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*Guidelines da Sociedade Europeia de Cardiologia para diagnóstico e manejo das síndromes coronarianas crônicas*

## 2019 ESC Guidelines for the diagnosis and management of chronic coronary syndromes

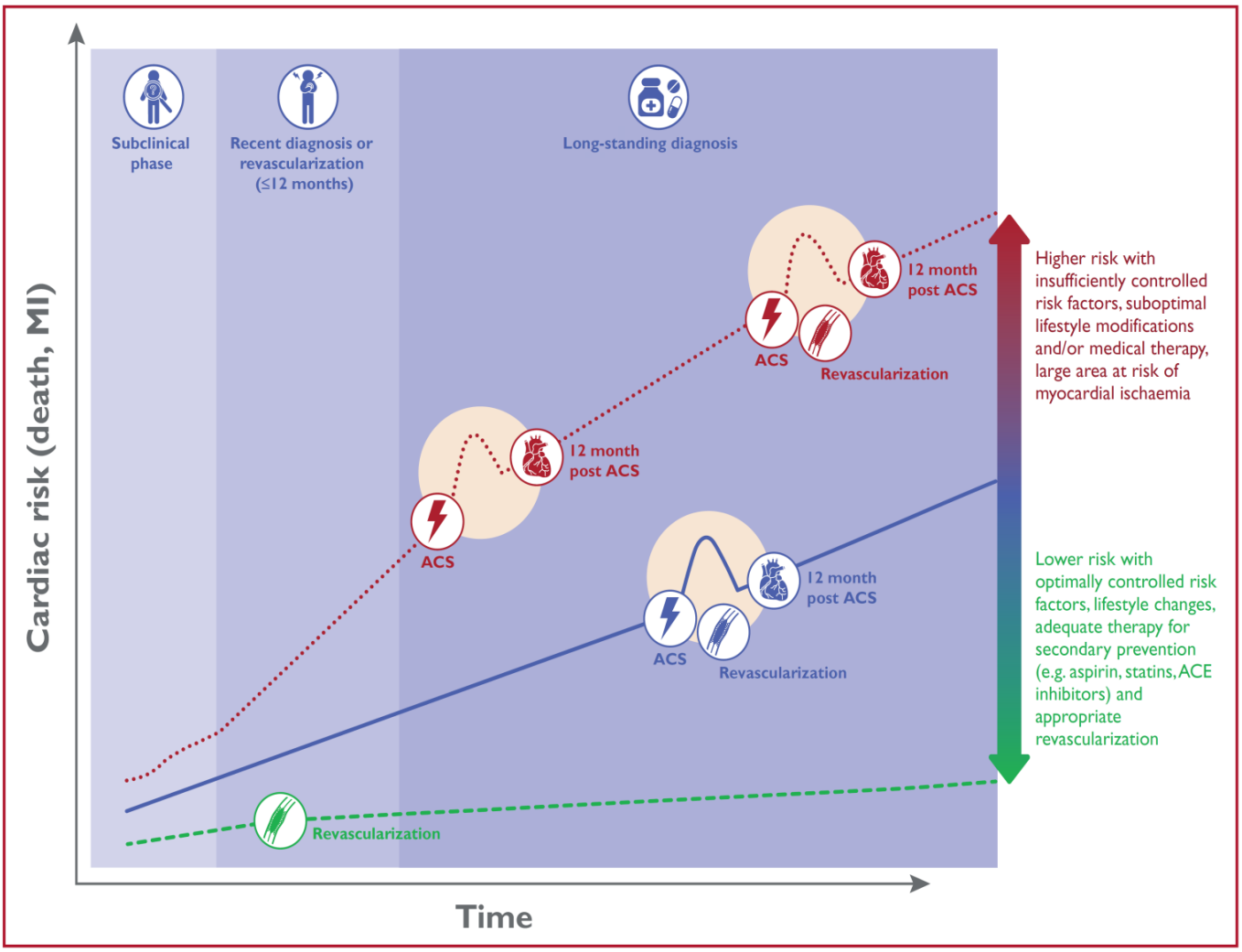
Coronary artery disease (CAD) is a pathological process characterized by atherosclerotic plaque accumulation in the epicardial arteries, whether obstructive or non-obstructive. This process can be modified by lifestyle adjustments, pharmacological therapies, and invasive interventions designed to achieve disease stabilization or regression. The disease can have long, stable periods but can also become unstable at any time, typically due to an acute atherothrombotic event caused by plaque rupture or erosion. However, the disease is chronic, most often progressive, and hence serious, even in clinically apparently silent periods.

The most frequently encountered clinical scenarios in patients with suspected or established CCS are: (1) patients with suspected CAD and 'stable' anginal symptoms, and/or dyspnoea; (2) patients with new onset of heart failure (HF) or left ventricular (LV) dysfunction and suspected CAD; (3) asymptomatic and symptomatic patients with stabilized symptoms <1 year after an ACS, or patients with recent revascularization; (4) asymptomatic and symptomatic patients >1 year after initial diagnosis or revascularization (5) patients with angina and suspected vasospastic or microvascular disease; and (6) asymptomatic subjects in whom CAD is detected at screening.

All of these scenarios are classified as a CCS but involve different risks for future cardiovascular events [death or myocardial infarction (MI)], and the risk may change over time. Development of an ACS may acutely destabilize each of these clinical scenarios. The risk may increase as a consequence of insufficiently controlled cardiovascular risk factors, suboptimal lifestyle modifications and/or medical therapy, or unsuccessful revascularization. Alternatively, the risk may decrease as a consequence of appropriate secondary prevention and successful revascularization.

Hence, CCS are defined by the different evolutionary phases of CAD, excluding situations in which an acute coronary artery thrombosis dominates the clinical presentation (i.e. ACS).

