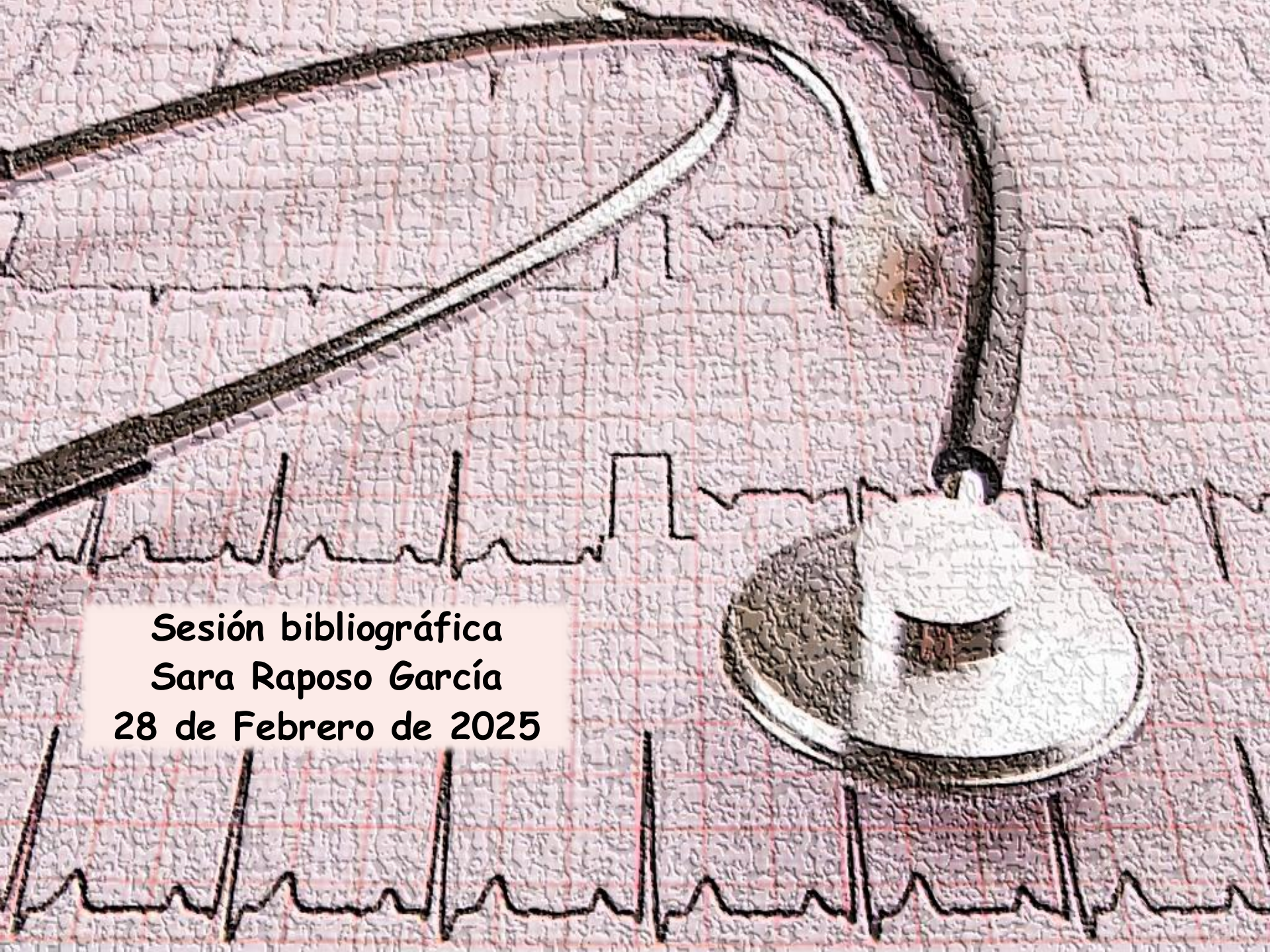

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# Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation

Andrea Giomi [a,1], Andrea Bernardini [a,b,*,1], Alessandro Paoletti Perini [a], Davide Ciliberti [b], Cristiano Salvatore Zaccaria [a,b], Umberto Signorini [a], Margherita Padeletti [a], Massimo Milli [a]

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ARTICLE INFO

*Keywords:*
Smoke
Atrial fibrillation
Ablation
Recurrences

ABSTRACT

*Background:* The clinical impact of smoking on atrial fibrillation (AF) recurrences after pulmonar
(PVI) have contradictory results in previous studies, performed on Asian populations.
*Methods and aim:* Smoking habit and other cardiovascular risk-factors were assessed in patients
their first radiofrequency PVI for symptomatic AF. The study aims to assess the clinical impact of
recurrences after PVI in a contemporary European cohort of patients.
*Results:* The study included 186 consecutive patients (135 males [72.6%]) with a mean age of 6
Current smokers resulted 29 (15.7%). No statistically significant baseline differences were de
current smokers and non-current smokers. After a follow-up of 418 ± 246 days, AF recurrenc
currently smoking patients vs. non-currently smoker patients, the latter intended as a combi
previous smokers and never smokers (34.5% vs. 14% $p = 0.01$). A previous smoking habit was
with increased risk of AF recurrence when compared with patients who never smoked (13.2%
0.23), while a current smoking habit impacted on AF recurrence in comparison with previous smo
and never smokers ($p = 0.04$). The increased incidence of AF recurrence in current smokers was
considering only paroxysmal AF (31.4% vs 9.6%, $p = 0.012$) or persistent AF (50% vs 31.2%, $p =$
(HR = 2.96 95% CI 1.32–6.64) and persistent AF (HR = 2.64 95% CI 1.22–5.7) resulted independe
AF recurrence.
*Conclusion:* Cigarette smoking is associated with an increased risk of AF recurrences after PVI, both
and in persistent AF.

## 1. Introduction

Atrial fibrillation (AF) and cigarette smoking have a high prevalence in the general population: AF has an estimated prevalence between 2% and 4% in adults [1], while it has been assessed that, in 2020, 22.3% of the worldwide population used tobacco [2], although these percentages could vary according to age, sex, ethnicity, nationality and education [3,4]. Cigarette smoke has a pleiotropic effect on the cardiovascular system increasing the risk of myocardial infarction [5], stroke [6], heart failure [7] and death [8]. The risk of AF occurrence associated with smoking and other cardiovascular risk factors has been established [9–11], as well as the association between AF recurrences and smoking after pharmacological or electrical cardioversion [12]. Pulmonary vein isolation (PVI) is the therapy of choice for rhythm control therapy, associated with reduction of AF recurrence and adverse
outcomes [13,14]: however, the evidence about the role
AF recurrence after PVI is scarce and derived from
controversial results, performed exclusively on Asian
[15,16]. This study aims to assess the clinical impact of
other cardiovascular risk factors in AF patients treated w
rary radiofrequency catheters for PVI.

## 2. Methods

### 2.1. Study population and cardiovascular risk factors assess

Our retrospective observational study included 186 c
tients referred to our electrophysiological lab for

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https://doi.org/10.1093/eurheartj/ehae585

**FAST TRACK CONGRESS**
*Valvular heart disease*

# Aortic valve replacement vs. conservative treatment in asymptomatic severe aortic stenosis: long-term follow-up of the AVATAR trial

**Marko Banovic [1,2]*, Svetozar Putnik[1,3], Bruno R. Da Costa, Marek A. Deja[6], Martin Kotrc[7], Radka Kockova[8], Sigita Glav, Hrvoje Gasparovic [10], Nikola Pavlovic [11], Lazar Velicki[12], Stefano Salizzoni [14], Wojtek Wojakowski[15], Guy Van Camp, Michael Laufer[17], Sara Tomovic[1], Ivan Busic[1], Milica Bojanic[1], Andrea Klasnja[19], Milos Matkovic[1,3], Nikola Boskovic[2], Kata, Miodrag Jovanovic[20], Serge D. Nikolic[21], Bernard Iung[22], and**

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University Clinical Center of Serbia, Belgrade, Serbia; [3]Clinical Trial Service Unit and Epidemiological Studies Unit, Nuffield Department
UK; [6]Cardiovascular Center, OLV Hospital, Aalst, Belgium; [7]Department of Cardiac Surgery, Medical University of Silesia, Katowice, Pol
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Institute of Clinical Medicine, Faculty of Medicine, Vilnius University, Vilnius, Lithuania; [10]Department of Cardiac Surgery, University o
Center Zagreb, Zagreb, Croatia; [11]Department of Cardiology, University Hospital Dubrava, Zagreb, Croatia; [12]Faculty of Medicine, Un
of Cardiac Surgery, Institute of Cardiovascular Diseases Vojvodina, Sremska Kamenica, Serbia; [14]Division of Cardiac Surgery, Cardiova
Turin, Italy; [15]Division of Cardiology and Structural Heart Diseases, Medical University of Silesia, Katowice, Poland; [16]Saban Al Ahmad
[17]Vtach Ventures, Menlo Park, CA, USA; [19]Anaesteziology Department, 'Institute Banjica', Belgrade, Serbia; [20]Department of Cardiolo
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Hospital APHP and Universita Paris-Cité, Paris, France

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**See the editorial comment for this article 'Benefit of early aortic valve replacement in a but questions remain', by A. Martinsson and A. Jeppsson, https://doi.org/10.1093/eurh**

**Abstract**

**Background and Aims** The question of when and how to treat truly asymptomatic patients with sever
tricular (LV) systolic function is still subject to debate and ongoing research. Her
AVATAR trial are reported (NCT02436655, ClinicalTrials.gov).

**Methods** The AVATAR trial randomly assigned patients with severe, asymptomatic AS a
either early surgical aortic valve replacement (AVR) or conservative treatment
had negative exercise stress testing. The primary hypothesis was that early AVR
comprising all-cause death, acute myocardial infarction, stroke, or unplanned ho
pared with conservative treatment strategy.

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ESC European Society of Cardiology
European Heart Journal: Acute Cardiovascular Care (2024) **13**, 537–545
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**ORIGINAL SCIENTIFIC PAPER**
*Acute Coronary Syndromes*

# Patient knowledge about risk factors, achievement of target values, and guideline-adherent secondary prevention therapies 12 months after acute myocardial infarction

**Uwe Zeymer [1,2,3]*, Franz Goss[3,4,5], Marcel Kunadt[2], Susanne Oldenburg[5], Mathias Hochadel[2], Holger Thiele [6,7], and Karl Werdan[3,7,8], for the GULLIVE-R Investigators**

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**In line with the Journal's conflict of interest policy, this paper was handled by Borja Ibanez.**

**See the editorial comment for this article 'High-sensitivity cardiac troponin and uncertainties in the diagnosis, treatment, and communication of risk in acute myocardial infarction', by Y.Y. Tew *et al.*, https://doi.org/10.1093/ehjacc/zuae077.**

**Aims** The prospective GULLIVE-R study aimed to evaluate adherence to guideline-recommended secondary prevention, physicians' and patients' estimation of cardiac risk, and patients' knowledge about target values of risk factors after acute myocardial infarction (AMI).

**Methods and results** We performed a prospective study enrolling patients 9–12 months after AMI. Guideline-recommended secondary prevention therapies and physicians as well as patients' estimation about their risk and patients' knowledge about target values were prospectively collected. Between July 2019 and June 2021, a total of 2509 outpatients were enrolled in 150 German centres 10 months after AMI. The mean age was 66 years, 26.4% were women, 45.3% had ST elevation myocardial infarction, 54.7% had non-ST elevation myocardial infarction, and 93.6% had revascularization (84.0% percutaneous coronary intervention, 7.4% coronary artery bypass graft, 1.8% both). Guideline-recommended secondary drug therapies were prescribed in over 80% of patients, while only about 50% received all five recommended drugs (aspirin, P2Y12 inhibitors, statins, beta-blockers, renin–angiotensin–aldosterone system inhibitors), and regular exercise was performed by only one-third. About 90% of patients felt well informed about secondary prevention, but the correct target value for blood pressure was known in only 37.9% and for LDL-cholesterol in only 8.2%. Both physicians and patients underestimated the objective risk of future AMIs as determined by the thrombolysis in myocardial infarction (TIMI) risk score for secondary prevention.

