

2025 ACC/AHA/ACEP/NAEMSP/SCAI Guideline for the Management of Patients With Acute Coronary Syndromes : A Concise Summary



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Empowering Patient Care With Evidence

Definition and Classification of ACS

- ACS results from atherosclerotic plaque rupture, thrombosis, and myocardial ischemia.
- Three main types:
 - **STEMI**: Complete coronary occlusion with ST elevation on ECG, requiring urgent reperfusion.
 - **NSTEMI**: Partial occlusion with elevated troponins but no ST elevation.
 - **UA**: Symptoms of ischemia without troponin elevation, indicating possible plaque instability.

Initial Evaluation and Management of Suspected ACS

- **12-lead ECG** within 10 minutes of first medical contact (FMC) to detect STEMI.
- **Serial ECGs** if the initial ECG is nondiagnostic, especially if symptoms persist or worsen.
- **Risk stratification** with clinical history, ECG findings, and cardiac biomarkers.
- **Immediate medical therapy**: Aspirin, P2Y12 inhibitors, and anticoagulation for all suspected ACS patients.
- **Early invasive strategy** for high-risk NSTEMI-ACS patients.

Initial In-Hospital Assessment of Patients With Confirmed or Suspected ACS

- **Cardiac troponin measurement** on arrival, preferably high-sensitivity troponin (hs-cTn).
- **Repeat troponin testing** at 1-2 hours (hs-cTn) or 3-6 hours (standard cTn) for dynamic changes.
- **Haemodynamic assessment** to identify shock or heart failure requiring urgent intervention.
- **Immediate risk stratification** using scores like GRACE or TIMI.

Risk Stratification Tools for Patients With STEMI and NSTEMI-ACS

- **STEMI**: Requires immediate revascularisation (PCI preferred, fibrinolysis if PCI is unavailable within 120 min).
- **NSTEMI-ACS**: GRACE and TIMI scores help guide the decision for early invasive vs. conservative management.
- **High-risk features** include recurrent chest pain, dynamic ECG changes, haemodynamic instability, or elevated GRACE score.

Management of Patients Presenting With Cardiac Arrest

- **Immediate CPR and defibrillation** for shockable rhythms.
- **Targeted temperature management** for post-resuscitation care.
- **Urgent coronary angiography** for suspected ACS as the cause of arrest.

Standard Medical Therapies for STEMI and NSTEMI-ACS

- **Oxygen Therapy**
 - Recommended only if SpO₂ <90%.
- **Analgesics**
 - Morphine can be used for pain relief but may slow antiplatelet drug absorption.
- **Antiplatelet Therapy**
 - **Aspirin:** Loading dose (162-325 mg), then low-dose (75-100 mg daily).
 - **P2Y₁₂ inhibitors:** Ticagrelor or prasugrel preferred over clopidogrel in PCI patients.
 - **Intravenous glycoprotein IIb/IIIa inhibitors:** Used selectively in high-risk PCI cases.
- **Parenteral Anticoagulation**
 - UFH, enoxaparin, or bivalirudin based on bleeding risk and renal function.
- **Lipid Management**
 - High-intensity statin therapy for all ACS patients.
 - Ezetimibe or PCSK9 inhibitors for LDL-C >70 mg/dL despite maximal statin therapy.
- **Beta-Blockers**
 - Initiate within 24 hours unless contraindicated (e.g., cardiogenic shock).
- **RAAS Inhibitors (ACEi/ARBs)**
 - Indicated for LVEF ≤40%, hypertension, diabetes, or CKD.

STEMI Management: Reperfusion Strategies

- **PCI-capable hospitals**
 - Primary PCI (PPCI) is the preferred treatment, with door-to-balloon time ≤90 minutes.
- **Non-PCI-capable hospitals**
 - If PCI cannot be performed within 120 minutes, administer fibrinolytics within 30 minutes.
 - Transfer for rescue PCI if fibrinolysis fails.
- **Urgent CABG surgery**
 - Required for PCI failure or complex CAD with ongoing ischaemia.

NSTE-ACS: Routine Invasive or Selective Invasive Initial Approach

- **Routine invasive strategy** for high-risk patients (e.g., GRACE score >140, recurrent symptoms, ECG changes).
- **Selective invasive strategy** for lower-risk patients after initial medical therapy.

Catheterization Laboratory Considerations in ACS

- **Radial access** preferred over femoral to reduce bleeding risk.
- **Aspiration thrombectomy** is not routinely recommended.
- **Intracoronary imaging (IVUS/OCT)** for optimising PCI in complex lesions.

Management of Multivessel CAD in ACS

- **STEMI patients:** Complete revascularisation preferred, either staged or during the index procedure.

- **NSTE-ACS patients:** Revascularisation approach depends on clinical and anatomical factors.

Cardiogenic Shock Management

- **Emergency PCI** for culprit lesion to restore perfusion.
- **Mechanical circulatory support (Impella or VA-ECMO)** for selected patients.

ACS Complications

- **Mechanical complications:** Urgent surgery for ventricular septal defect, papillary muscle rupture, or free wall rupture.
- **Electrical complications:** ICD implantation for patients with LVEF $\leq 35\%$ post-MI.
- **Pericarditis:** Treated with NSAIDs and colchicine.
- **LV thrombus:** Anticoagulation recommended.

In-Hospital Issues in ACS Management

- **Cardiac Intensive Care Unit (CICU)** monitoring for high-risk patients.
- **Management of anaemia:** RBC transfusion if Hb < 8 g/dL.
- **Telemetry:** Based on risk stratification.
- **Pre-discharge noninvasive testing:** For patients without prior angiography.

Discharge Planning

- **Patient education** on medication adherence, lifestyle changes, and symptom recognition.
- **Follow-up within one week** to optimise therapy and monitor adherence.
- **Cardiac rehabilitation** is recommended for all eligible patients.

Long-Term Management and Secondary Prevention

- **DAPT for at least 12 months** post-ACS, adjusting duration based on bleeding risk.
- **Lipid monitoring:** Recheck lipid levels 4-8 weeks after initiation or adjustment of statin therapy.
- **SGLT-2 inhibitors and GLP-1 receptor agonists** for selected high-risk patients with diabetes.
- **Vaccination:** Influenza and pneumococcal vaccines recommended.

Evidence Gaps and Future Directions

- Optimal DAPT duration beyond one year remains under investigation.
- Further studies needed on personalised antithrombotic strategies.
- The role of novel lipid-lowering and anti-inflammatory therapies in long-term ACS care.

Reference

1. Rao, S.V., O'Donoghue, M.L., Ruel, M., Rab, T., Tamis-Holland, J.E., Alexander, J.H., Morrow, D.A., Baber, U., Mukherjee, D., Baker, H., et al. (2025) '2025 ACC/AHA/ACEP/NAEMSP/SCAI guideline for the management of patients with acute coronary syndromes: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines', *Circulation*, 151, pp. e00–e00. Available at: <https://www.ahajournals.org/journal/circ>