In the present Guidelines, each section deals with the main clinical scenarios of CCS. This structure aims to simplify the use of the Guidelines in clinical practice.


Subclinical phase
Recent diagnosis or revascularization (≤12 months)
Long-standing diagnosis
Cardiac risk (death, MI)
Time
ACS
12 month post ACS
Revascularization
ACS
12 month post ACS
Revascularization
ACS
12 month post ACS
Revascularization
Higher risk with insufficiently controlled risk factors, suboptimal lifestyle modifications and/or medical therapy, large area at risk of myocardial ischaemia
Lower risk with optimally controlled risk factors, lifestyle changes, adequate therapy for secondary prevention (e.g. aspirin, statins, ACE inhibitors) and appropriate revascularization
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J Am Coll Cardiol 2019;74:2074-84

*Tomada de decisão entre cirurgia de revascularização ou angioplastia coronária, em pacientes diabéticos multiarteriais: lições do estudo FREEDOM*

## Individualizing Revascularization Strategy for Diabetic Patients With Multivessel Coronary Disease


### BACKGROUND

In patients with diabetes and multivessel coronary artery disease (CAD), the FREEDOM (Future Revascularization Evaluation in Patients with Diabetes Mellitus: Optimal Management of Multivessel Disease) trial demonstrated that, on average, coronary artery bypass grafting (CABG) was superior to percutaneous coronary intervention (PCI) for major acute cardiovascular events (MACE) and angina reduction. Nonetheless, multivessel PCI remains a common revascularization strategy in the real world.

### OBJECTIVES

To translate the results of FREEDOM to individual patients in clinical practice, risk models of the heterogeneity of treatment benefit were built.

### METHODS

Using patient-level data from 1,900 FREEDOM patients, the authors developed models to predict 5-year MACE (all-cause mortality, nonfatal myocardial infarction, and nonfatal stroke) and 1-year angina after CABG and PCI using baseline covariates and treatment interactions. Parsimonious models were created to support clinical use. The models were internally validated using bootstrap resampling, and the MACE model was externally validated in a large real-world registry.

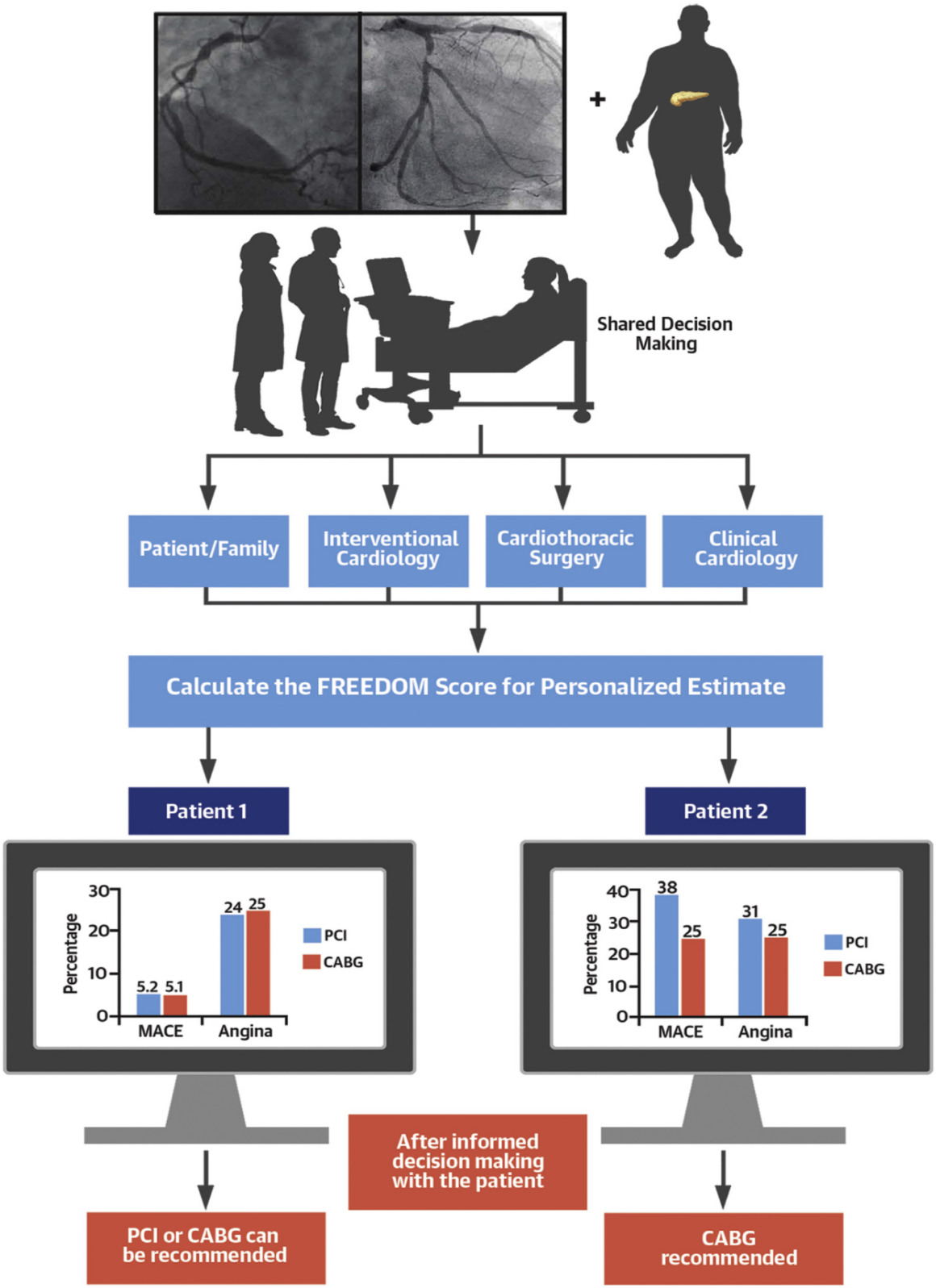
### RESULTS

The 5-year MACE occurred in 346 (18.2%) patients, and 310 (16.3%) had angina at 1 year. The MACE model included 8 variables and treatment interactions with smoking status (c = 0.67). External validation in stable CAD (c = 0.65) and ACS (c = 0.68) demonstrated comparable performance. The 6-variable angina model included a treatment interaction with SYNTAX score (c = 0.67). PCI was never superior to CABG, and CABG was superior to PCI for MACE in 54.5% of patients and in 100% of patients with history of smoking.

