of Evidence: B*)

# Triage and Transfer for PCI





# Supplemental Information

## Dosing Table for Antiplatelet and Anticoagulant Therapy - Appendix 4 in Update

### Mission: Lifeline

<http://www.americanheart.org/presenter.jhtml?identifier=3050213>



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**The full-text guideline is also available  
on the American Heart Association  
Web site:**

**<http://www.americanheart.org/presenter.ihtml?identifier=9181>**