

Who Dies After Cardiac Surgery?

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Introduction: Risk factors for death following cardiac surgery have been studied extensively. Emergency or urgent surgery and low pre-operative left ventricular ejection fraction are important risk factors for death in most studies. In these analyses we examined the risk of in-hospital death associated with each of these factors and also calculated the number deaths in each of these risk categories.

Methods: Data were collected from consecutive patients undergoing isolated coronary artery bypass graft surgery (CABG). In-hospital mortality rates and percent of total deaths were calculated for each patient group. Emergency patients are hemodynamically unstable while urgent patients are hospitalized with recent myocardial infarction or unstable angina.

Results: There were 812 in-hospital deaths among these 27,201 CABG patients for an overall mortality rate of 3.0%. The rates of death (per 100 patients), the actual number of deaths and the percent of all deaths are shown in the table.

Preoperative Ejection Fraction	Elective Surgery N= 8,898		Urgent Surgery N= 16,447		Emergency Surgery N=1,856	
	Death Rate/100	Number of Deaths (%)	Death Rate/100	Number of Deaths (%)	Death Rate/100	Number of Deaths (%)
<40%	3.0	29 (3.6%)	5.0	112 (13.8%)	12.5	34 (4.2%)
40-49%	1.2	15 (1.9%)	3.2	84 (10.3%)	11.5	30 (3.7%)
50-59%	1.3	27 (3.3%)	3.0	106 (13.1%)	7.1	22 (2.7%)
≥60%	1.1	39 (4.8%)	1.9	106 (13.1%)	5.8	27 (3.3%)
Missing EF	1.5	17 (2.1%)	3.5	87 (10.7%)	14.2	77 (9.5%)

Not surprisingly, the highest death rates were seen in the emergency and urgent patients and in those with depressed preoperative ejection fraction. Emergency patients accounted for 23.4% of all deaths. The majority of the deaths (61.0%) occurred among the urgent patients, while 15.6% of deaths occurred among elective patients. Overall, 33.4% of all deaths occurred among non-emergency patients known to have preserved preoperative ejection fraction (EF>40%).

Conclusion: Many deaths following cardiac surgery occur in lower or moderate risk patients with preserved preoperative ejection fractions. Some of these deaths may be preventable.