### CONCLUSIONS

To help disseminate the results of FREEDOM, the authors created a personalized risk prediction tool for patients with diabetes and multivessel CAD that could be used in shared decision-making for CABG versus PCI by estimating each patient's personal outcomes with both treatments.

**CENTRAL ILLUSTRATION** **Proposed Shared Decision-Making Algorithm for Patients With Multivessel Coronary Artery Disease and Diabetes Utilizing the FREEDOM Score**




**Qintar, M. et al. J Am Coll Cardiol. 2019;74(16):2074-84.**

Utilizing our innovative FREEDOM score, a heart-team approach can be undertaken to engage patients and their physicians to make an informed decision about the best treatment strategy for their coronary artery disease. CABG = coronary artery bypass grafting; PCI = percutaneous coronary intervention.

N Engl J Med 2019. Nov 16. DOI: 10.1056/NEJMoa1912388

*COLCOT Trial: baixa Dose de Colchicina Pós Infarto do Miocárdio Reduz Eventos Cardiovasculares Futuros*

# Efficacy and Safety of Low-Dose Colchicine after Myocardial Infarction


## BACKGROUND

Experimental and clinical evidence support the role of inflammation in atherosclerosis and its complications. Colchicine is an orally administered, potent antiinflammatory medication that is indicated for the treatment of gout and pericarditis.

## METHODS

We performed a randomized, double-blind trial involving patients recruited within 30 days after a myocardial infarction. The patients were randomly assigned to receive either low-dose colchicine (0.5 mg once daily) or placebo. The primary efficacy end point was a composite of death from cardiovascular causes, resuscitated cardiac arrest, myocardial infarction, stroke, or urgent hospitalization for angina leading to coronary revascularization. The components of the primary end point and safety were also assessed.

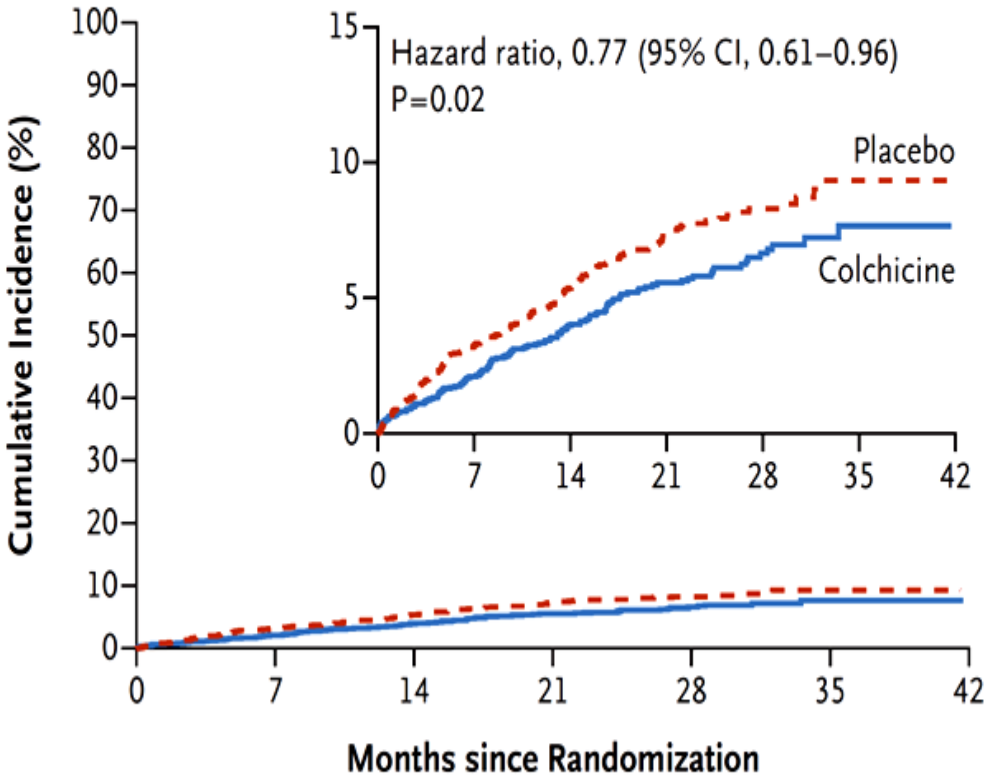
## RESULTS

A total of 4745 patients were enrolled; 2366 patients were assigned to the colchicine group, and 2379 to the placebo group. Patients were followed for a median of 22.6 months. The primary end point occurred in 5.5% of the patients in the colchicine group, as compared with 7.1% of those in the placebo group (hazard ratio, 0.77; 95% confidence interval [CI], 0.61 to 0.96; P=0.02). The hazard ratios were 0.84 (95% CI, 0.46 to 1.52) for death from cardiovascular causes, 0.83 (95% CI, 0.25 to 2.73) for resuscitated cardiac arrest, 0.91 (95% CI, 0.68 to 1.21) for myocardial infarction, 0.26 (95% CI, 0.10 to 0.70) for stroke, and 0.50 (95% CI, 0.31 to 0.81) for urgent hospitalization for angina leading to coronary revascularization. Diarrhea was reported in 9.7% of the patients in the colchicine group and in 8.9% of those in the placebo group (P=0.35). Pneumonia was reported as a serious adverse event in 0.9% of the patients in the colchicine group and in 0.4% of those in the placebo group (P=0.03).

