ACC/AHA 2009 STEMI Guideline Focused Update and What’s New in 2012 Guideline

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# Evolution of Guidelines for ACS

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1990 ACC/AHA AMI R. Gunnar

1994 AHCPR/NHLBI UA E. Braunwald


2004 2007 Rev Upd ACC/AHA STEMI E. Antman

2009 Upd ACC/AHA STEMI/PCI F. Kushner
Hospitalizations in the U.S. Due to Acute Coronary Syndromes (ACS)

**Acute Coronary Syndromes*  

1.57 Million Hospital Admissions - ACS

- **UA/NSTEMI†**: 1.24 million Admissions per year
- **STEMI**: 0.33 million Admissions per year


*Primary and secondary diagnoses. †About 0.57 million NSTEMI and 0.67 million UA.
# Applying Classification of Recommendations and Level of Evidence

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<td>Additional studies with broad objectives needed; Additional registry data would be helpful</td>
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Applying Classification of Recommendations and Level of Evidence

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**Level A:** Multiple populations evaluated; Data derived from multiple randomized clinical trials or meta-analyses

**Level B:** Limited populations evaluated. Data derived from a single randomized trial or non-randomized studies

**Level C:** Very limited populations evaluated. Only consensus opinion of experts, case studies, or standard-of-care.
Recommendations for the use of Thienopyridines
Recommendations for the use of Thienopyridines

A loading dose of thienopyridine is recommended for STEMI patients for whom PCI is planned. Regimens should be one of the following:

Clopidogrel at least 300 mg to 600mg† should be given as early as possible before or at the time of primary or non-primary PCI.
Optimal Plavix Loading Dose: ISAR CHOICE

Plasma concentrations of the active metabolite were statistically significant between the 300- and 600-mg dose, but not the 600- and 900-mg dose.

Maximal ADP-induced platelet aggregation at 4 hours was statistically significant between the 300- and 600-mg dose, but not the 600- and 900-mg dose.
Recommendations for the use of Thienopyridines

Prasugrel 60 mg should be given as soon as possible for primary PCI.
TRITON TIMI-38

STEVI Cohort
N=3534

CV Death / MI / Stroke

Clopidogrel

Prasugrel

TIMI Major
NonCABG Bleeds

Percent (%)

Days From Randomization

Clopidogrel

Prasugrel

HR 0.79
(0.65-0.97)
P=0.02
NNT = 42

HR 0.68
(0.54-0.87)
P=0.002

12.4%

6.5%

9.5%

10.0%

STEMI Cohort

N=3534

Montalescot et al Lancet 2008. Adapted with permission from Antman EM.
Cumulative Incidence of Primary Endpoint* and Major Bleeding†


**The primary end point** — a composite of death from vascular causes, myocardial infarction, or stroke

**Major Bleeding** — Fatal bleeding, intracranial bleeding, intrapericardial bleeding with cardiac tamponade, hypovolemic shock or severe hypotension due to bleeding and requiring pressors or surgery, a decline in the hemoglobin level of 5.0 g per deciliter or more, or the need for transfusion of at least 4 units of red cells
Recommendations for the use of Thienopyridines

For STEMI patients undergoing non-primary PCI, the following regimens are recommended:

If the patient has received fibrinolytic therapy…

- a. …and has been given clopidogrel, it should be continued as the thienopyridine of choice.
- b. …without a thienopyridine, a loading dose of 300-600 mg of clopidogrel should be given as the thienopyridine of choice.

If the patient did not receive fibrinolytic therapy…

- c. …either a loading dose of 300-600 mg of clopidogrel should be given or, once the coronary anatomy is known and PCI is planned, a loading dose of 60 mg of prasugrel should be given promptly and no later than 1 hour after the PCI.
Thienopyridines

The duration of thienopyridine therapy should be as follows:

a. In patients receiving a stent (BMS or DES) during PCI for ACS, clopidogrel 75 mg daily† or prasugrel 10 mg § daily should be given for at least 12 months;

b. If the risk of morbidity from bleeding outweighs the anticipated benefit afforded by thienopyridine therapy, earlier discontinuation should be considered.
In patients taking a thienopyridine in whom coronary artery bypass surgery (CABG) is planned and can be delayed, it is recommended that the drug be discontinued to allow for dissipation of the antiplatelet effect.