**Conclusion** There is still room for improvement in patient education and implementation of guideline-recommended non-pharmacological and pharmacological secondary prevention therapies in patients in the chronic phase after AMI.

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# Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation

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[b] Department of Experimental and Clinical Medicine, University of Florence, Italy

ARTICLE INFO

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ABSTRACT

*Background:* The clinical impact of smoking on atrial fibrillation (AF) recurrences after pulmonary vein isolation (PVI) have contradictory results in previous studies, performed on Asian populations.

*Methods and aim:* Smoking habit and other cardiovascular risk-factors were assessed in patients who underwent their first radiofrequency PVI for symptomatic AF. The study aims to assess the clinical impact of smoking on AF recurrences after PVI in a contemporary European cohort of patients.

*Results:* The study included 186 consecutive patients (135 males [72.6%]) with a mean age of 63.4 ± 9.7 years. Current smokers resulted 29 (15.7%). No statistically significant baseline differences were detected between current smokers and non-current smokers. After a follow-up of 418 ± 246 days, AF recurrence was higher in currently smoking patients vs. non-currently smoker patients, the latter intended as a combination between previous smokers and never smokers (34.5% vs. 14% $p = 0.01$). A previous smoking habit was not associated with increased risk of AF recurrence when compared with patients who never smoked (13.2% vs. 14.6%, $p = 0.23$), while a current smoking habit impacted on AF recurrence in comparison with previous smokers ($p = 0.01$) and never smokers ($p = 0.04$). The increased incidence of AF recurrence in current smokers was consistent also considering only paroxysmal AF (31.4% vs 9.6%, $p = 0.012$) or persistent AF (50% vs 31.2%, $p = 0.03$). Smoking (HR 2.96 95% CI 1.32–6.64) and persistent AF (HR 2.64 95% CI 1.22–5.7) resulted independent predictors of AF recurrence.

*Conclusion:* Cigarette smoking is associated with an increased risk of AF recurrences after PVI, both in paroxysmal and in persistent AF.

## 1. Introduction

Atrial fibrillation (AF) and cigarette smoking have a high prevalence in the general population: AF has an estimated prevalence between 2% and 4% in adults [1], while it has been assessed that, in 2020, 22.3% of the worldwide population used tobacco [2], although these percentages could vary according to age, sex, ethnicity, nationality and education [3,4]. Cigarette smoke has a pleiotropic effect on the cardiovascular system increasing the risk of myocardial infarction [5], stroke [6], heart failure [7] and death [8]. The risk of AF occurrence associated with smoking and other cardiovascular risk factors has been established [9–11], as well as the association between AF recurrences and smoking after pharmacological or electrical cardioversion [12]. Pulmonary vein isolation (PVI) is the therapy of choice for rhythm control therapy, associated with reduction of AF recurrence and adverse cardiovascular outcomes [13,14]: however, the evidence about the role of smoking in AF recurrence after PVI is scarce and derived from studies with controversial results, performed exclusively on Asian populations [15,16]. This study aims to assess the clinical impact of smoking and of other cardiovascular risk factors in AF patients treated with contemporary radiofrequency catheters for PVI.

## 2. Methods

### 2.1. Study population and cardiovascular risk factors assessment

Our retrospective observational study included 186 consecutive patients referred to our electrophysiological lab for PVI due to

* Corresponding author at: Cardiology and Electrophysiology Unit, Santa Maria Nuova Hospital, Piazza di Santa Maria Nuova 1, 50122 Florence, Italy.
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[1] These authors equally contributed and co-first authors to the paper.

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# Introducción

- **Prevalencia de la FA** (en adultos) ➔ 2 – 4 %
- **Prevalencia del consumo de tabaco** (en adultos) ➔ 22,3%

- **El humo del tabaco incrementa:**
  - Riesgo de **IAM**.
  - Riesgo de **ictus**.
  - Riesgo de **Insuficiencia Cardiaca**.
  - Riesgo de **mortalidad**.

- **Ablación de venas pulmonares** ➔ Tratamiento definitivo para el control del ritmo en pacientes con FA.

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

# Objetivo del estudio

- Evaluar el **IMPACTO CLÍNICO DEL TABACO** en pacientes con **FA** tratados mediante **ablación de venas pulmonares por Radiofrecuencia**.

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

# Resultados

- **186 pacientes** incluidos.
  - **Varones 73%**
  - **Edad media 63,4 ± 9,7 años.**
  - **15,7% (n=29) fumadores *activos*.**
  - **Seguimiento de 418 ± 246 días.**
  - No hubo diferencias significativas en las características basales de los fumadores activos, exfumadores y aquellos que no fumaron nunca.

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

# Resultados

**Table 1**
Baseline characteristics of the study population and outcomes.

| Variables | All Patients (N = 186) | Non-current Smokers (N = 157) | Current Smokers (N = 29) | p-value | Non Recurrent AF (N = 154) | Recurrent AF (N = 32) | p-value |
|---|---|---|---|---|---|---|---|
| Age, y | 63.4 ± 9.7 | 64.1 ± 9.8 | 59.7 ± 8.4 | **0.02** | 63.5 ± 9.9 | 62.8 ± 8.8 | 0.69 |
| Male, n (%) | 135 (72.6%) | 112 (71.3%) | 23 (79.3%) | 0.37 | 115 (74.7%) | 21 (65.6%) | 0.16 |
| BMI, kg/m$^2$ | 26.5 ± 4.1 | 26.4 ± 4.0 | 27.3 ± 4.5 | 0.28 | 26.4 ± 4.1 | 27.2 ± 4.3 | 0.29 |
| Smoking status | | | | | | | |
| Never, n (%) | 89 (47.8%) | – | – | | 76 (49.4%) | 13 (40.6%) | 0.36 |
| Former, n (%) | 68 (36.6%) | – | – | | 59 (38.3%) | 9 (28.1%) | 0.27 |
| Current, n (%) | 29 (15.6%) | – | – | | 19 (12.3%) | 10 (31.3%) | **<0.01** |
| Cigarette/day | – | – | 13.5 ± 6.8 | | 7.2 ± 10.6 | 8.9 ± 9.7 | 0.22 |
| PY*, pack/y | 11.5 ± 18.7 | 9.1 ± 18 | 24.5 ± 16.6 | **<0.01** | 10.8 ± 18.8 | 15 ± 18.1 | 0.11 |
| PY > 20/y*, n (%) | 37 (19.9%) | 25 (15.9%) | 12 (41.4%) | 0.91 | 29 (18.8%) | 8 (25%) | 0.81 |
| Time since smoke cessation[£], Y | – | 17.2 ± 12 | – | | 17.5 ± 12.2 | 15.8 ± 10.9 | 0.73 |
| *E*-cigarettes Smokers, n (%) | – | – | 2 (1.1%) | | 1 (0.64%) | 1 (3.1%) | 0.21 |
| Post PVI Interruption, n (%) | 1 (0.5%) | – | – | – | 1 (0.6%) | 0 (0%) | 0.64 |
| Hypertension, n (%) | 105 (56.5%) | 89 (56.7%) | 16 (55.2%) | 0.88 | 84 (54.5%) | 21 (65.6%) | 0.25 |
| Diabetes, n (%) | 13 (7%) | 12 (7.6%) | 1 (3.4%) | 0.41 | 10 (6.5%) | 3 (9.4%) | 0.56 |
| Obesity, n (%) | 38 (20.4%) | 30 (19.1%) | 8 (27.6%) | 0.29 | 28 (18.2%) | 10 (31.2%) | 0.09 |
| Dyslipidemia, n (%) | 85 (45.7%) | 75 (47.8%) | 10 (34.5%) | 0.18 | 68 (44.2%) | 17 (53.1%) | 0.35 |
| OSAS, n (%) | 17 (9.1%) | 15 (9.6%) | 2 (6.9%) | 0.64 | 12 (7.8%) | 5 (15.6%) | 0.16 |
| Excess Alcohol Consumption[&], n (%) | 7 (3.8%) | 4 (2.5%) | 3 (10.3%) | **0.04** | 3 (1.9%) | 4 (12.5%) | **<0.01** |
| CAD, n (%) | 19 (10.2%) | 18 (11.5%) | 1 (3.4%) | 0.19 | 15 (9.7%) | 4 (12.5%) | 0.63 |
| TIA/Stroke, n (%) | 5 (2.7%) | 4 (2.5%) | 1 (3.4%) | 0.78 | 5 (3.2%) | 0 (0%) | 0.30 |
| HF, n (%) | 19 (10.2%) | 14 (8.9%) | 5 (17.2%) | 0.17 | 13 (8.4%) | 6 (18.8%) | 0.08 |
| VHD, n (%) | 2 (1.1%) | 1 (0.6%) | 1 (3.4%) | 0.17 | 2 (1.3%) | 0 (0%) | 0.51 |
| $CHA_2DS_2$_VASC[$] | 2 (1–2) | 2 (1–3) | 2 (1–2) | 0.67 | 2 (1–2) | 2 (1–3) | 0.75 |
| LVEF, % | 57.4 ± 5.5 | 57.5 ± 5.2 | 56.9 ± 7.1 | 0.99 | 57.7 ± 5.2 | 55.9 ± 6.8 | 0.12 |
| LA area, m$^2$ | 22.1 ± 5.2 | 22.2 ± 5.3 | 21.5 ± 4.5 | 0.79 | 22 ± 4.9 | 22.3 ± 6.2 | 0.29 |
| PAF, n (%) | 148 (79.6%) | 125 (79.6%) | 23 (79.3%) | 0.97 | 129 (83.8%) | 19 (59.4%) | **<0.01** |
| PsAF, n (%) | 38 (20.4%) | 32 (20.4%) | 6 (20.7%) | 0.97 | 25 (16.2%) | 13 (40.6%) | **<0.01** |
| OAC, n (%) | 175 (94.1%) | 146 (93%) | 29 (100%) | 0.14 | 145 (94.2%) | 30 (93.8%) | 0.92 |
| AAD[°], n (%) | 76 (40%) | 62 (39%) | 14 (51.7%) | 0.17 | 64 (41.5%) | 12 (37.5%) | 0.65 |
| Statins, n (%) | 85 (45.7%) | 75 (47.8%) | 10 (34.5%) | 0.18 | 71 (46.1%) | 14 (43.8%) | 0.80 |
| CIEDs, n (%) | 31 (16.6%) | | | | | | |
| Outcomes | | | | | | | |
| Recurrence, n (%) | 32 (17.2%) | 22 (14%) | 10 (34.5%) | **<0.01** | – | – | |
| Recurrence in BP, n (%) | 3 (1.6%) | 2 (1.2%) | 1 (3.4%) | **<0.01** | – | – | |
| Time to recurrence after procedure, d | 379 ± 231 | 381 ± 228 | 366 ± 253 | 0.57 | – | – | |
| Detection of Recurrence (n = 32) | | | | | | | |
| Clinical, n (%) | 13 (40.6%) | 8 (36.3%) | 5 (50%) | 0.46 | – | – | |
| Holter, n (%) | 5 (15.6%) | 3 (13.7%) | 2 (20%) | 0.64 | – | – | |
| CIEDs, n (%) | 14 (43.8%) | 11 (50%) | 3 (30%) | 0.29 | – | – | |

Data are presented as: Mean ± Standard deviation or n (percentage). $p < 0.05$ considered as statistically significant. Statistically significant differences are enhanced in bold.