## CONCLUSIONS

Among patients with a recent myocardial infarction, colchicine at a dose of 0.5 mg daily led to a significantly lower risk of ischemic cardiovascular events than placebo. (Funded by the Government of Quebec and others; COLCOT ClinicalTrials.gov number, NCT02551094.).

**Figure 2.** Cumulative Incidence of Cardiovascular Events (Intention-to-Treat Population).



**J Thorac Cardiovasc Surg 2019. Sep 21. https://doi.org/10.1016/j.jtcvs.2019.09.177**
**g/10.1016/j.jtcvs.2019.09.**

*Enxerto de Safena No Touch Apresenta Excelente Perviedade em 8 Anos, Aponta Ensaio Clínico Sueco*

# The No-Touch Saphenous Vein is an Excellent Alternative Conduit to the Radial Artery 8 Years after Coronary Artery Bypass Grafting: A Randomized Trial

## OBJECTIVES

In 2004, a prospective randomized trial demonstrated that, after 3 years, saphenous veins (SV) harvested with a No Touch (NT) technique had a greater patency than radial grafts for coronary bypass surgery. We now report the 8-year follow-up data of this trial.

## METHODS

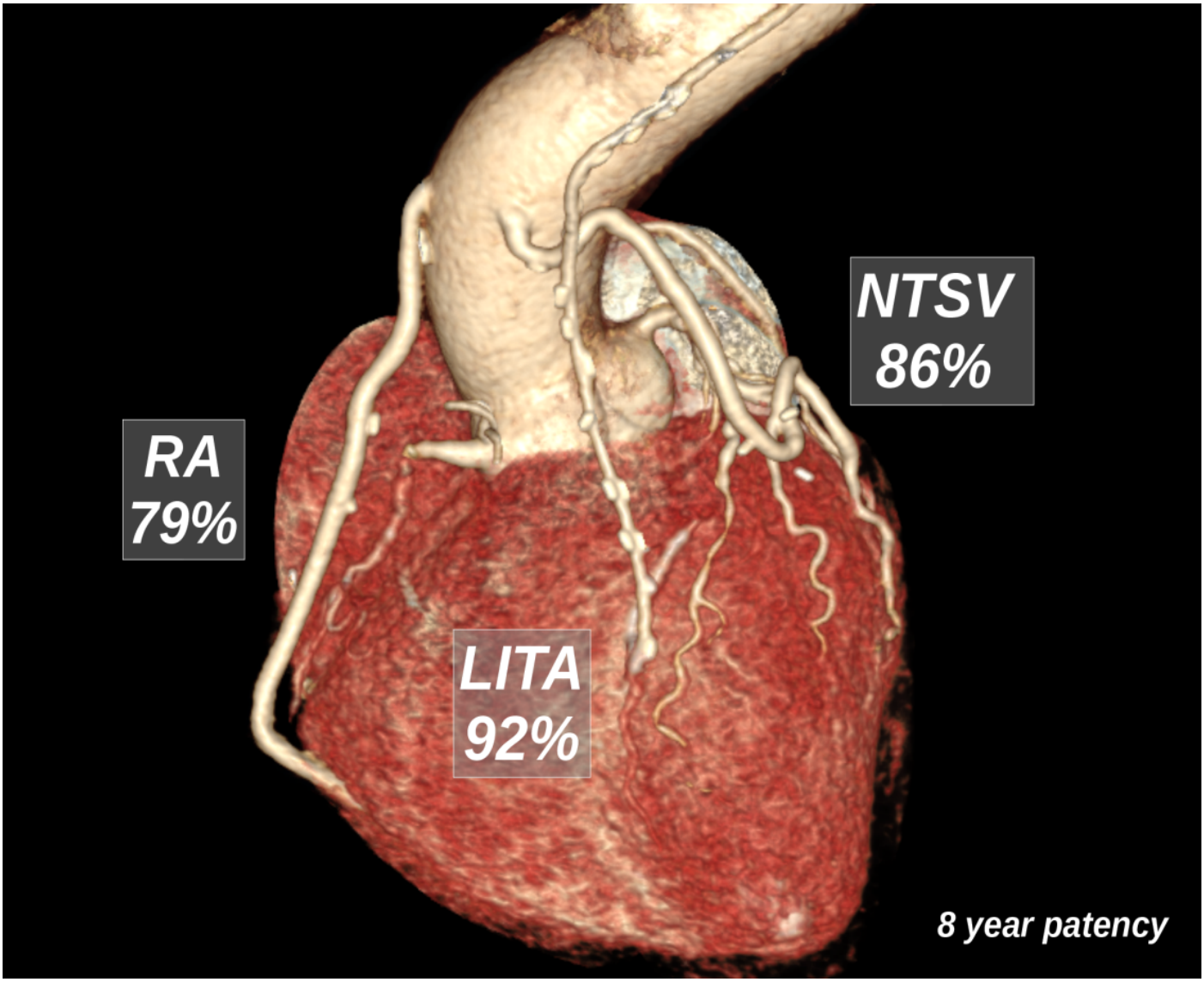
The trial included 108 patients undergoing coronary artery bypass grafting (CABG). Each patient was assigned to receive one NT SV and one radial artery (RA) graft either to the left or right coronary territory to complement the left internal thoracic artery (LITA). Sequential grafting was common, so overall graft patency, as well as patency of each anastomosis was assessed.