The period of withdrawal should be at least 5 days in patients receiving clopidogrel and at least 7 days in patients receiving prasugrel, … unless the need for revascularization and/or the net benefit of the thienopyridine outweighs the potential risks of excess bleeding.
Thienopyridines

NEW Recommendation

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.
TRITON TIMI-38 Net Clinical Benefit

Bleeding Risk Subgroups

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<td>P_int</td>
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<table>
<thead>
<tr>
<th>Overall</th>
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<tbody>
<tr>
<td>Risk (%)</td>
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Hazard Ratio

Prasugrel Better  Clopidogrel Better

0.5  1  2

Post-hoc analysis

Recommendations for the Use of Glycoprotein IIb/IIIa Receptor Antagonists in STEMI
It is reasonable to start treatment with glycoprotein IIb/IIIa receptor antagonists at the time of primary PCI (with or without stenting) in selected patients with STEMI:

- abciximab
- tirofiban and eptifibatide
The usefulness of glycoprotein IIb/IIIa receptor antagonists (as part of a preparatory pharmacologic strategy for patients with STEMI prior to arrival in the cardiac catheterization laboratory for angiography and PCI) is uncertain.
**BRAVE 3: Effects of Abciximab**

No significant difference in infarct size or major bleeding

Patient received Plavix 600mg loading

Recommendations for Use of Parenteral Anticoagulants in Patients with STEMI
For patients proceeding to primary PCI, who have been treated with ASA and a thienopyridine, recommended supportive anticoagulant regimens include:

b. Bivalirudin is useful as support for primary PCI with or without prior treatment with heparin.
Use of Parenteral Anticoagulants in STEMI Patients Proceeding to Primary PCI: Modified Class I Recommendations

- Bilvalirudin added as an acceptable anticoagulant for primary PCI
- Unfractionated heparin (UFH) administration guided by:
  - Therapeutic activated clotting time (ACT) levels
  - Prior administration of GP IIb/IIIa receptor antagonists
- Enoxaparin and fondaparinux unchanged from 2007 STEMI Focused Update
**HORIZONS-AMI**: Time-to-Event Curves through 30 days: Net Adverse Clinical Events

Treatment with bivalirudin alone compared with UFH + GP IIb/IIIa Inhibitors resulted in reduced 30-day rates of net adverse clinical events

\[ HR=0.75, (0.62-0.92); \ p=0.006 \]

**HORIZONS-AMI:** Time-to-Event Curves through 30 days: Major Bleeding

- HR=0.59 (0.45-0.76); p<0.0001
- *40% less bleeding in Bivalirudin group at 30 days*

Recommendations for triage and transfer for Percutaneous Coronary Intervention for Patients with STEMI
Recommendations for Triage and Transfer for PCI (for STEMI)

Each community should develop a STEMI system of care following the standards developed for *Mission Lifeline* including:

- Ongoing multidisciplinary team meetings with EMS, non-PCI-capable hospitals (STEMI Referral Centers), & PCI-capable hospitals (STEMI Receiving Centers)
Recommendations for Triage and Transfer for PCI (for STEMI) (cont.)

STEMI system of care standards in communities should also include:

- Process for prehospital identification & activation
- Destination protocols to STEMI Receiving Centers
- Transfer protocols for patients who arrive at STEMI Referral Centers and are primary PCI candidates, and/or are fibrinolytic ineligible and/or in cardiogenic shock
Primary PCI versus Thrombolysis
Meta Analysis of 23 Trials (N=7739)

- Death: PCI 7%, Thrombolysis 9%
  \( p=0.0002 \)
- Re-MI: PCI 2.5%, Thrombolysis 6.8%
  \( P<0.0001 \)
- CVA: PCI 1%, Thrombolysis 2%
  \( p=0.0004 \)
- Hemo CVA: PCI 0.05%, Thrombolysis 1.1%
  \( p=0.0001 \)

Source: Lancet 2003;361:9351
Age-Adjusted and Propensity Score-Adjusted Mortality According to Time to Reperfusion and Type of Therapy


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Recommendations for Triage and Transfer for PCI (for STEMI) (cont.)