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

# Resultados

- **Fumadores activos** vs **resto** (exfumadores y no-fumadores):
  - **34,5%** vs **14%**; **p<0,01**.

- **Ex-fumadores** vs **no-fumadores** (sin diferencias significat.):
  - **13,2%** vs **14,6%**; **p=0,23**.

- **Fumadores activos** vs **exfumadores**:
  - **p=0,01**.

- **Fumadores activos** vs **no-fumadores**:
  - **p=0,04**.

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

# Resultados

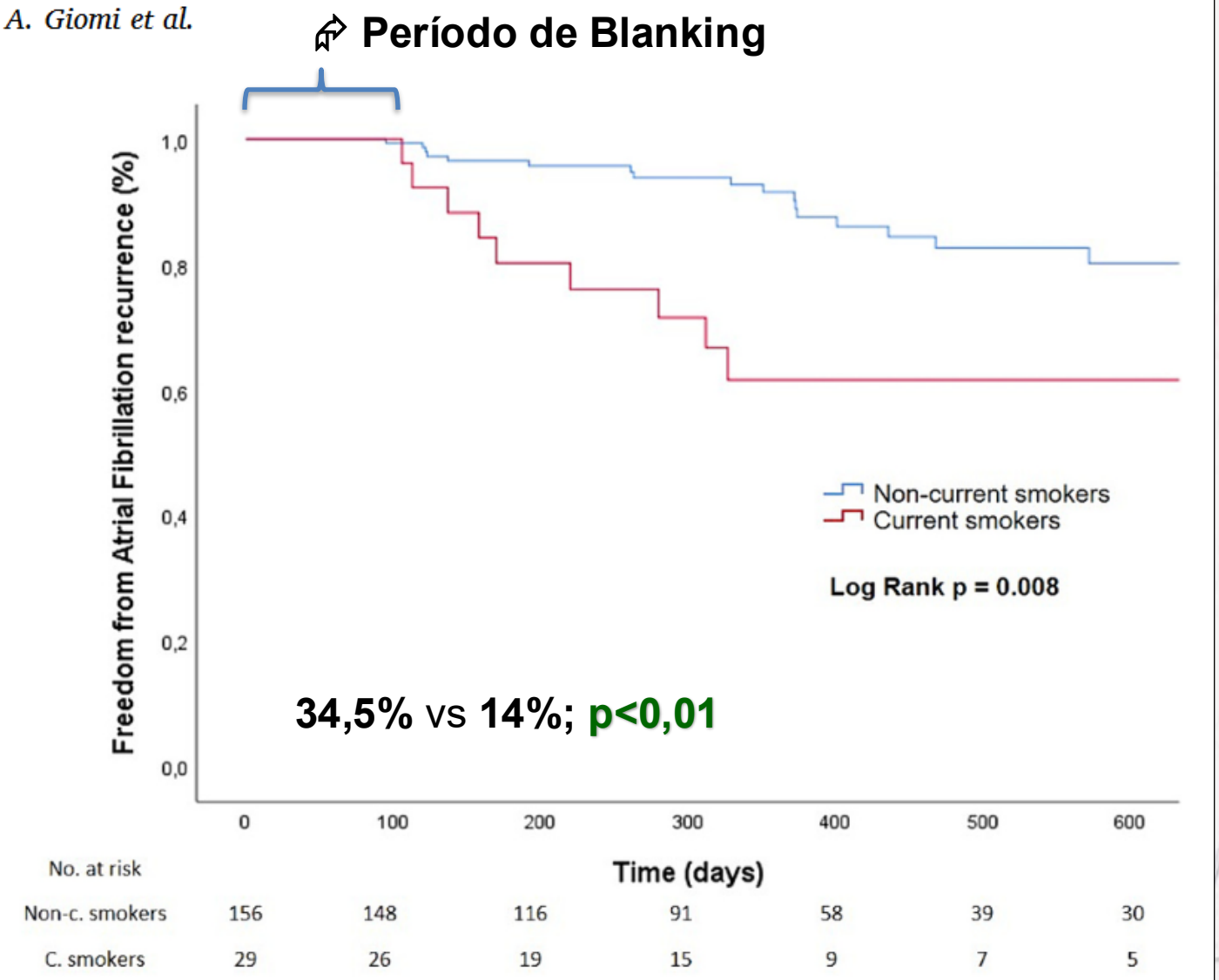


**Fig. 1.** Kaplan-Meier analysis of freedom from atrial fibrillation recurrence in non-current smokers vs. current smokers. The analysis time starts after 3 months of blanking period. C.: current

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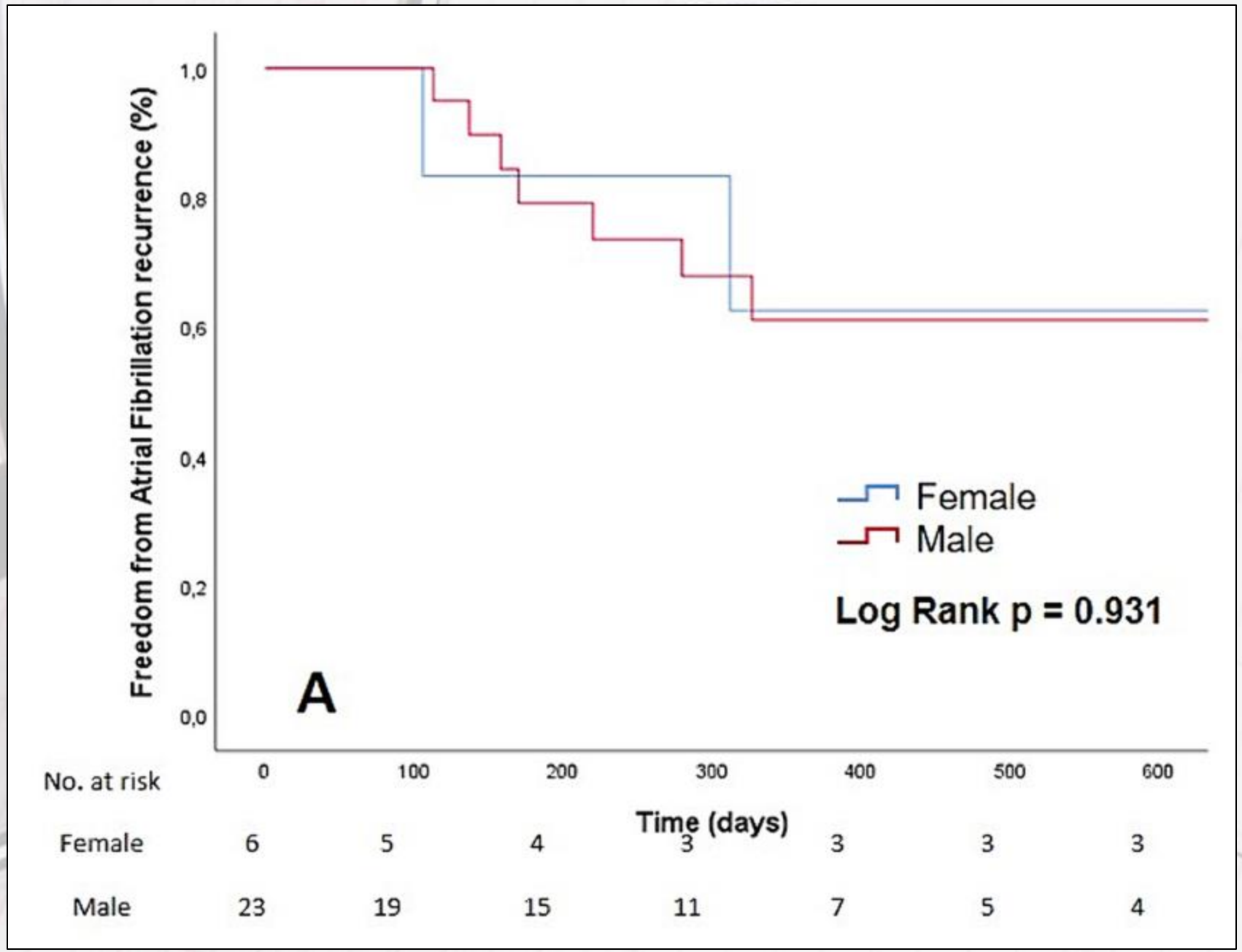


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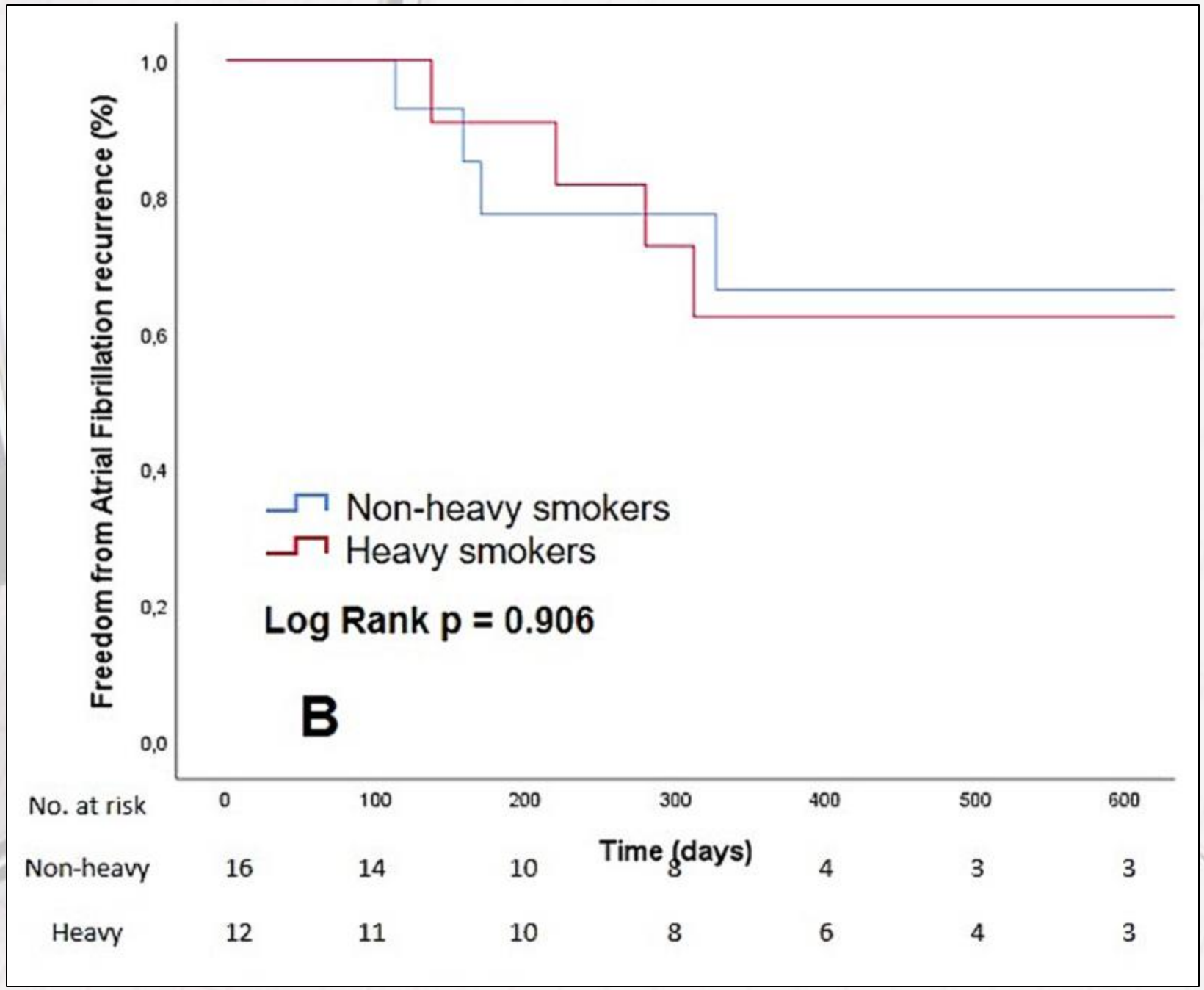


