Clinical, hemodynamic and neurohumoral variables in 238 patients with chronic congestive heart failure (CHF) secondary to coronary artery disease were analyzed to determine potential predictors of mortality in a large population and to allow analysis according to mode of death (sudden or low output death). All variables were assessed before initiation of treatment with vasodilators (converting enzyme inhibitors, direct acting vasodilators) or with the nonglycoside, noncatecholamine class of inotropic agents. Survival outcome was determined as alive, sudden death or low output death. When all variables except ejection fraction were analyzed by Cox multiple regression analysis, the most important independent predictor of all deaths was the baseline plasma renin activity (p less than 0.001). When subdivided by cause of cardiovascular death, baseline plasma renin activity was retained as the most important determinant of low output death (p less than 0.001), whereas baseline left ventricular stroke work index (p less than 0.001), pulmonary capillary wedge pressure (p less than 0.002) and absence of sinus rhythm (p less than 0.006) were the most powerful independent predictors of sudden death. Plasma norepinephrine was markedly elevated in the group dying of low output, but only modestly elevated in the group of survivors and the group dying suddenly. However, baseline norepinephrine was not found to be an important independent predictor of mortality in any of the subgroups. Plasma renin activity, but not plasma norepinephrine, is a powerful independent prognostic determinant of mortality in this group of patients with CHF.