## RESULTS

Angiography was performed in 84 patients (78%) at mean 97 months postoperatively. Graft patency for both the NT veins and RAs were high, and similar: 86% NT versus 79% RA, P=0.22. The patency for coronary anastomoses grafted with the NT SV was significantly higher than for the RA grafts (91% versus 81% p = 0.046), respectively. The NT grafts also had excellent patency in coronary arteries with a less than 90% stenosis (patency 93%), or in coronary arteries with small diameters (87%), or mild calcification (88%). The patency for the left internal thoracic artery (LITA) was 92%.

## CONCLUSIONS

No Touch saphenous vein grafts have an excellent patency that is similar to radial artery grafts after 8 years. In addition, NT saphenous vein can also be used in situations that are not ideal for radial artery grafts.


NTSV
86%
RA
79%
LITA
92%
8 year patency

J Am Coll Cardiol 2019;74:1190-1200

*Subanálise do Estudo PARTNER II: Anticoagulação após Troca de Válvula Aórtica (Cirúrgica ou Transcateter) Apresenta Melhor Desempenho em 1 ano*

# Anticoagulation After Surgical or Transcatheter Bioprosthetic Aortic Valve Replacement


## OBJECTIVES

The study aimed to assess the impact of AC after bioprosthetic AVR on valve hemodynamics and clinical outcomes.

## METHODS

Data on antiplatelet and antithrombotic therapy were collected. Echocardiograms were performed at 30 days and 1 year post-AVR. Linear regression model and propensity-score adjusted cox proportional model were used to assess the impact of AC on valve hemodynamics and clinical outcomes, respectively.

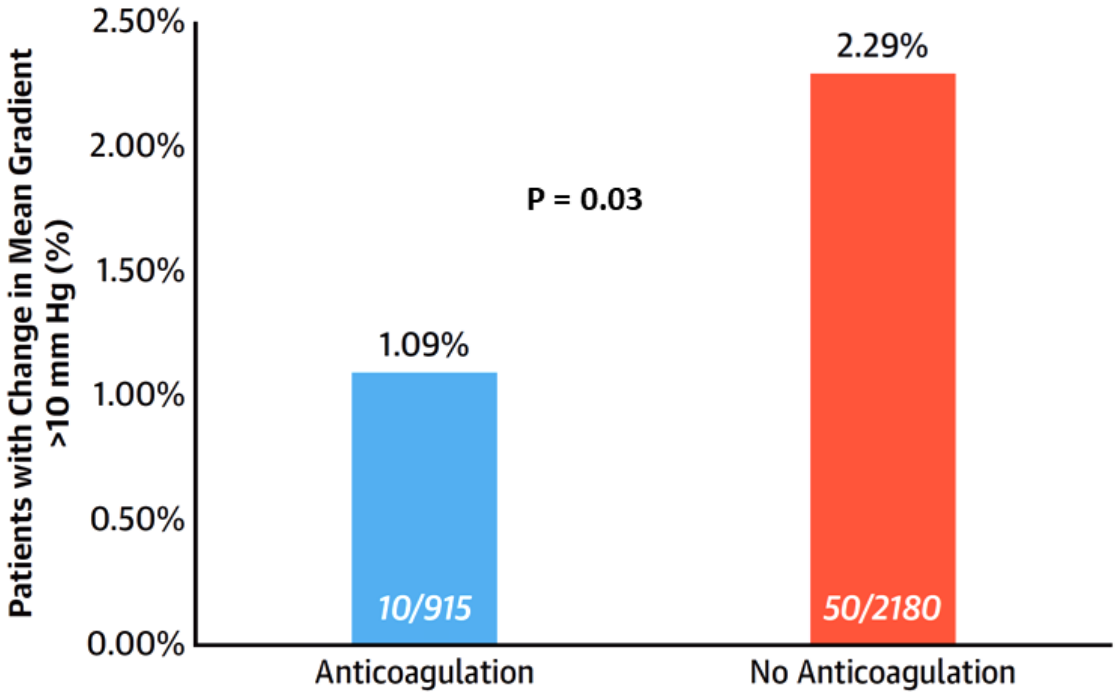
## RESULTS

A total of 4,832 patients undergoing bioprosthetic AVR (transcatheter aortic valve replacement [TAVR], n = 3,889 and surgical AVR [SAVR], n = 943) in the pooled cohort of PARTNER2 (Placement of Aortic Transcatheter Valves) randomized trials and nonrandomized registries were studied. Following adjustment for valve size, annular diameter, atrial fibrillation, and ejection fraction at the time of assessment of hemodynamics, there was no significant difference in aortic valve mean gradients or aortic valve areas between patients discharged on AC vs. those not discharged on AC, for either TAVR or SAVR cohorts. A significantly greater proportion of patients not discharged on AC had an increase in mean gradient >10 mm Hg from 30 days to 1 year, compared with those discharged on AC (2.3% vs. 1.1%, P=0.03). There was no independent association between AC after TAVR and adverse outcomes (death, P=0.15; rehospitalization, P=0.16), whereas AC after SAVR was associated with significantly fewer strokes (hazard ratio [HR]: 0.17; 95% confidence interval [CI]: 0.05-0.60; P=0.006).

## CONCLUSIONS

In the short term, early AC after bioprosthetic AVR did not result in adverse clinical events, did not significantly affect aortic valve hemodynamics (aortic valve gradients or area), and was associated with decreased rates of stroke after SAVR (but not after TAVR). Whether early AC after bioprosthetic AVR has impact on long-term outcomes remains to be determined. (PARTNER II A; NCT01314313.)

