



**FIGURE 9-1** Composite algorithm for cardiac risk assessment and stratification in patients undergoing noncardiac surgery. Stepwise clinical evaluation: [1] emergency surgery; [2] prior coronary revascularization; [3] prior coronary evaluation; [4] clinical assessment; [5] RCRI; [6] risk modification strategies. Preventive medical therapy = beta blocker and statin therapy. RCRI, revised cardiac risk index. (Adapted from LA Fleisher et al: *Circulation* 116:1971, 2007, with permission.)

Program prospective database has identified five predictors of perioperative myocardial infarction (MI) and cardiac arrest based on increasing age, American Society of Anesthesiologists class, type of surgery, dependent functional status, and abnormal serum creatinine level. However, given its accuracy and simplicity, the revised cardiac risk

**TABLE 9-2** ASSESSMENT OF CARDIAC RISK BY FUNCTIONAL STATUS

Risk	Higher	<ul style="list-style-type: none"> <li>• Has difficulty with adult activities of daily living</li> <li>• Cannot walk four blocks or up two flights of stairs or does not meet a MET level of 4</li> </ul>
	Lower	<ul style="list-style-type: none"> <li>• Is inactive but has no limitations</li> <li>• Is active: easily does vigorous tasks</li> <li>• Performs regular vigorous exercises</li> </ul>

Source: From LA Fleisher et al: *Circulation* 116:1971, 2007.

index (RCRI) (Table 9-3) is favored. The RCRI relies on the presence or absence of six identifiable predictive factors: high-risk surgery, ischemic heart disease, congestive heart failure, cerebrovascular disease, diabetes mellitus, and renal dysfunction. Each of these predictors is assigned one point. The risk of major cardiac events—defined as myocardial infarction, pulmonary edema, ventricular fibrillation or primary cardiac arrest, and complete heart block—can then be predicted. Based on the presence of none, one, two, three, or more of these clinical predictors, the rate of development of one of these four major cardiac events is estimated to be 0.4, 0.9, 7, and 11%, respectively (Fig. 9-2). An RCRI score of 0 signifies a 0.4–0.5% risk of cardiac events; RCRI 1, 0.9–1.3%; RCRI 2, 4–7%; and RCRI  $\geq 3$ , 9–11%. The clinical utility of the RCRI is to identify patients with three or more predictors who are at very high risk ( $\geq 11\%$ ) for cardiac complications and who may benefit from further risk stratification with noninvasive cardiac testing or initiation of preoperative preventive medical management.