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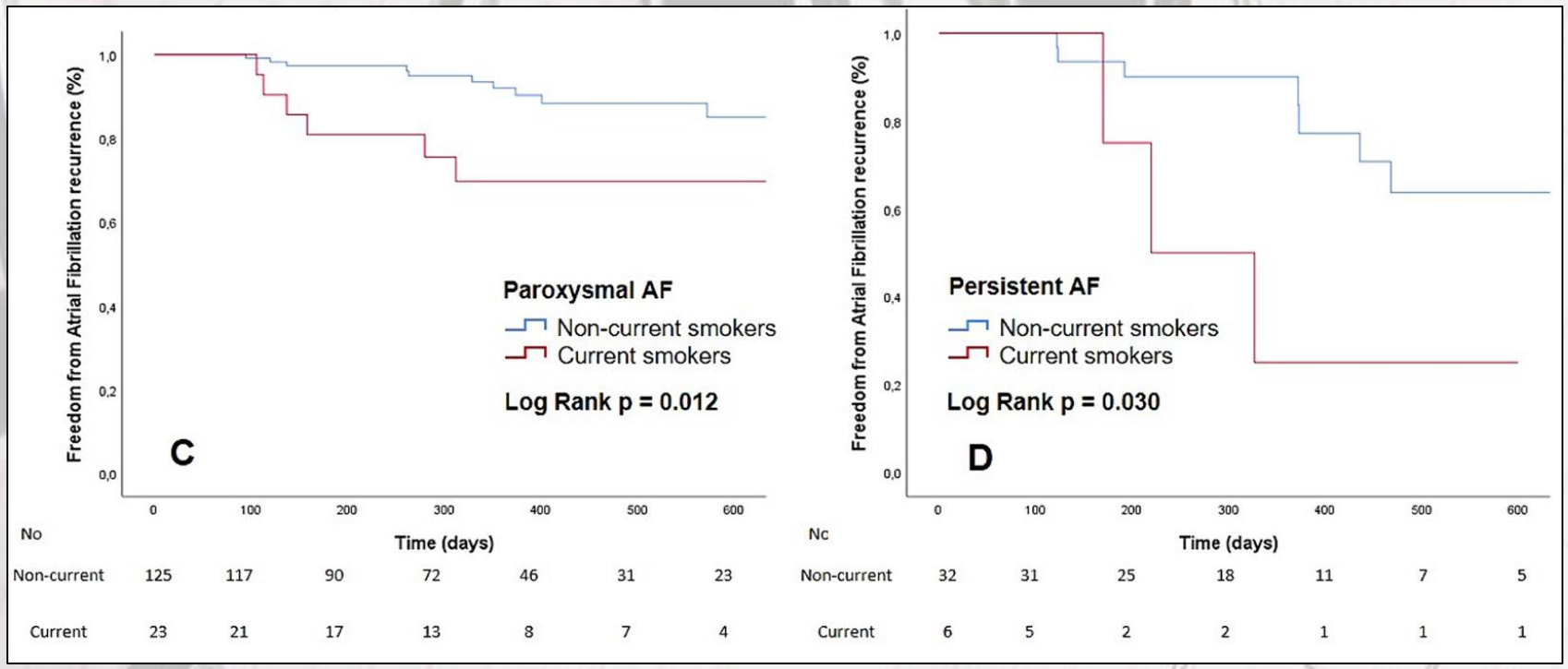


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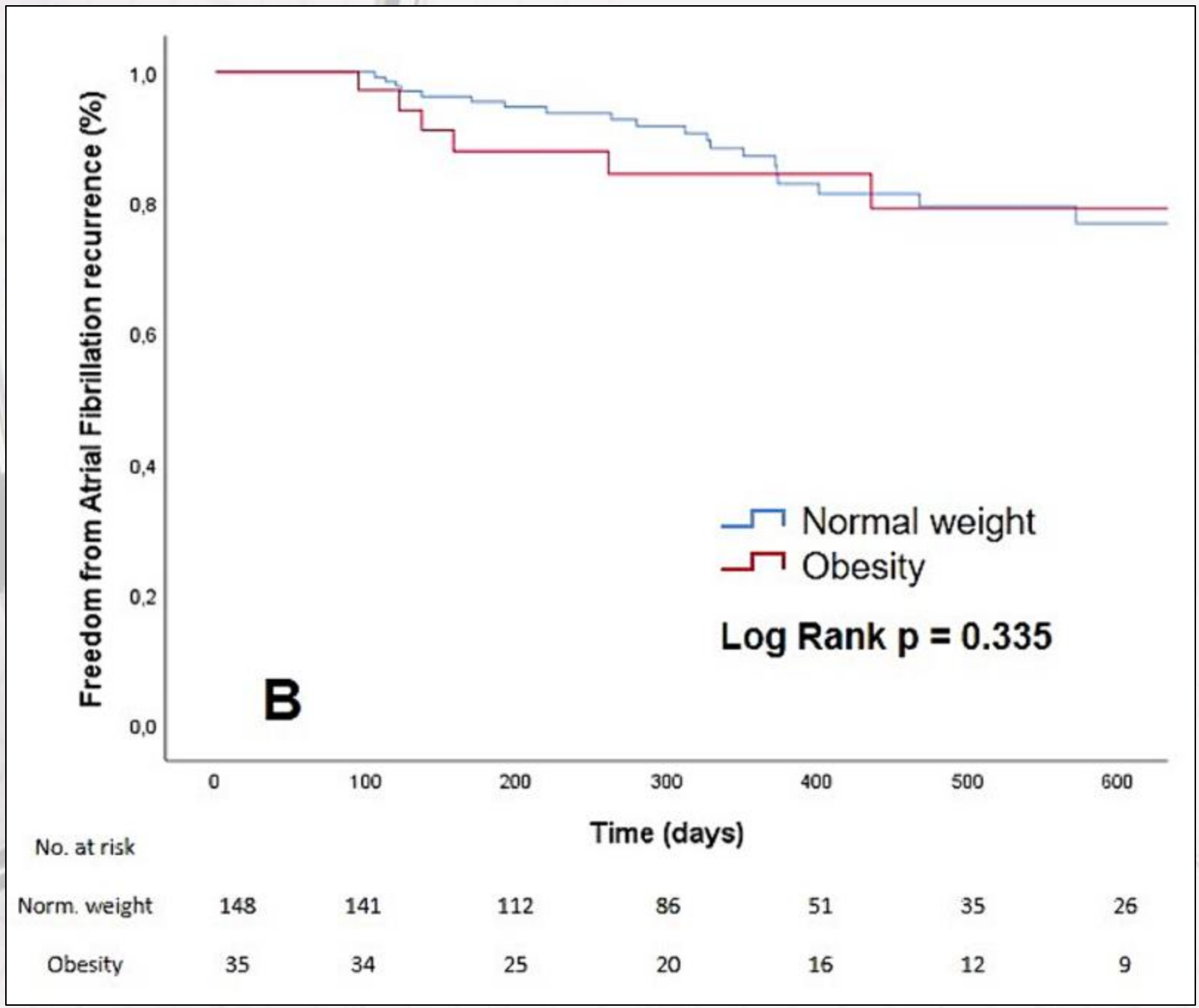


| No. at risk | | | | | | | |
|---|---|---|---|---|---|---|---|
| Norm. weight | 148 | 141 | 112 | 86 | 51 | 35 | 26 |
| Obesity | 35 | 34 | 25 | 20 | 16 | 12 | 9 |

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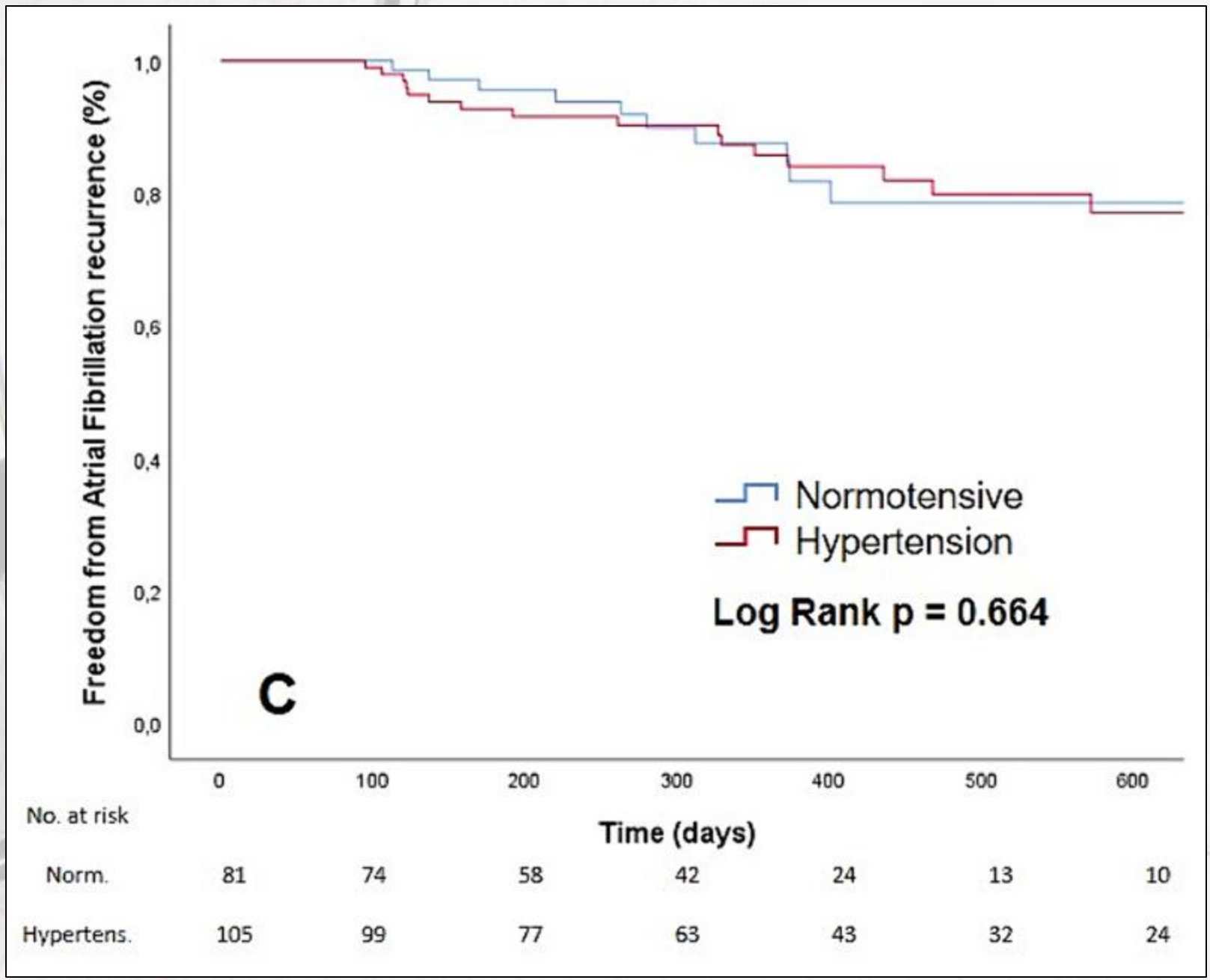


