Key Highlights from the recommended guideline:

- For initial diagnosis, use history, physical examination, 12-lead ECG and cardiac markers, repeating if necessary.
- For risk assessment, use non-invasive stress testing; go to early angiography for high-risk patients and those who do not stabilize with intensive medical treatment.
- Management goals are to relieve ischemia (with nitroglycerine for most patients), start antiplatelet therapy (with ASA for most patients), and monitor (ECG, O₂ saturation) to determine need for additional treatment.

Scope: This guideline is intended for physicians responsible for the initial management of patients with known or suspected unstable angina or non-ST-segment elevation MI (NSTEMI).

How should I initially assess a patient with suspected acute coronary syndrome (ACS)?

- If the patient has any of
  - Chest discomfort at rest for > 20 minutes
  - Hemodynamic instability, or
  - Recent syncope or presyncope
  strongly consider referring immediately to an emergency department or specialized chest pain unit. [Strength of recommendation: I] [Level of evidence: C]

- Do not assess a patient with possible ACS symptoms over the telephone only. Instead, refer to a facility where a physician can evaluate in person and a 12-lead ECG can be recorded. [Strength of recommendation: I] [Level of evidence: C]

- Use the history, physical examination, 12-lead ECG, and initial cardiac marker tests to categorize the patient's diagnosis as
  - Noncardiac diagnosis
  - Chronic stable angina
  - Possible ACS or
  - Definite ACS. [Strength of recommendation: I] [Level of evidence: C]

- If the patient has possible or definite ACS but a normal initial ECG and cardiac marker levels, observe with cardiac monitoring, and repeat the ECG and cardiac markers 6-12 hours after symptom onset. [Strength of recommendation: I] [Level of evidence: B]

- If you suspect or know that the patient has ischemic heart disease and the follow-up ECG and cardiac marker levels are normal, do a pharmacological or exercise stress test (in the emergency department, a chest pain unit or an outpatient setting shortly after discharge). [Strength of recommendation: I] [Level of evidence: C]
  - If the stress test is negative and the patient is at low risk, manage on an outpatient basis. [Strength of recommendation: I] [Level of evidence: C]
What is the initial management of a patient with suspected ACS?

- Relieve ischemia using: [Strength of recommendation: I except where indicated]
  - Nitroglycerine (NTG) as a sublingual tablet or spray, then intravenously. [Level of evidence: C] Do not use nitrates if the patient has had sildenafil (Viagra) in the last 24 hours. [Strength of recommendation: III] [Level of evidence: C]
  - Morphine sulfate i.v. if symptoms are not relieved or if the patient is severely agitated or has acute pulmonary congestion. [Level of evidence: C]
  - A β-blocker (first dose i.v.) if chest pain continues and the patient has no contraindications [Level of evidence: B]
  - Non-dihydropyridine calcium channel blocker (e.g. verapamil, diltiazem) if β-blockers are contraindicated and the patient does not have other contraindications (e.g. severe LV dysfunction). [Level of evidence: B] Do not use immediate-release dihydropyridine calcium channel blockers without a β-blocker. [Strength of recommendation: III] [Level of evidence: A]
  - Supplemental oxygen for patients with cyanosis or respiratory distress. [Level of evidence: C]
  - An ACE inhibitor for hypertension if patient has diabetes or if patient has LV systolic dysfunction or congestive heart failure and the NTG and β-blocker have not resolved the hypertension. [Level of evidence: B]

- Start antiplatelet therapy [Strength of recommendation: I]
  - Start ASA as soon as possible, and continue indefinitely. [Level of evidence: A]
    - If an inpatient cannot tolerate ASA (e.g. hypersensitive, major GI side effects), use clopidogrel. [Level of evidence: A]
  - Also anticoagulate the patient with heparin (s.c. low-molecular weight heparin (LMWH) or i.v. unfractionated heparin (UFH)). [Level of evidence: A]
  - Manage women and men similarly. [Level of evidence: B]

- Monitor [Strength of recommendation: I]
  - Keep patients who still have pain while at rest on bed rest with continuous ECG monitoring. [Level of evidence: C]
  - Monitor oxygen saturation and the need for supplemental oxygen (SaO₂ should be > 90%) with finger pulse oximetry or arterial blood gas measurements. [Level of evidence: C]

How do I assess a patient’s risk and need for a revascularization procedure?

- Use noninvasive stress testing in [Strength of recommendation: I; Level of evidence: C]
  - Patients at low risk [See table below] who have had no ischemia or congestive heart failure at rest or low-level activity for at least 12-24 hours.
  - Patients at intermediate risk [See table below] who have had no ischemia or congestive heart failure at rest or low-level activity for at least 2-3 days.