NEW Recommendation

It is reasonable to transfer high risk patients who receive fibrinolytic therapy as primary reperfusion therapy at a non-PCI capable facility to a PCI-capable facility as soon as possible where either PCI can be performed when needed or as a pharmacoinvasive strategy.
CARESS-IN-AMI: Primary Outcome

primary outcome (composite of all cause mortality, reinfarction, & refractory MI within 30 days) occurred significantly less often in the immediate PCI group vs. standard care/rescue PCI group.

TRANSFER-AMI: Efficacy
Kaplan Meier Curves for Primary Endpoint

primary end point: composite of death, reinfarction, recurrent ischemia, new or worsening CHF, or shock within 30 days
pharmaco-invasive group=11.0% vs. standard treatment group=17.2%

RR = 0.64, 95 CI% (0.47-0.87)

Recommendations for Triage and Transfer for PCI (for STEMI) (cont.)

NEW Recommendation

Consideration should be given to initiating a preparatory antithrombotic (anticoagulant plus antiplatelet) regimen prior to and during patient transfer to the catheterization laboratory.
Triage and Transfer for PCI (in STEMI)

- Each community and each facility in that community should have an agreed-upon plan for how STEMI patients are to be treated, including:
  - which hospitals should receive STEMI patients from EMS units capable of obtaining diagnostic ECGs
  - management at the initial receiving hospital, and
  - written criteria & agreements for expeditious transfer of patients from non-PCI-capable to PCI-capable facilities
Triage and Transfer for PCI (in STEMI)

• Need for the development of regional systems of STEMI care through stakeholder efforts to evaluate ACS care using:
  – standardized performance & quality improvement measures, (e.g., endorsed by the ACC, AHA, Joint Commission, Centers for Medicare and Medicaid Services)
  – standardized quality-of-care data registries designed to track and measure outcomes, complications and adherence to evidence-based processes of care
    • NCDR ACTION Registry ®
    • American Heart Association “Get With the Guidelines”
American Heart Association’s *Mission Lifeline* is an initiative to encourage closer cooperation and trust amongst prehospital care providers, and cardiac care professionals.
What’s New in 2012
STEMI Guideline

Timeline

• WC Commissioned December 2009
• Full Revision of the 2004 GL, and 2007, 2009 Focused Updates
• Organizational Meeting March 2010
• Consensus Conference for STEMI, PCI, and CABG GL WCs October 2010
• STEMI, PCI, CABG Chair Conference Calls Throughout Process
• Peer Review Summer 2011
• Publication expected in March 2012
What’s New in 2012
STEMI Guideline

Evidence Review

• Extensive Evidence Review through November 2010, with additional selected references through June 2011
• Summary/Evidence Tables constructed by writing committee authors
What’s New in 2012 STEMI Guideline

Representation and Expertise

- Writing Committee Consisted of 23 Members
- Expertise in: Cardiovascular Medicine, Cardiac Rehabilitation, Cardiac Surgery, Electrophysiology, Emergency Medicine, Heart Failure, Interventional Cardiology, Internal Medicine, Nursing, and Pharmacology
- Organizational Representatives from: ACCF, AHA, ACEP, ACP, and SCAI
What’s New in 2012
STEAMI Guideline

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What’s New in 2012
STEMI Guideline

Concordance With PCI/CABG

• October 2010 Consensus Conference to review recommendations - all members of the STEMI, PCI, CABG WCs
• Frequent conference calls between chairs
• Recommendations kept as concordant as possible between GL’s for overlapping areas
What’s New in 2012 STEMI Guideline

ACCF/AHA Guideline Review Process

Writing Committee (12-15 members) Consensus

2 ACC reviewers
2 AHA reviewers
Content reviewers
Reviewers from other org.
Pharmacy reviewer
ACCF/AHA Task Force

Revision/response by writing committee

Task Force lead reviewer

Ballot WC
Task Force Chair

Ballot Task Force

ACCF Board of Trustees
AHA Science Advisory Coordinating Committee
Other organizations

Publication
What’s New in 2012 STEMI Guideline

2012 ACCF/AHA STEMI GL
Class of Recommendation and Level of Evidence Summary

Tentative Count

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