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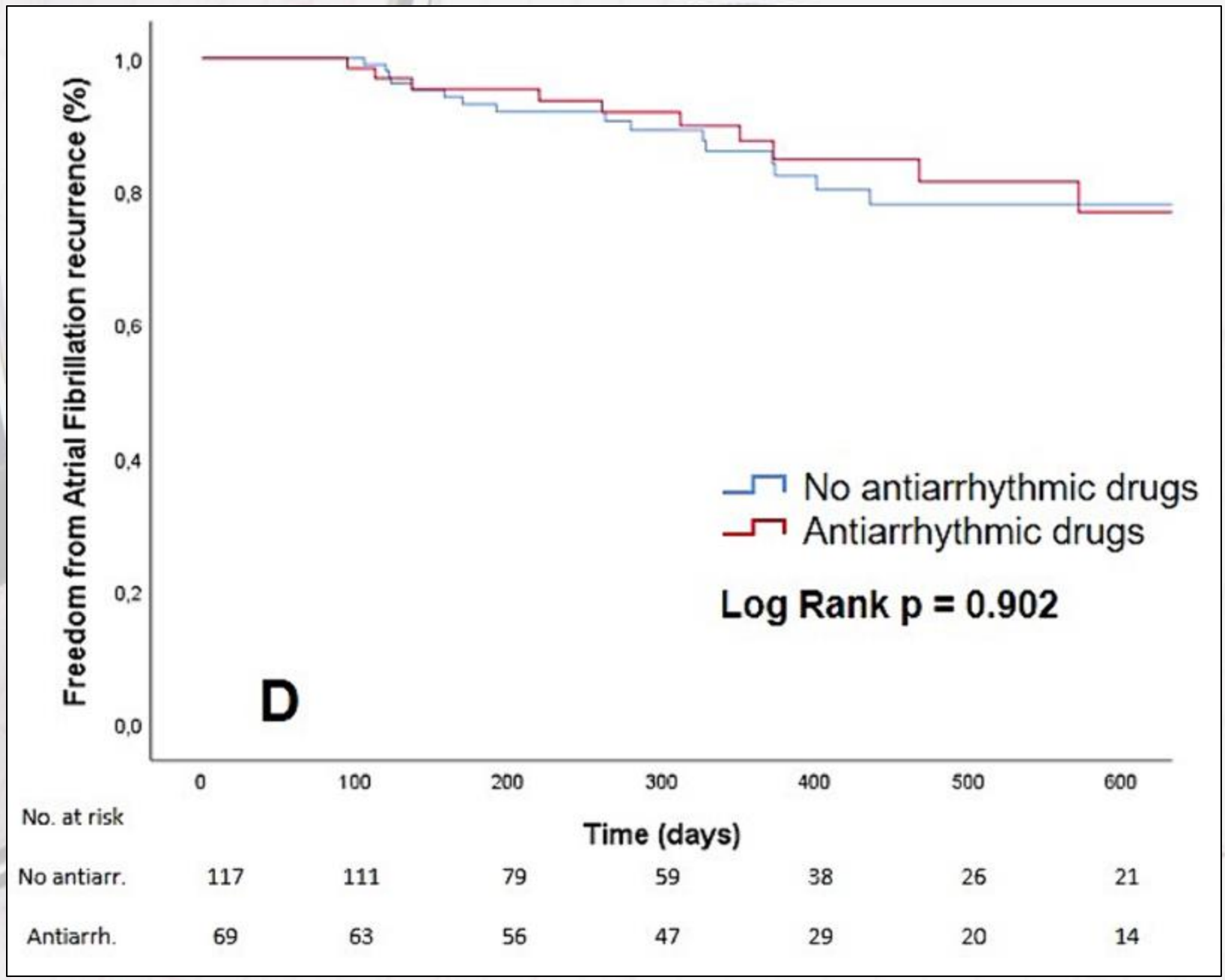


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# Resultados

- El **tabaquismo** y la **FA persistente** se comportaron como **predictores independientes de** la **recurrencia de FA** (**HR=2,96; IC95% 1,32–6,64** y **HR=2,64; IC95% 1,22–5,7**, respectivamente).

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

# Conclusiones

- El **tabaquismo activo** se asocia a un **mayor riesgo de recurrencia de la FA tras la ablación de venas pulmonares**, independientemente de que se trate de una FA paroxística o persistente, así como del resto de comorbilidades del paciente.

**Clinical impact of smoking on atrial fibrillation recurrence after pulmonary vein isolation.** Int J Cardiol. 2024 Oct 15:413:132342.

ESC European Society of Cardiology

European Heart Journal (2024) **45**, 4526–4535
https://doi.org/10.1093/eurheartj/ehae585

**FASTTRACK CONGRESS**
*Valvular heart disease*

# Aortic valve replacement vs. conservative treatment in asymptomatic severe aortic stenosis: long-term follow-up of the AVATAR trial

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**See the editorial comment for this article 'Benefit of early aortic valve replacement in asymptomatic severe aortic stenosis but questions remain', by A. Martinsson and A. Jeppsson, https://doi.org/10.1093/eurheartj/ehae597.**

## Abstract

**Background and Aims** The question of when and how to treat truly asymptomatic patients with severe aortic stenosis (AS) and normal left ventricular (LV) systolic function is still subject to debate and ongoing research. Here, the results of extended follow-up of the AVATAR trial are reported (NCT02436655, ClinicalTrials.gov).

**Methods** The AVATAR trial randomly assigned patients with severe, asymptomatic AS and LV ejection fraction ≥ 50% to undergo either early surgical aortic valve replacement (AVR) or conservative treatment with watchful waiting strategy. All patients had negative exercise stress testing. The primary hypothesis was that early AVR will reduce a primary composite endpoint comprising all-cause death, acute myocardial infarction, stroke, or unplanned hospitalization for heart failure (HF), as compared with conservative treatment strategy.

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# Introducción

- **Estenosis Aórtica** ⇨ Cardiopatía valvular más frecuente entre aquellas que requieren intervención.
- **Su prevalencia se duplicará entre 2.025 y 2.050** (por el envejecimiento de la población).
- **Tratamientos definitivos** ⇨ Quirúrgico y percutáneo (TAVI).

- **INDICACIÓN DE CIRUGÍA** *(o TAVI)* ⇨ EAo grave, **sintomática**.

- ¿Qué hacer con pacientes diagnosticados de EAo grave ***asintomáticos***?

Marco Banovic, et al. **Aortic valve replacement vs. conservative treatment in asymptomatic severe aortic stenosis: long-term follow-up of the AVATAR trial.** European Heart Journal (2024) 45, 4526–4535

# Métodos

- **Ensayo AVATAR** ⇨ ensayo prospectivo, multinacional, aleatorizado, controlado, de grupos paralelos y basado en eventos, que compara la *seguridad* y *eficacia* de la ***cirugía precoz*** en el tratamiento de pacientes **asintomáticos** con EAo grave y FEVI ≥50%, **frente** al ***tratamiento conservador*** con estrategia de intervención tardía -*sólo tras la aparición de síntomas*-).

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# Métodos

- **Hipótesis** ⇨ *"El recambio valvular **precoz (en pacientes asintomáticos)** podría reducir el compuesto mortalidad por cualquier causa, infarto agudo de miocardio, ictus u hospitalización urgente por insuficiencia cardiaca (IC), en comparación con la estrategia de tratamiento conservador (que retrasa la cirugía hasta la presentación de síntomas)".*

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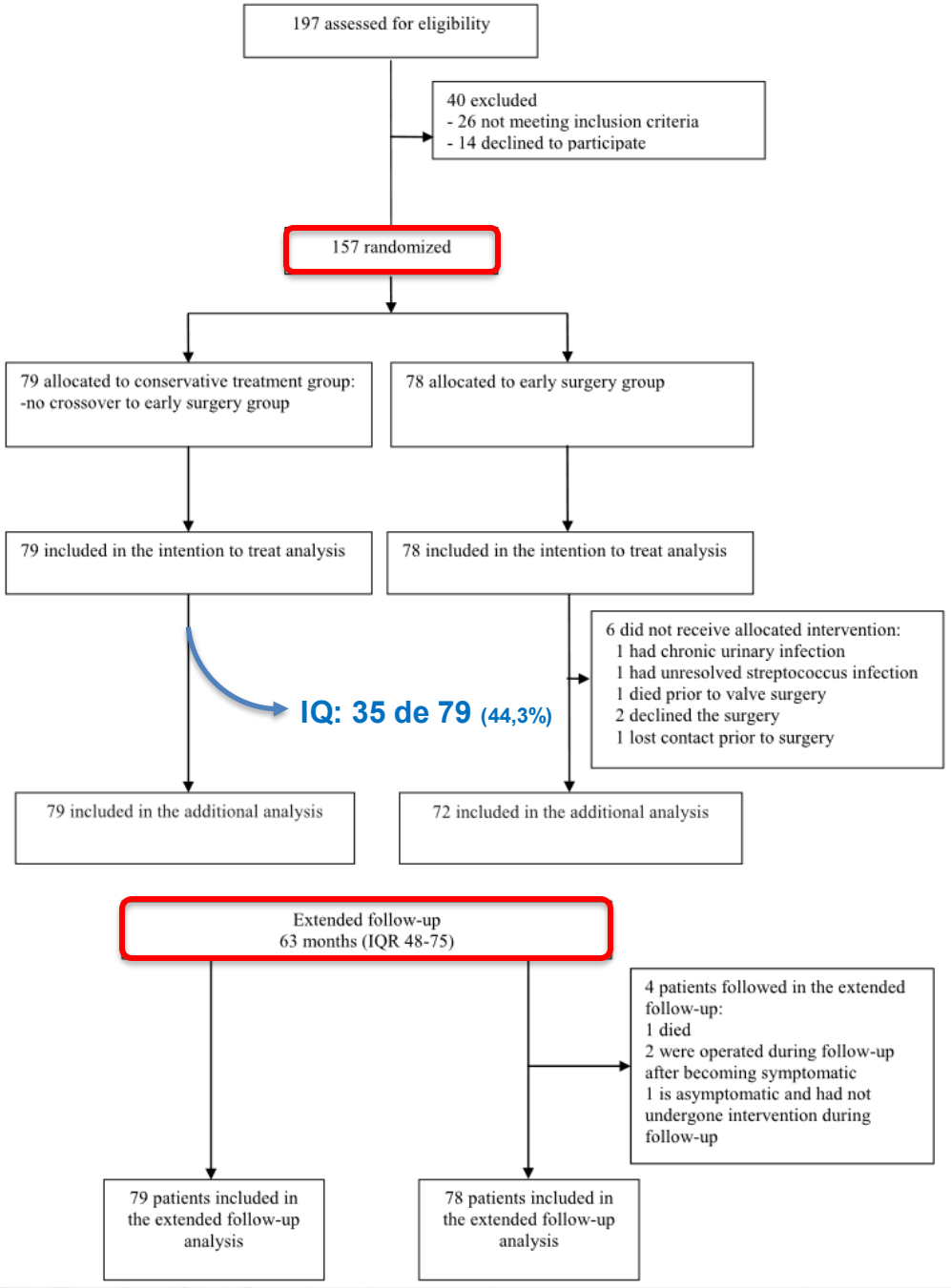
# Resultados

