Beta-blockers

Full citation	**Yang H, Raymer K, Butler R, Parlow J, Roberts R. (2006) The effects of perioperative beta-blockade: results of the Metoprolol after Vascular Surgery (MaVS) study, a randomized controlled trial. Am Heart J. 152(5):983-90.**
Study details	Study type: randomised, placebo-controlled, double-blind trial Location(s): Canada Aim(s): to assess the efficacy of perioperative metoprolol on postoperative outcomes of patients undergoing abdominal aortic surgery Study dates: 1999 to 2002 Follow-up: 30 months Sources of funding: Heart and Stroke Foundation of Canada
Participants	Population: patients undergoing elective abdominal aortic surgery (no additional details were provided). Sample size: 496; 76% (377/496) male Inclusion criteria: patients with American Society of Anaesthesiology class of 3 or less undergoing abdominal aortic surgery and infrainguinal or axillofemoral revascularization were included Exclusion criteria: current or recent use of beta-blockers or amiodarone, an airflow obstruction requiring treatment, history of congestive heart failure, a history of atrioventricular block, or previous adverse drug reactions to beta-blockers Baseline characteristics: • Mean age: Beta-blocker group, 66.4 years; control group, 65.9 years • Sex: Beta-blocker group, 78.5% male; control group, 73.6% male • Mean aneurysm size: not reported • Prior myocardial infarction: Beta-blocker group, 15.0%; control group, 12.0% • Angina: Beta-blocker group, 7.3%; control group, 10.0% • Diabetes: Beta-blocker group, 22.0%; control group, 14.8% • Permanent pace maker: Beta-blocker group, 0.4%; control group, 0% • Renal insufficiency: Beta-blocker group, 1.2%; control group, 2.8%

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Intervention	25 to 100 mg of metoprolol was administered orally or intravenously, 2 hours before and after surgery. Treatment was continued intravenously every 6 hours or orally twice a day for 5 days or until hospital discharge (whichever occurred sooner).
Comparison	Matched placebo
Outcomes measures	The primary outcome was the composite rate of cardiac death, myocardial infarction, congestive heart failure, unstable angina, dysrhythmia requiring treatment, and non-cardiac death at 6 month follow-up. Individual rates were also reported at 30-day follow-up. Secondary outcomes included the need for reoperation, cerebrovascular accidents, new or worsened renal insufficiency, rehospitalisation, and intraoperative adverse events.
Risk of bias assessment (using Cochrane risk of bias tool)	1. Random sequence generation (selection bias): Unclear risk – Authors state that randomisation was constructed in block of 4 by the study statistician; however it is not clear how allocation sequences were generated. 2. Allocation concealment (selection bias): Unclear risk – Insufficient information was provided in the manuscript to ascertain whether appropriate steps were taken to conceal group allocations 3. Blinding of participants and personnel (performance bias): Low risk – Authors state that patients, investigators, and all caretakers were blinded to the study randomisation 4. Blinding of outcome assessment (detection bias): Low risk – Authors state that patients, investigators, and all caretakers were blinded to the study randomisation 5. Incomplete outcome data (attrition bias): Low risk – “Completion of study protocol was 77.6% and 75.2% in the placebo and treatment groups, respectively.” All losses to follow-up were accounted for and equally balanced across the 2 groups. 6. Selective reporting (reporting bias): Low risk – All pre-specified outcomes were reported 7. Other bias: – Unclear risk – Intraoperative use of esmolol was allowed if deemed absolutely necessary. However, it was not clear what proportions of patients in each group received esmolol. Overall risk of bias: Low Directness: directly applicable