

KEY REFERENCES

EuroSCORE Bridging

Scoring systems for predicting mortality in cardiac surgery are not a new phenomenon. Some previous scoring systems include the Parsonnet Score, the Cleveland Score, and the UK Bayes Score.

The European System for Cardiac Operative Risk Evaluation (EuroSCORE) is a prognostic scoring system developed in Europe for patients undergoing cardiac surgery. It was derived from a European database of nearly 20,000 consecutive patients from 128 hospitals in 8 European countries. Information was collected on 97 risk factors, preoperatively, in all the patients. These risk factors were then compared to patient outcomes (survival or death). By means of logistic regression calculations, those risk factors most reliably and objectively associated with mortality became part of the EuroSCORE calculation. Therefore, by using the EuroSCORE, one can predict mortality as a percentage risk prior to operating.

The Table shows how to calculate the EuroSCORE by simple arithmetic. Some factors are more important than others and so are weighted accordingly in the calculation. For example, active endocarditis prior to an operation increases the preoperative risk by 3% and an emergency operation increases the risk by a further 2%.

Simple online calculators can also be found on the official website: www.euroscore.org.

The score obtained for an individual in this way is the predictive mortality, as a percentage, for the patient, assuming the "average" heart surgeon is operating.

Not only is the score useful on a clinical basis but it is hoped that EuroSCORE data may be used to compare cardiac surgeon performances by taking into account preoperative risks.

Since the scoring system has been developed, it has been tested and validated on several local populations in areas around the world, including Europe, Japan, Scandinavia, and the United States. It has been shown to be more accurate than previous cardiac scoring systems.

Considering the fact that the EuroSCORE system has been validated by good performance in North American populations, it would be acceptable to use the scoring system as a risk prediction method in the United States.

Much research, still ongoing, has gone into the EuroSCORE model. Although the overall validity and performance are extremely good, one must understand the shortcomings associated with any scoring system and take these into consideration when using it in clinical practice.

Overview of the EuroSCORE

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European System for Cardiac Operative Risk Evaluation (EuroSCORE)

	Risk Factor	Score
Patient-Related Factors		
Age	1 point per 5 years or part thereof older than 60 years	1
Sex	Female	1
Chronic pulmonary disease	Long-term use of bronchodilators or steroids for lung disease	1
Extracardiac arteriopathy	Any one or more of the following: claudication; carotid occlusion or >50% stenosis; previous or planned intervention on the abdominal aorta, limb arteries, or carotids	2
Neurological dysfunction disease	Severely affecting ambulation or day-to-day functioning	2
Serum creatinine	>200 µmol/L preoperatively	2
Active endocarditis	Patient still under antibiotic treatment for endocarditis at the time of surgery	3
Critical preoperative state	Any one or more of the following: ventricular tachycardia or fibrillation or aborted sudden death, preoperative cardiac massage, preoperative ventilation before arrival in the anaesthetic room, preoperative inotropic support, intraaortic balloon counterpulsation, or preoperative acute renal failure (anuria or oliguria <10 mL/hour)	3
Cardiac-related factors		
Unstable angina	Rest angina requiring intravenous nitrates until arrival in the anaesthetic room	2
Left ventricular dysfunction	Moderate or left ventricular ejection fraction 30%-50%	1
	Poor or left ventricular ejection fraction <30%	3
Recent myocardial infarct	<90 days	2
Pulmonary hypertension	Systolic pulmonary artery pressure >60 mm Hg	2
Operation-related factors		
Emergency	Surgery performed on referral before the beginning of the next working day	2
Other than isolated coronary artery bypass graft	Major cardiac procedure other than or in addition to coronary artery bypass graft	2
Surgery on thoracic aorta	For disorder of ascending aorta, aortic arch, or descending aorta	3
Postinfarct septal rupture		4

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Andrew Gogbashian, Department of Surgery, Hammersmith Hospital, London, UK