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# Resultados

**Table 2** Selected baseline characteristics of the study population

| | Early surgery group ($n = 78$) | Conservative treatment group ($n = 79$) | P-value |
|---|---|---|---|
| Demographics and comorbidities | | | |
| Age, years, median (IQR) | 68 (63–73) | 69 (64–75) | .02 |
| Sex (female) | 32 (41.0%) | 35 (44.3%) | .67 |
| STS score, median (IQR) | 1.6 (1.1–2.2) | 1.8 (1.2–2.7) | .67 |
| Days from randomization to surgery, median (IQR) | 55 (36–79) | 476 (226–1098) | <.001 |
| Diabetes mellitus | 14 (17.9%) | 23 (29.1%) | .07 |
| Hypertension | 69 (88.4%) | 70 (88.6%) | .44 |
| History of PCI | 1 (1.3%) | 2 (2.5%) | .44 |
| History of stroke | 2 (2.5%) | 2 (2.5%) | .92 |
| Peripheral arterial disease | 0 (0%) | 1 (1.36%) | .80 |
| Laboratory parameters | | | |
| BNP, pg/mL[a], median (IQR) | 83 (53–127) | 89 (58–149) | .61 |
| NT-proBNP, pg/mL[a], median (IQR) | 381 (153–660) | 347 (186–722) | .45 |
| Haemoglobin, g/L, median (IQR) | 141 (131–150) | 134 (128–141) | .01 |
| Creatinine, μmol/L, median (IQR) | 80 (66–94) | 76 (67–92) | .27 |
| Blood glucose, mmol/L, median (IQR) | 5.6 (5.3–6.7) | 5.6 (5.1–6.8) | .70 |
| Echocardiography | | | |
| LVESV, mL, median (IQR) | 28 (20–41) | 33 (22–42) | .96 |
| LVEDV, mL, median (IQR) | 113 (89–142) | 113 (96–126) | .54 |
| LV mass index, g/m$^2$, median (IQR) | 152 (133–175) | 160 (139–183) | .67 |
| Left atrium, cm | 4.1 (3.8–4.4) | 4.2 (3.9–4.4) | .68 |
| SVi, mL/m$^2$, median (IQR) | 39 (33–48) | 42 (34–51) | .58 |
| PA systolic pressure, mmHg, median (IQR) | 30 (26–36) | 30 (27–37) | .82 |
| $V_{max}$, m/s, median (IQR) | 4.5 (4.3–4.8) | 4.5 (4.2–4.7) | .13 |
| $P_{mean}$, mmHg, median (IQR) | 51 (44–58) | 50 (43–59) | .16 |
| $P_{max}$, mmHg, median (IQR) | 82 (74–90) | 79 (70–90) | .18 |
| AVA, cm$^2$, median (IQR) | 0.73 (0.55–0.84) | 0.74 (0.59–0.89) | .29 |
| AVAi, cm$^2$/m$^2$, median (IQR) | 0.37 (0.3–0.42) | 0.37 (0.31–0.46) | .08 |
| *E*/*e*′, median (IQR) | 12.2 (9.6–16.3) | 12.2 (8.8–18.1) | .54 |

AVA, aortic valve area; AVAi, indexed aortic valve area; [a]BNP, B-type natriuretic peptide; EDV, end-diastolic volume; ESV, end-systolic volume; IQR, interquartile range; LV, left ventricle; [a]NT-proBNP, N-terminal pro-B-type natriuretic peptide; PA, pulmonary artery; PCI, percutaneous coronary intervention; $P_{max}$, maximal gradient across the aortic valve; $P_{mean}$, mean transaortic valvular gradient; PROM, predicted risk of mortality; STS, Society of Thoracic Surgeons; SVi, indexed stroke volume; $V_{max}$, maximal velocity across the aortic valve.

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# Resultados

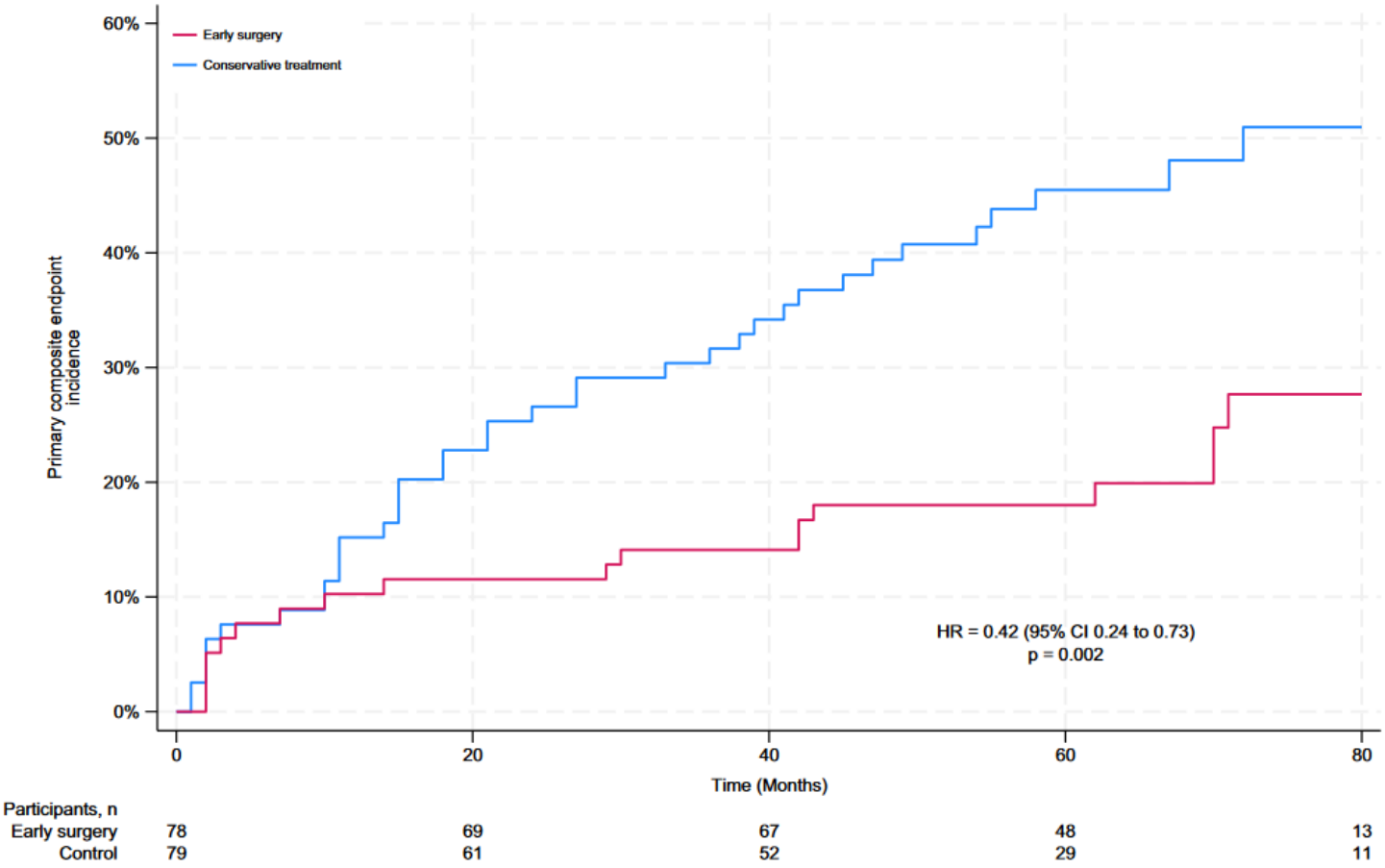


**Figure 2** Cumulative incidence of primary composite outcome (intention-to-treat population)

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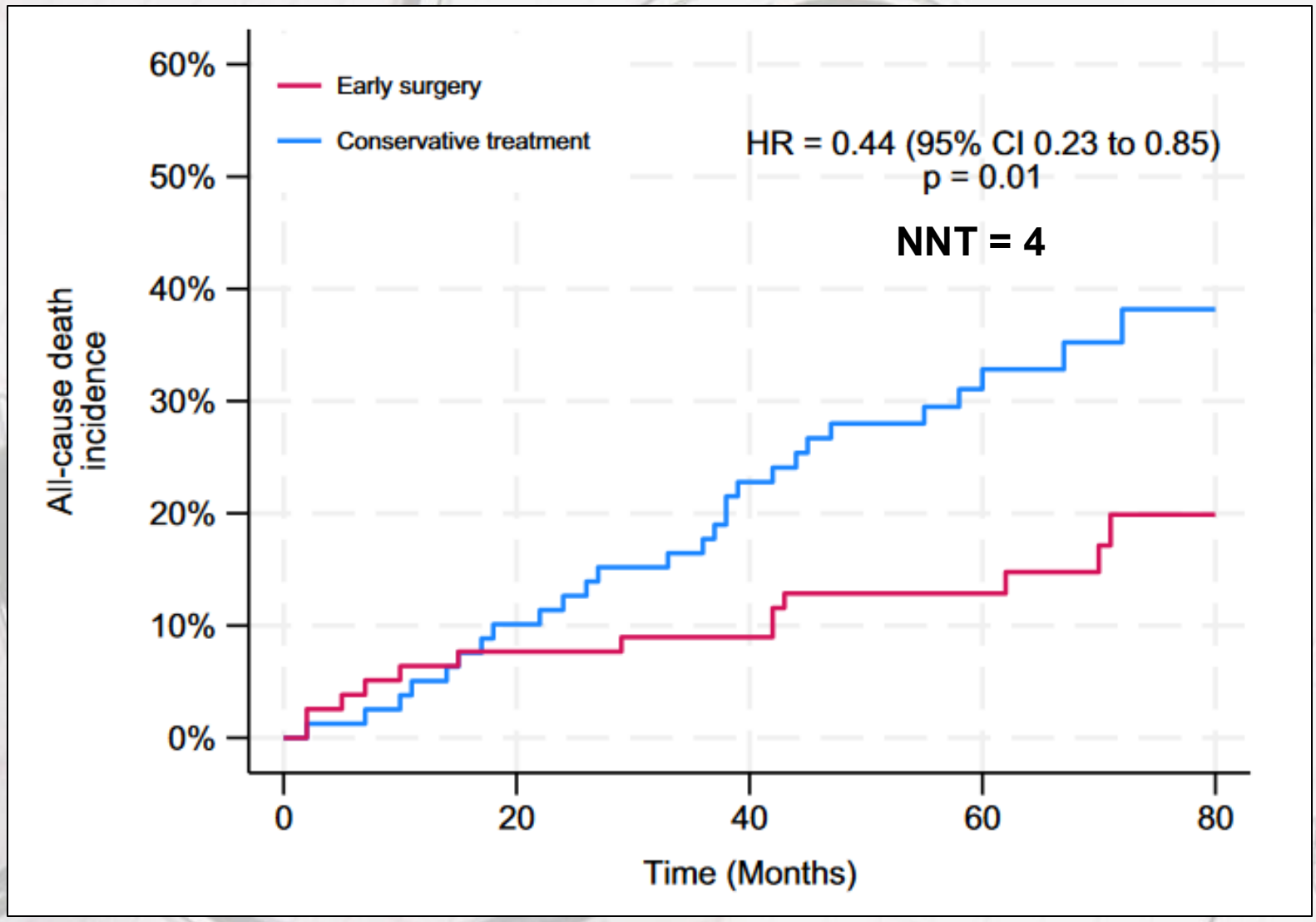


