

**Anexis 1:****Definitions of preoperative comorbidities:**

- Hypertension: systolic blood pressure >160 mmHg, or diastolic pressure >100 mmHg, or antihypertensive medication
- Diabetes: under treatment with oral therapy or insulin-dependent diabetes
- Hyperlipidemia: total cholesterol >250 mg/dl/triglyceride>200 mg/dl or under medical treatment.
- Neurological disease: cerebrovascular accidents and/or transient ischemic attack
- Kidney disease: creatinine >2mg/dL, preoperative dialysis, previous renal transplantation
- Lung disease: chronic obstructive pulmonary disease/history of previous lung disease on treatment
- Coronary artery disease: History of previous myocardial infarction or coronary disease requiring revascularization and medical treatment.
- Rhythm: preoperative non-sinus rhythm
- Definition of peripheral vascular disease (intermittent claudication, previous surgery or percutaneous intervention on the abdominal aorta or the lower extremity vessels, abdominal or thoracic surgery, arterial and venous thrombosis)
- Redo-surgery: history of previous cardiac surgery
- Double mitral lesion: Defined as combination of moderate or severe mitral stenosis and regurgitation.
- Pulmonary hypertension: Mean pulmonary artery pressure more than 25 mmHg.

**Definition of complications:**

- In hospital mortality included all deaths within 30 days of operation regardless of where death occurred and all deaths in hospital after 30 days among patients who had not been discharged after the index operation
- Cardiovascular complications included myocardial infarction, atrio-ventricular blockade, new onset of atrial fibrillation and cardiogenic shock. A diagnosis of postoperative myocardial infarction was based on the presence of new Q waves, new wall motion abnormalities evidenced by echocardiography or coronary stenosis evidenced by coronary angiogram. Cardiogenic shock was defined as hypotension, cardiac index lower than 2,2 l/min or needs of two or more inotropic drug.
- Neurologic complications included permanent and transient strokes, defined as new onset of global or focal brain injury that persisted for over 72 hours and episodes of delirium. Perioperative stroke was defined as any new temporary or permanent, focal or global neurologic deficit, in accordance with the published guidelines, within 30 days from operation or later than 30 days if still in hospital(22). Temporary stroke included TIA, defined as fully reversible neurologic deficits lasting less than 24 hours, and prolonged reversible ischemic neurologic deficits, defined as events lasting more than 24 hours and less than 3 weeks.
- Pulmonary complications included ventilation failure, reintubation, need of tracheotomy and pleural effusion requiring evacuation.
- Renal complications included acute renal failure, defined as the requirement of hemodialysis or an elevated creatinine level >2 mg/dL or an elevated creatinine level 50% or greater over baseline preoperative value or >2 mg/dL.

- Infectious complications included pneumonia, septicemia, sternal and leg wound infections, defined by positive culture and requiring antibiotic therapy.