- Go directly to angiography in patients who do not stabilize despite intensive medical treatment. [Strength of recommendation: I] [Level of evidence: B]

- Also use an “early invasive strategy” (angiography) for patients with UA or NSTEMI and any of the following (which suggest high risk): [Strength of recommendation: I] [Level of evidence: A]
  - Recurrent angina/ischemia at rest or with low level activities despite intensive anti-ischemic therapy
  - Elevated troponin T (TnT) or I (Tnl)
  - New or presumed new ST segment depression
  - Recurrent angina or ischemia with: congestive heart failure symptoms, an S3 gallop, or new or worsening mitral regurgitation
  - High risk findings on noninvasive stress testing
  - LV systolic dysfunction (e.g. ejection fraction < 0.40)
  - Hemodynamic instability
  - Sustained ventricular tachycardia
  - History of percutaneous coronary intervention (PCI) in the past 6 months, or history of coronary artery bypass graft (CABG)

- Remember that women have similar indications for noninvasive and invasive testing as men. [Level of evidence: B]
Short Term Risk of Death or Nonfatal MI in Patients With Unstable Angina

**High Risk**
At least one of the following must be present:
- Accelerating tempo of ischemic symptoms in preceding 48 h
- Prolonged ongoing (>20 minutes) rest pain
- Pulmonary edema, most likely due to ischemia
- New or worsening MR murmur
- S3 or new/worsening rales
- Hypotension, bradycardia, tachycardia
- Age >75 years
- Angina at rest with transient ST-segment changes >0.05 mV
- Bundle-branch block, new or presumed new
- Sustained ventricular tachycardia
- Elevated cardiac markers (TnT or TnI >0.1 ng/mL)

**Intermediate Risk**
No high-risk features, but one of the following is present:
- Prior MI, peripheral or cerebrovascular disease, or CABG, prior aspirin use
- Prolonged (>20 min) rest angina, now resolved, with moderate or high likelihood of CAD
- Rest angina (<20 min) or relieved with rest or sublingual NTG
- Age >70 years
- T-wave inversions >0.2 mV
- Pathological Q waves
- Slightly elevated (e.g., TnT >0.01 but <0.1 ng/mL)

**Low Risk**
No high or intermediate risk features, but may have any of the following:
- New-onset or progressive CCS Class III or IV angina the past 2 weeks without prolonged (>20 min) rest pain but with moderate or high likelihood of CAD (see Table 5)
- Normal or unchanged ECG during an episode of chest discomfort
- Normal cardiac markers


How should I manage my ACS patients after they are discharged from hospital?

- Prescribe the following medications for all patients (unless there are contraindications): [Strength of recommendation: I]
  - NTG (sublingual or spray) [Level of evidence: C]
  - ASA 75-325 mg daily, or clopidogrel if the patient cannot tolerate ASA [Level of evidence: A], or both for 9 months after UA/NSTEMI [Level of evidence: B]
  - β-blocker [Level of evidence: B]
  - Lipid-lowering agents if
    - LDL-cholesterol is > 3.37 mmol/L [Level of evidence: A]
    - LDL-cholesterol is > 2.59 mmol/L after dietary modification [Level of evidence: B]
    - HDL—cholesterol < 1.03 mmol/L (with or without other lipid abnormalities) [Level of evidence: B]
  - ACE inhibitor if the patient has hypertension, diabetes, congestive heart failure or LV ejection fraction < 0.40. [Level of evidence: A]

- Ensure that the patient is instructed about how to modify cardiac risk factors: [Strength of recommendation: I]
  - Lifestyle modification: smoking cessation, optimal weight, daily exercise, diet. [Level of evidence: B]
  - Blood pressure control (< 130/85 mm Hg) [Level of evidence: A]
  - Tight glycemic control in diabetes [Level of evidence: B]

- Consider referring smokers to a smoking cessation program or and/or an outpatient cardiac rehabilitation program. [Strength of recommendation: I] [Level of evidence: B]
Levels of Evidence

The levels of evidence used to grade the recommendations in this guideline are as follows:

<table>
<thead>
<tr>
<th>Strength of Recommendation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>Conditions for which there is evidence and/or general agreement that a given procedure or treatment is useful and effective</td>
</tr>
<tr>
<td>Class II</td>
<td>Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment</td>
</tr>
<tr>
<td>Class IIa</td>
<td>Weight of evidence/opinion is in favor of usefulness/efficacy</td>
</tr>
<tr>
<td>Class IIb</td>
<td>Usefulness/efficacy is less well established by evidence/opinion</td>
</tr>
<tr>
<td>Class III</td>
<td>Conditions for which there is evidence and/or general agreement that the procedure/treatment is not useful/effective and in some cases may be harmful</td>
</tr>
</tbody>
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Levels of Evidence

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<tr>
<td>A</td>
<td>The data were derived from multiple randomized clinical trials that involved large numbers of patients</td>
</tr>
<tr>
<td>B</td>
<td>The data were derived from a limited number of randomized trials that involved small numbers of patients or from careful analyses of nonrandomized studies or observational registries.</td>
</tr>
<tr>
<td>C</td>
<td>Expert consensus is the primary basis for the recommendation.</td>
</tr>
</tbody>
</table>

The above recommendations were derived from the following GAC endorsed guideline:


Rating (out of 4): 🍀🍀🍀🍀

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