A fatal outcome in patients with acute myocardial infarction results from arrhythmias and pump failure. Although mortality due to primary arrhythmias seems to have been reduced by electrocardiographic monitoring and more aggressive antiarrhythmic therapy, the mortality associated with the low-output syndrome that complicates acute myocardial infarction is still very high.

Recent experimental and clinical research has provided newer knowledge about the pathophysiology of acute myocardial infarction and its consequences; progress in the therapy of complications of acute myocardial infarction, however, has been relatively slower. Until recently, one of the major difficulties in managing acutely ill cardiac patients has been the inability to define precisely the underlying mechanism and the degree of depression of cardiac function in an individual patient. The development of balloon-tip flotation catheters (Swan-Ganz type), however, has greatly facilitated safe, reliable, and continuous hemodynamic monitoring, even in critically ill cardiac patients.

Over the last few years, there has also been increasing interest in limiting infarct size, as it seems almost certain that the larger the infarct, the worse the immediate and late prognosis. It seems logical, therefore, that therapeutic approaches to reduce the extent of myocardial ischemic injury should play an important role in the rational management of patients with acute myocardial infarction. The lack of sensitive methods for measuring infarct size imposes a great limitation on the evaluation of any therapy designed to reduce infarct size. Furthermore, some therapies that appear to be sound on a physiologic basis have not been particularly useful in clinical practice. Apparently, therefore, despite a better understanding of the pathophysiology of acute myocardial infarction, considerable controversy remains regarding appropriate therapy for the consequences of acute myocardial infarction.

The present chapter will offer general guidelines for care of the patient with acute myocardial infarction (e.g., regarding diet, ambulation, and the like), discuss the theory and practice of limiting infarct size, discuss indications of hemodynamic monitoring, and present an overview of the practical management of low output state and cardiogenic shock in patients with acute myocardial infarction.

Areas of controversy include techniques and limitations of estimating infarct size, possible harmful effects of some inotropic and vasodilating agents, whether to use anticoagulation therapy, how early to allow patients to ambulate and to discharge them from the hospital, the role of surgery, and the importance of right ventricular infarcts. Because the therapy of arrhythmias in the setting of an acute infarction will be discussed at length in chapter 15, it will not be presented in this chapter.
General Approach to the Management of Patients with Acute Myocardial Infarction

The following guidelines, adapted from those of Alpert and Francis [1], represent a useful therapeutic regimen:

1. **Vital signs:** The frequency of taking vital signs (respiratory rate, blood pressure, and pulse) varies from hospital to hospital, but a reasonable schedule is every 30 minutes times four, then every 60 minutes times two. If the patient is stable, a frequency of every 2 hours for the first 24 hours and every 4 hours thereafter is recommended. Temperature may be taken two to four times a day.

2. **Diet:** A recommended diet consists of 1,500 calories of soft food with increased bulk (to prevent constipation) and no added salt. The convalescent period following an acute myocardial infarction represents a good time to introduce a patient to a diet that is low in cholesterol and saturated fat and high in unsaturated fat. The patient should probably have no oral intake for the first 4 to 6 hours, and the feedings should be small, either four or six times a day for the first several days. Oral fluid intake should be moderate, about 2 liters per day.

3. **Electrocardiograms:** Daily recordings are recommended.

4. **Portable chest roentgenogram:** This should be obtained on admission and as necessary, depending on clinical status.

5. **Oxygen supplementation:** This can be accomplished by nasal prongs (2 liters/min or as required).

6. **Daily weights and intake and output recordings are recommended.**

7. **Intravenous infusion:** A 5 percent saline-in-water solution at “keep-open” rate is advisable. Either a short plastic line inserted in a peripheral vein or a central venous line may be used.

8. **Laboratory tests:** Various combinations of cardiac enzymes (creatine phosphokinase, serum glutamic-oxaloacetic transaminase, and lactic dehydrogenase) are usually obtained for diagnosis (see chapter 8) and for estimating the size of the infarct (discussed subsequently). Daily electrolyte determinations are advisable in those patients who are prone to arrhythmias; periodic determination of other tests (hematocrit, white blood cell count, prothrombin time, and tests of renal function) are also recommended.

9. **Medications:** A daily stool softener is recommended; for patients who are constipated, a gentle laxative such as milk of magnesia (at night) is also useful. Mild sedatives such as diazepam (5 mg) or chloralidoxepoxide (10 mg) may be ordered four times a day if necessary. Flurazepam (30 mg) is recommended for sleep at night. Analgesics, such as morphine or hydromorphone (Dilaudid), are preferred for pain associated with anterior or lateral infarcts. The increased parasympathomimetic actions of these drugs, however, may add to the increased vagal tone seen with inferior infarction, and meperidine (Demerol) is preferred in that setting. Also, nitrous oxide gas has been shown to be a useful analgesic in patients with acute infarction [2].

Anticoagulation is a controversial point. “Mild-dose” heparin every 8 to 12 hours subcutaneously for the first 4 to 5 days has been recommended to reduce the prevalence of thrombophlebitis and pulmonary embolism. This seems reasonable in light of the small risks of adverse side effects, although the protective effects remain to be more definitively documented. The role of longer-duration anticoagulation with warfarin derivatives in uncomplicated myocardial infarctions has once again become a subject of controversy since recent investigations suggested that there still may be a place for this kind of therapy [3].

In regard to ambulation, there is little uniformity of opinion as to when a patient should be allowed to ambulate and be discharged from the hospital or advised to return to work. The traditional approach has been to prescribe prolonged bed rest, even for the uncomplicated patients, because of the fear that early ambulation may cause extension of the infarction, precipitate heart failure or arrhythmias, or enhance the risk of the development of ventricular aneurysm and rupture. Recent studies have indicated, however, that patients with uncomplicated myocardial infarction not only can start ambulating on the second day after the infarction, but they can also be discharged from the hospital at the end of the first week without suffering any untoward