Patients with increased mean gradient > 10 mmHg at 1 year



**Am J Cardiol 2019. Nov 8. DOI: 10.1016/j.amjcard.2019.10.036**

*Metanálise Demonstra Menor Mortalidade com Válvula Aórtica Transcateter (TAVI), em Comparação à Cirurgia Convencional, em Pacientes de Baixo Risco*

# Meta-Analysis of Transcatheter Aortic Valve Implantation Versus Surgical Aortic Valve Replacement in Patients With Low Surgical Risk

## ABSTRACT

Transcatheter aortic valve implantation (TAVI) is the current standard of care for patients with severe aortic stenosis who are at high risk for surgery. However, several recent studies have demonstrated the comparable safety and efficacy of TAVI in low-risk patients as well. We sought to pool the existing data to further assert its comparability. MEDLINE, Cochrane, and Embase databases were evaluated for relevant articles published from January 2005 to June 2019. Studies comparing outcomes of TAVI versus surgical aortic valve replacement in patients who are at low risk for surgery were included.

Twelve studies (5 randomized controlled trials and 7 observational studies) totaling 27,956 patients were included. Follow-up ranged from 3 months to 5 years. Short-term all-cause mortality, short-term, and 1-year cardiac mortality were significantly lower in the TAVI group. One-year all-cause mortality, short-term, and 1-year stroke and myocardial infarction were similar in both groups. Rate of acute kidney injury and new-onset atrial fibrillation were lower in the TAVI group, whereas permanent pacemaker implantation and major vascular complications were higher in the TAVI group. Subgroup analysis of randomized controlled trials showed significantly lower 1-year all-cause mortality in the TAVI group.

In conclusion, in severe aortic stenosis patients at low surgical risk, TAVI when compared with surgical aortic valve replacement, demonstrated a lower rate of short-term all-cause mortality, short-term, and 1-year cardiac mortality and similar in terms of 1-year all-cause mortality. TAVI is emerging as a safe and efficacious alternative for low surgical risk patients.

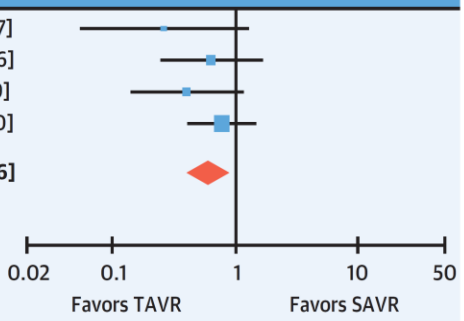
**CENTRAL ILLUSTRATION** **All-Cause and Cardiovascular Death at 1 Year After TAVR Versus SAVR in Low-Risk Patients**

**A**

| Study or Subgroup | TAVR Events | TAVR Total | SAVR Events | SAVR Total | Weight | Risk Ratio M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| SURTAVI (STS Below 3%) | 2 | 131 | 7 | 123 | 8.4% | 0.27 [0.06, 1.27] |
| NOTION | 7 | 145 | 10 | 135 | 23.2% | 0.65 [0.26, 1.66] |
| PARTNER 3 | 5 | 496 | 11 | 454 | 18.5% | 0.42 [0.15, 1.19] |
| Evolut Low Risk | 17 | 725 | 20 | 678 | 49.9% | 0.79 [0.42, 1.50] |
| **Total (95% CI)** | | **1,497** | | **1,390** | **100.0%** | **0.61 [0.39, 0.96]** |
| Total events | 31 | | 48 | | | |

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 2.28$, df = 3 (p = 0.52); $I^2 = 0\%$

Test for overall effect: Z = 2.12 (p = 0.03)

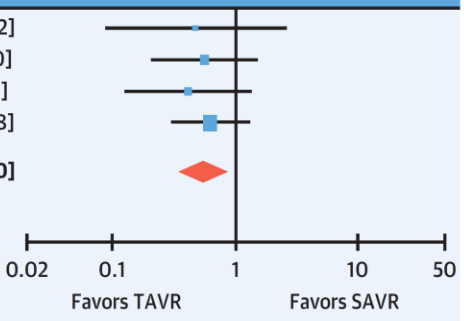



**B**

| Study or Subgroup | TAVR Events | TAVR Total | SAVR Events | SAVR Total | Weight | Risk Ratio M-H, Random, 95% CI |
|---|---|---|---|---|---|---|
| SURTAVI (STS Below 3%) | 2 | 131 | 4 | 123 | 8.8% | 0.47 [0.09, 2.52] |
| NOTION | 6 | 145 | 10 | 135 | 25.6% | 0.56 [0.21, 1.50] |
| PARTNER 3 | 4 | 496 | 9 | 454 | 18.1% | 0.41 [0.13, 1.31] |
| Evolut Low Risk | 12 | 725 | 18 | 678 | 47.5% | 0.62 [0.30, 1.28] |
| **Total (95% CI)** | | **1,497** | | **1,390** | **100.0%** | **0.55 [0.33, 0.90]** |
| Total events | 24 | | 41 | | | |

Heterogeneity: $Tau^2 = 0.00$; $Chi^2 = 0.41$, df = 3 (p = 0.94); $I^2 = 0\%$

Test for overall effect: Z = 2.37 (p = 0.02)




**Kolte, D. et al. J Am Coll Cardiol. 2019;74(12):1532-40.**

All-cause death **(A)** and cardiovascular death **(B)** at 1 year after TAVR versus SAVR in low-risk patients are shown. In low-risk patients with severe aortic stenosis, TAVR was associated with significantly lower risk of all-cause death (2.1% vs. 3.5%; RR: 0.61; 95% CI: 0.39 to 0.96; p = 0.03; $I^2 = 0\%$) and cardiovascular death (1.6% vs. 2.9%; RR: 0.55; 95% CI: 0.33 to 0.90; p = 0.02; $I^2 = 0\%$) at 1 year as compared with SAVR. CI = confidence interval; M-H = Mantel-Haenszel; NOTION = Nordic Aortic Valve Intervention Trial; PARTNER = Placement of Aortic Transcatheter Valves; RR = risk ratio; SAVR = surgical aortic valve replacement; STS = Society of Thoracic Surgeons; SURTAVI = Surgical Replacement and Transcatheter Aortic Valve Implantation; TAVR = transcatheter aortic valve replacement.