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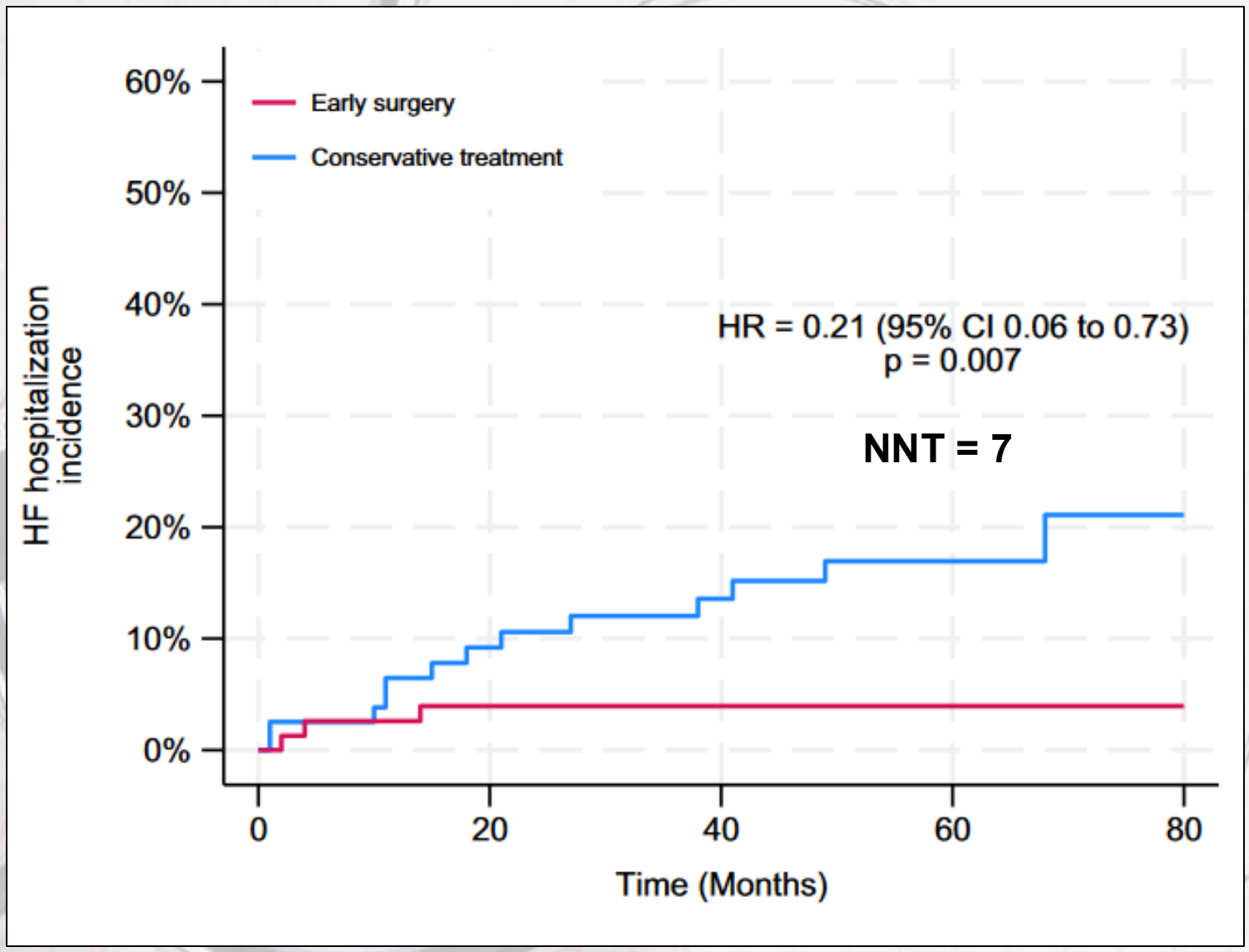


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**Table 4** Primary composite outcome and secondary endpoint analyses

| | Early surgery no. (5-year KM estimate, %) | Conservative treatment no. (5-year KM estimate, %) | Hazard ratio (95% CI) | *P*-value |
|---|---|---|---|---|
| Primary composite outcome | 18 (18.0) | 37 (45.6) | 0.42 (0.24–0.73) | .002 |
| Time-to-event secondary outcomes | | | | |
| All-cause death | 13 (12.9) | 27 (31.1) | 0.44 (0.23–0.85) | .012 |
| HF hospitalization | 3 (4.0) | 13 (17.0) | 0.21 (0.06–0.73) | .007 |
| All-cause death or HF hospitalization | 14 (17.9) | 35 (44.3) | 0.34 (0.18–0.63) | <.001 |
| Acute myocardial infarction | 1 (1.4) | 6 (9.3) | 0.15 (0.02–1.29) | .047 |
| Stroke | 4 (4.1) | 4 (6.4) | 0.91 (0.23–3.65) | .89 |
| Cardiovascular death | 10 (11.6) | 17 (19.5) | 0.54 (0.25–1.18) | .11 |
| Serious adverse events | 20 (26.4) | 35 (49.4) | 0.50 (0.29–0.88) | .013 |
| | **No. (Event Risk %)** | **No. (Event Risk %)** | **Risk ratio (95% CI)** | ***P*-value** |
| Binary secondary outcomes | | | | |
| Intraoperative/30-day mortality | 1 (1.3) | 2 (2.5) | 0.51 (0.05–5.47) | .58 |
| Sudden cardiac death | 4 (5.1) | 9 (11.4) | 0.45 (0.14–1.40) | .17 |
| Repeated MACE | 3 (3.8) | 14 (17.7) | 0.22 (0.06–0.73) | .013 |
| Thromboembolic complications | 4 (5.1) | 3 (3.8) | 1.35 (0.31–5.84) | .69 |
| Major bleeding | 4 (5.1) | 3 (3.8) | 1.35 (0.31–5.84) | .69 |

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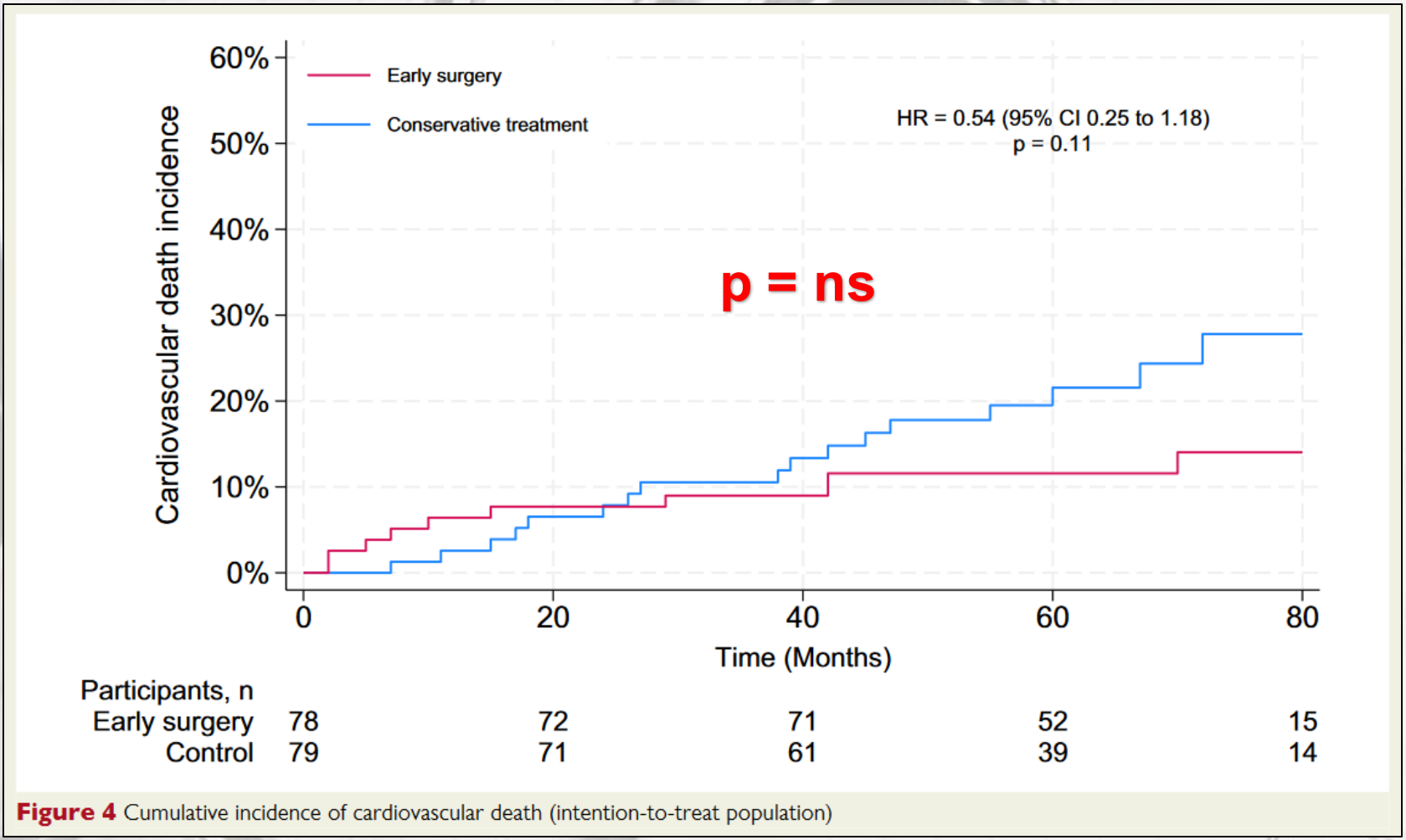


**Figure 4** Cumulative incidence of cardiovascular death (intention-to-treat population)

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# Limitaciones


- **Problema ético**: indicar una intervención quirúrgica a un paciente asintomático, en contra de las recomendaciones de las Guías de Práctica Clínica vigentes.

- **Pandemia de COVID-19:** redujo las revisiones presenciales con ecocardiograma de control.

- **Enfermedad coronaria concomitante:** algunos pacientes con EAo grave asintomática del brazo control presentaron enfermedad coronaria y se decidió realizar cirugía (no por progresión de la EAo).

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# Ilustración central

## AVATAR trial

Aortic valve replacement versus conservative treatment in asymptomatic severe aortic stenosis

Multicenter, multinational, open label, randomized, controlled trial

**157**

Asymptomatic patients with severe aortic stenosis and normal LV function

Median follow-up of **63** months

**78**

Early surgery

**79**

Conservative management with watchful waiting

Composite primary outcome comprising all-cause mortality, AMI, stroke or unplanned HF hospitalization

**23.1%** In early surgery group

vs

**46.8%** In conservative management group (HR 0.42; 95% CI, 0.24–0.73; p = 0.002)

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# Conclusiones

- El **tratamiento quirúrgico precoz**, en pacientes con **estenosis aórtica grave *asintomática***, podría resultar más beneficioso que la estrategia habitual (esperar al desarrollo de síntomas para proceder a la cirugía), en términos de **reducción de eventos adversos**.

- Estos resultados **deberán ser confirmados** con nuevos estudios.

- De ser así, estos hallazgos **podrían modificar las recomendaciones de las próximas Guías de Práctica Clínica** para el manejo de las valvulopatías.

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European Heart Journal: Acute Cardiovascular Care (2024) **13**, 537–545
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**ORIGINAL SCIENTIFIC PAPER**
*Acute Coronary Syndromes*

# Patient knowledge about risk factors, achievement of target values, and guideline-adherent secondary prevention therapies 12 months after acute myocardial infarction

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**In line with the Journal's conflict of interest policy, this paper was handled by Borja Ibanez.**

**See the editorial comment for this article 'High-sensitivity cardiac troponin and uncertainties in the diagnosis, treatment, and communication of risk in acute myocardial infarction', by Y.Y. Tew *et al.*, https://doi.org/10.1093/ehjacc/zuae077.**

**Aims** The prospective GULLIVE-R study aimed to evaluate adherence to guideline-recommended secondary prevention, physicians' and patients' estimation of cardiac risk, and patients' knowledge about target values of risk factors after acute myocardial infarction (AMI).

**Methods and results** We performed a prospective study enrolling patients 9–12 months after AMI. Guideline-recommended secondary prevention therapies and physicians as well as patients' estimation about their risk and patients' knowledge about target values were prospectively collected. Between July 2019 and June 2021, a total of 2509 outpatients were enrolled in 150 German centres 10 months after AMI. The mean age was 66 years, 26.4% were women, 45.3% had ST elevation myocardial infarction, 54.7% had non-ST elevation myocardial infarction, and 93.6% had revascularization (84.0% percutaneous coronary intervention, 7.4% coronary artery bypass graft, 1.8% both). Guideline-recommended secondary drug therapies were prescribed in over 80% of patients, while only about 50% received all five recommended drugs (aspirin, P2Y12 inhibitors, statins, beta-blockers, renin–angiotensin–aldosterone system inhibitors), and regular exercise was performed by only one-third. About 90% of patients felt well informed about secondary prevention, but the correct target value for blood pressure was known in only 37.9% and for LDL-cholesterol in only 8.2%. Both physicians and patients underestimated the objective risk of future AMIs as determined by the thrombolysis in myocardial infarction (TIMI) risk score for secondary prevention.

