TABLE 294-1 DRUGS COMMONLY USED IN INTENSIVE MEDICAL MANAGEMENT OF PATIENTS WITH UNSTABLE ANGINA AND NON-ST-SEGMENT ELEVATION MYOCARDIAL INFARCTION

Drug Category	Clinical Condition	When to Avoid[a]	Dosage
Nitrates	Administer sublingually, and, if symptoms persist, intravenously	Hypotension	Topical, oral, or buccal nitrates are acceptable alternatives for patients without ongoing or refractory symptoms
		Patient receiving sildenafil or other PDE-5 inhibitor	5–10 μg/min by continuous infusion titrated up to 75–100 μg/min until relief of symptoms or limiting side effects (headache or hypotension with a systolic blood pressure <90 mmHg or more than 30% below starting mean arterial pressure levels if significant hypertension is present)
Beta blockers[b]	Unstable angina	PR interval (ECG) <0.24 s 2° or 3° atrioventricular block Heart rate <60 beats/min Systolic pressure <90 mmHg Shock Left ventricular failure Severe reactive airway disease	Metoprolol 25–50 mg by mouth every 6 h If needed, and no heart failure, 5-mg increments by slow (over 1–2 min) IV administration
Calcium channel blockers	Patients whose symptoms are not relieved by adequate doses of nitrates and beta blockers, or in patients unable to tolerate adequate doses of one or both of these agents, or in patients with variant angina	Pulmonary edema Evidence of left ventricular dysfunction (for diltiazem or verapamil)	Dependent on specific agent
Morphine sulfate	Patients whose symptoms are not relieved after three serial sublingual nitroglycerin tablets or whose symptoms recur with adequate anti-ischemic therapy	Hypotension	2–5 mg IV dose
		Respiratory depression Confusion Obtundation	May be repeated every 5–30 min as needed to relieve symptoms and maintain patient comfort

[a]Allergy or prior intolerance is a contraindication for all categories of drugs listed in this chart. [b]Choice of the specific agent is not as important as ensuring that appropriate candidates receive this therapy. If there are concerns about patient intolerance due to existing pulmonary disease, especially asthma, left ventricular dysfunction, risk of hypotension, or severe bradycardia, initial selection should favor a short-acting agent, such as propranolol or metoprolol or the ultra-short-acting agent esmolol. Mild wheezing or a history of chronic obstructive pulmonary disease should prompt a trial of a short-acting agent at a reduced dose (e.g., 2.5 mg IV metoprolol, 12.5 mg oral metoprolol, or 25 μg/kg per min esmolol as initial doses) rather than complete avoidance of beta blocker therapy.

Note: Some of the recommendations in this guide suggest the use of agents for purposes or in doses other than those specified by the U.S. Food and Drug Administration. Such recommendations are made after consideration of concerns regarding nonapproved indications. Where made, such recommendations are based on more recent clinical trials or expert consensus. 2°, second-degree; 3°, third-degree; ECG, electrocardiogram; IV, intravenous.

Source: Modified from J Anderson et al: J Am Coll Cardiol 61:e179, 2013.

Anticoagulants (See Chap. 143) Four options are available for anticoagulant therapy to be added to antiplatelet agents: (1) unfractionated heparin (UFH), long the mainstay of therapy; (2) the low-molecular-weight heparin (LMWH), enoxaparin, which has been shown to be superior to UFH in reducing recurrent cardiac events, especially in patients managed by a conservative strategy but with some increase in bleeding; (3) bivalirudin, a direct thrombin inhibitor that is similar in efficacy to either UFH or LMWH but causes less bleeding and is used just prior to and/or during PCI; and (4) the indirect factor Xa inhibitor, fondaparinux, which is equivalent in efficacy to enoxaparin but appears to have a lower risk of major bleeding.

Excessive bleeding is the most important adverse effect of all antithrombotic agents, including both antiplatelet agents and anticoagulants. Therefore, attention must be directed to the doses of antithrombotic agents, accounting for body weight, creatinine clearance, and a previous history of excessive bleeding, as a means of reducing the risk of bleeding. Patients who have experienced a stroke are at higher risk of intracranial bleeding with potent antiplatelet agents and combinations of antithrombotic drugs.

INVASIVE VERSUS CONSERVATIVE STRATEGY

Multiple clinical trials have demonstrated the benefit of an early invasive strategy in high-risk patients (i.e., patients with multiple clinical risk factors, ST-segment deviation, and/or positive biomarkers) (Table 294-3). In this strategy, following treatment with anti-ischemic and antithrombotic agents, coronary arteriography is carried out within ~48 h of presentation, followed by coronary revascularization (PCI or coronary artery bypass grafting), depending on the coronary anatomy. In low-risk patients, the outcomes from an invasive strategy are similar to those obtained from a conservative strategy. The latter consists of anti-ischemic and antithrombotic therapy followed by "watchful waiting," in which the patient is closely observed and coronary arteriography is carried out only if rest pain or ST-segment changes recur, a biomarker of necrosis becomes positive, or there is evidence of severe ischemia on a stress test.

LONG-TERM MANAGEMENT

The time of hospital discharge is a "teachable moment" for the patient with NSTE-ACS, when the physician can review and optimize the medical regimen. Risk-factor modification is key, and the caregiver should discuss with the patient the importance of smoking cessation, achieving optimal weight, daily exercise, blood-pressure control, following an appropriate diet, control of hyperglycemia (in diabetic patients), and lipid management as recommended for patients with chronic stable angina (Chap. 293).