Eur J Heart Fail 2019. Sep 2. DOI: 10.1002/ejhf.1616

*Resultados de 2 anos do Mitra-FR trial não demonstram benefício do MitraClip em relação ao tratamento clínico, em pacientes com insuficiência mitral grave*

# Percutaneous Repair or Medical Treatment for Secondary Mitral Regurgitation: outcomes at 2 Years


## AIMS

The MITRA-FR trial showed that among symptomatic patients with severe secondary mitral regurgitation, percutaneous repair did not reduce the risk of death or hospitalization for heart failure at 12 months compared with guideline-directed medical treatment alone. We report the 24-month outcome from this trial.

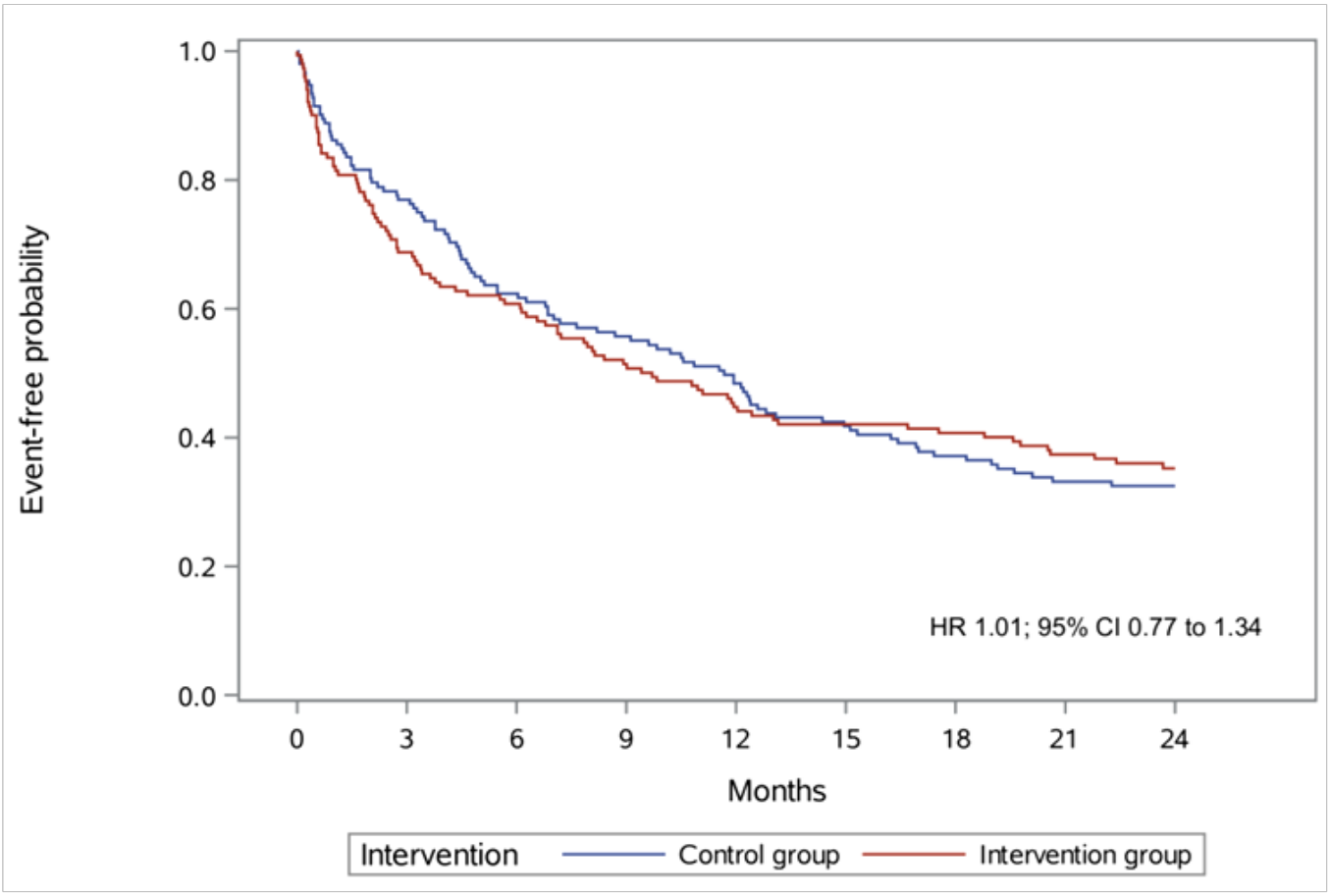
## METHODS AND RESULTS

At 37 centres, we randomly assigned 304 symptomatic heart failure patients with severe secondary mitral regurgitation (effective regurgitant orifice area >20 mm2 or regurgitant volume >30 mL), and left ventricular ejection fraction between 15% and 40% to undergo percutaneous valve repair plus medical treatment (intervention group, n = 152) or medical treatment alone (control group, n = 152). The primary efficacy outcome was the composite of all-cause death and unplanned hospitalization for heart failure at 12 months. At 24 months, all-cause death and unplanned hospitalization for heart failure occurred in 63.8% of patients (97/152) in the intervention group and 67.1% (102/152) in the control group [hazard ratio (HR) 1.01, 95% confidence interval (CI) 0.77-1.34]. All-cause mortality occurred in 34.9% of patients (53/152) in the intervention group and 34.2% (52/152) in the control group (HR 1.02, 95% CI 0.70-1.50). Unplanned hospitalization for heart failure occurred in 55.9% of patients (85/152) in the intervention group and 61.8% (94/152) in the control group (HR 0.97, 95% CI 0.72-1.30).

## CONCLUSIONS

In patients with severe secondary mitral regurgitation, percutaneous repair added to medical treatment did not significantly reduce the risk of death or hospitalization for heart failure at 2 years compared with medical treatment alone.

# Death ou unplanned hospitalization for heart failure



*Anemia e Transfusão Sanguínea Impactam a Mortalidade Tardia, Após Cirurgia Cardíaca?*

## Association Between Anemia and Blood Transfusion With Long term Mortality after Cardiac Surgery


### BACKGROUND

Preoperative anemia and red blood cell (RBC) transfusion are both associated with in-hospital mortality after cardiac surgery. The aim of this study was to investigate the interactions between preoperative anemia and RBC transfusion and their effect on the long-term survival of patients undergoing cardiac surgery.

### METHODS

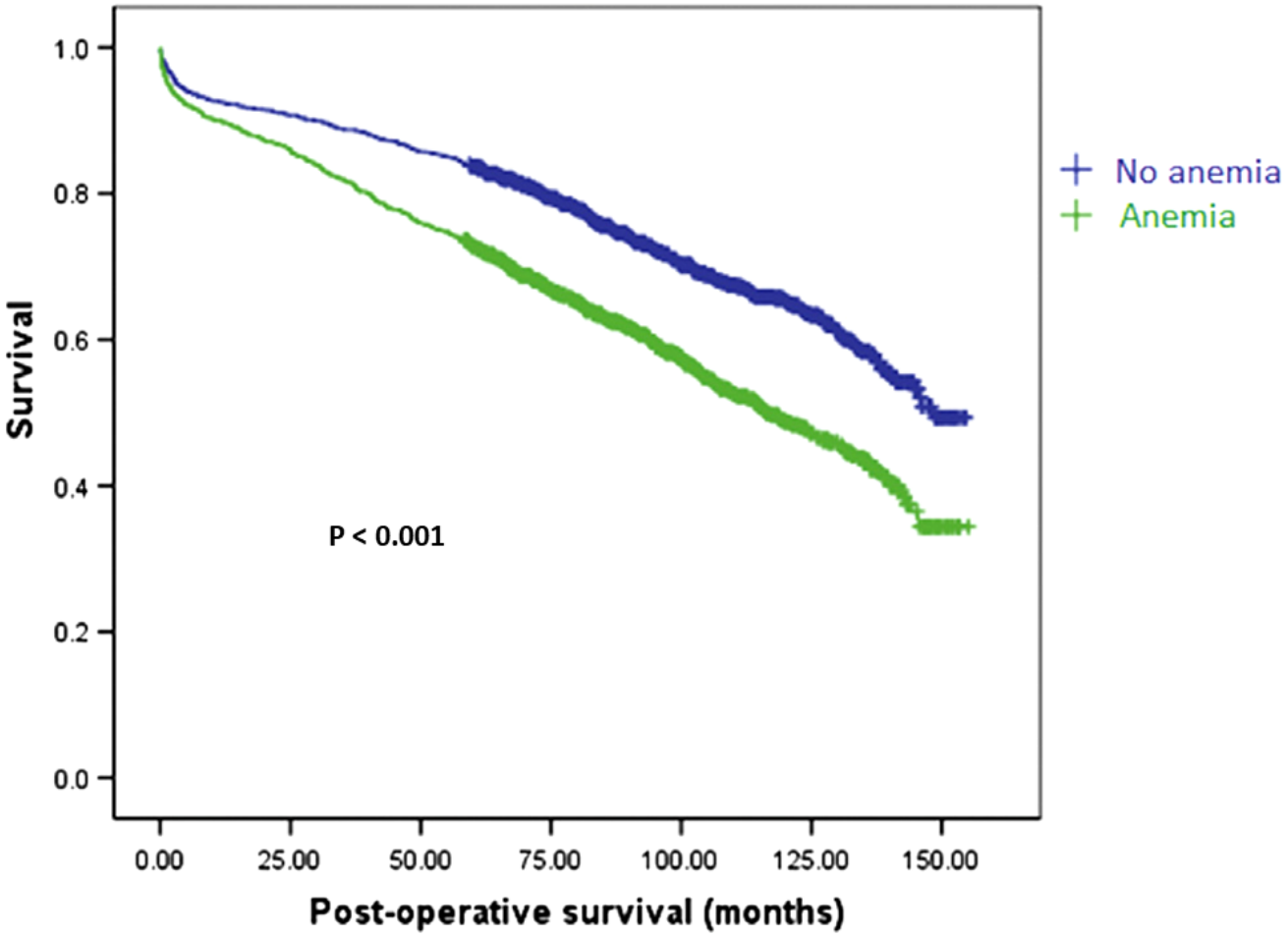
Between 2005 and 2012, 1170 patients with anemia who underwent elective or urgent cardiac surgery were included. A matched group of 1170 nonanemic patients was used as a control group. A binary logistic regression model was used.

### RESULTS

The median follow-up period was 64 months (range, 0-127). Anemic patients had higher mortality (45%, n=526) than nonanemic patients (32%, n=374; P<.001). Preoperative anemia was independently associated with long-term mortality (odds ratio [OR], 1.70; 95% confidence interval [CI], 1.46-2.1; P < .001), with both moderate (OR, 2.27; 95% CI, 1.72-2.99; P<.001) and mild anemia (OR, 1.39; 95% CI, 1.13-1.71; P=.002) contributing significantly. RBC transfusion was not associated with long-term mortality (OR, 1.07; 95% CI, 0.88-1.31; P = .49). There was no interaction between preoperative anemia and RBC transfusion (P=.947).

### CONCLUSIONS

Long-term mortality is significantly high in patients who are anemic, regardless of their transfusion status. Preoperative anemia is a strong, independent predictor of mortality and therefore should be managed before cardiac surgery.


1.0
0.8
0.6
0.4
0.2
0.0
Survival
P < 0.001
0.00
25.00
50.00
75.00
100.00
125.00
150.00
Post-operative survival (months)
No anemia
Anemia