**Conclusion** There is still room for improvement in patient education and implementation of guideline-recommended non-pharmacological and pharmacological secondary prevention therapies in patients in the chronic phase after AMI.

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# Introducción

- **Guías de Práctica Clínica** ⇨ Recomendaciones a pacientes.
  - Medidas higiénico-dietéticas.
  - Cambios en el estilo de vida.
  - Control de FRCV.

- **Estudios previos** ⇨ Mayor interés por parte del paciente por mantener un tratamiento y un estilo de vida adecuado durante los primeros meses.

Uwe Zeymer, et al. **Patient knowledge about risk factors, achievement of target values, and guideline-adherent secondary prevention therapies 12 months after acute myocardial infarction.** European Heart Journal: Acute Cardiovascular Care (2024) 13, 537–545

# Objetivos

**1)** Evaluar la **adherencia a las recomendaciones de las Guías**, en prevención secundaria.

**2)** Conocer la **estimación subjetiva del riesgo** por parte de los **médicos** y de los **pacientes**.

**3)** Analizar el **conocimiento de los pacientes sobre** los valores **objetivo** de los diferentes factores de riesgo, tras un IAM.

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# Métodos

## Estudio prospectivo GULLIVE-R

- **N = 2.509** pacientes **post-IAM** (a los 10 meses)
  - 54,7% IAM no Q.
  - 45,3% IAM con elevación del ST.
- **150 centros alemanes**.
- Edad media **66 años**.
- **24% mujeres**.

Uwe Zeymer, et al. **Patient knowledge about risk factors, achievement of target values, and guideline-adherent secondary prevention therapies 12 months after acute myocardial infarction.** European Heart Journal: Acute Cardiovascular Care (2024) 13, 537–545

# Resultados

**Table 1 Baseline characteristics and revascularization procedures during the index acute myocardial infarction in patients with** ST elevation myocardial infarction **and** non-ST elevation myocardial infarction

| | STEMI ($n = 1134$) | NSTEMI ($n = 1369$) |
|---|---|---|
| Age | 63.2 + 11.5 years | 68.3 + 11.6 years |
| Women | 276 (24.3%) | 384 (28.0%) |
| Risk factors | | |
| Diabetes mellitus | 241 (21.3%) | 449 (33.0%) |
| Family history for myocardial infarction | 365/899 (40.6%) | 439/1070 (41.0%) |
| Hyperlipidaemia | 879 (79.3%) | 1104 (82.1%) |
| Hypertension | 886 (78.8%) | 1196 (87.6%) |
| Prior or current smoker | 677 (61.1% | 680 (51.7%) |
| Medical history | | |
| Prior myocardial infarction | 100 (8.9%) | 188 (13.9%) |
| Prior percutaneous coronary intervention | 120 (10.8%) | 237 (17.8%) |
| Prior coronary artery bypass graft surgery | 15 (1.2%) | 71 (5.3%) |
| Prior stroke | 46 (4.1%) | 77(5.6%) |
| Peripheral artery disease | 50 (4.4%) | 103 (7.5%) |
| Glomerular filtration rate (modification of diet in renal disease) < 60 mL/min | 188 (17.0%)) | 347 (26.0%) |
| Atrial fibrillation | 88 (7.8%) | 183 (13.4%) |
| Invasive and revascularisation procedures for index AMI | | |
| Coronary angiography | 1122 (98.9%) | 1338 (97.7%) |
| Percutaneous coronary intervention | 1054 (92.9%) | 1104 (80.6%) |
| Coronary artery bypass graft surgery | 59 (5.2%) | 171 (12.5%) |

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# Resultados

**Table 2 Secondary prevention measures 10 months after acute myocardial infarction**

| Measure | *n* = 2503 | % |
|---|---|---|
| Antithrombotic therapies | | |
| Any antithrombotic therapy | 2496 | 99.7% |
| Dual antiplatelet therapy | 1773 | 69.3% |
| Aspirin | 2212 | 88.4% |
| P2Y12 inhibitors | 1982 | 79.2% |
| Clopidogrel | 513 | 25.9% |
| Prasugrel | 584 | 29.5% |
| Ticagrelor | 885 | 44.7% |
| Oral anticoagulation (OAC) | 326 | 13.0% |
| OAC only | 80 | 3.2% |
| OAC + platelet inhibitors | 246 | 9.8% |
| Statin | 2316 | 92.6% |
| Ezetimibe | 522 | 20.9% |
| RAAS inhibitors | 2149 | 85.9% |
| Beta-Blockers | 2073 | 82.9% |
| Non-medical therapies | | |
| Diet | 990/1936 | 51.1% |
| 3 × 30 min exercise per week | 677/1980 | 34.2% |
| Smoking cessation in smokers | 272/677 | 40.2% |
| Weight loss | 835/2223 | 37.6% |
| Blood pressure self-measurement | 1483/2028 | 72.8% |

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# Resultados

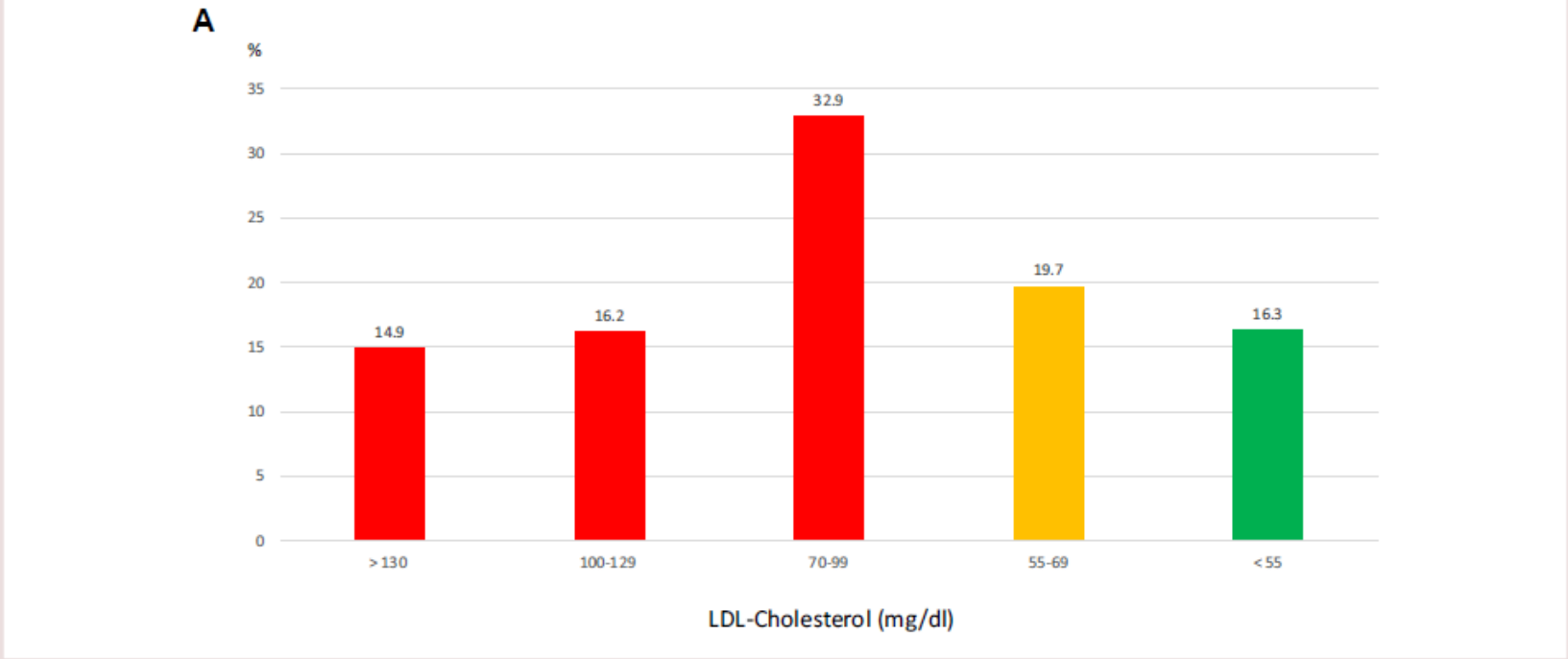


**Figure 1** Achievement of guideline[1,2,3]-recommended target levels of blood pressure (*A*) and LDL-cholesterol (*B*) 9–12 months after acute myocardial infarction.

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# Resultados

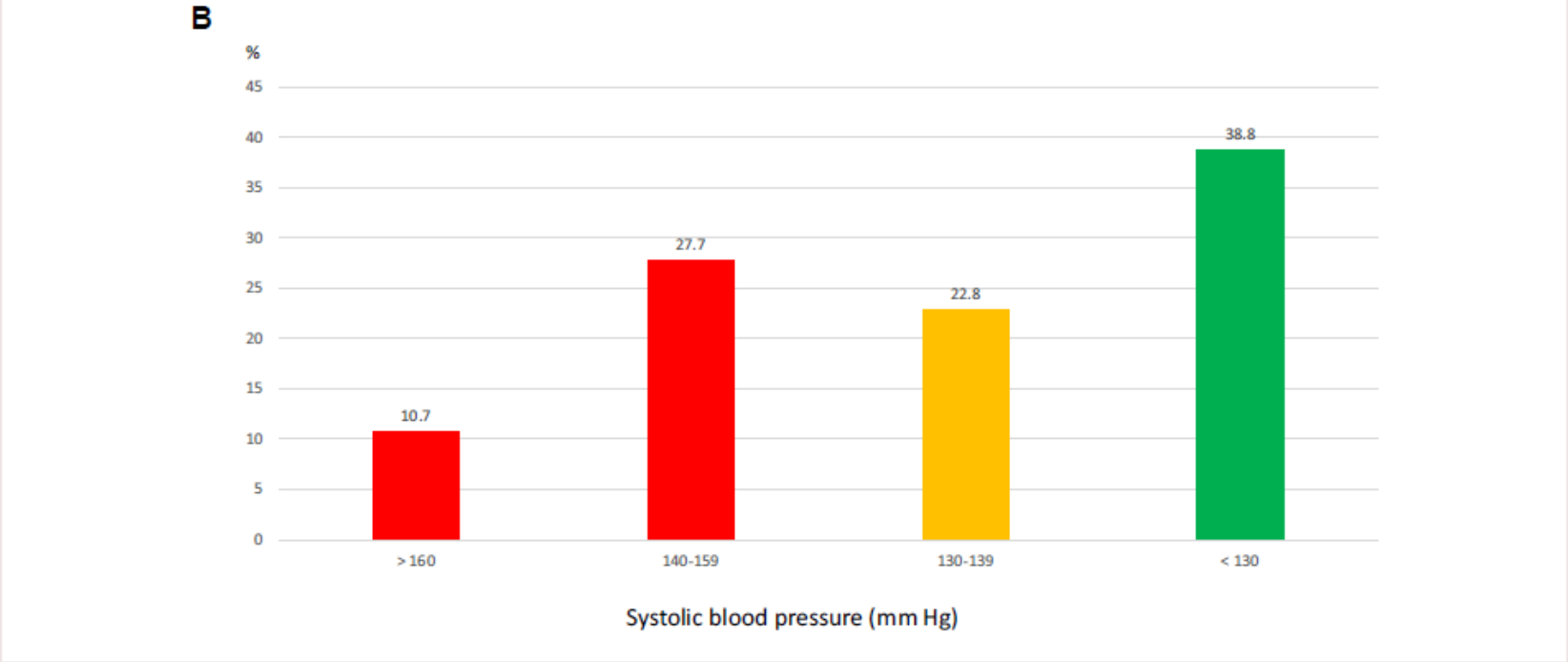


**Figure 1** Achievement of guideline[1,2,3]-recommended target levels of blood pressure (*A*) and LDL-cholesterol (*B*) 9–12 months after acute myocardial infarction.

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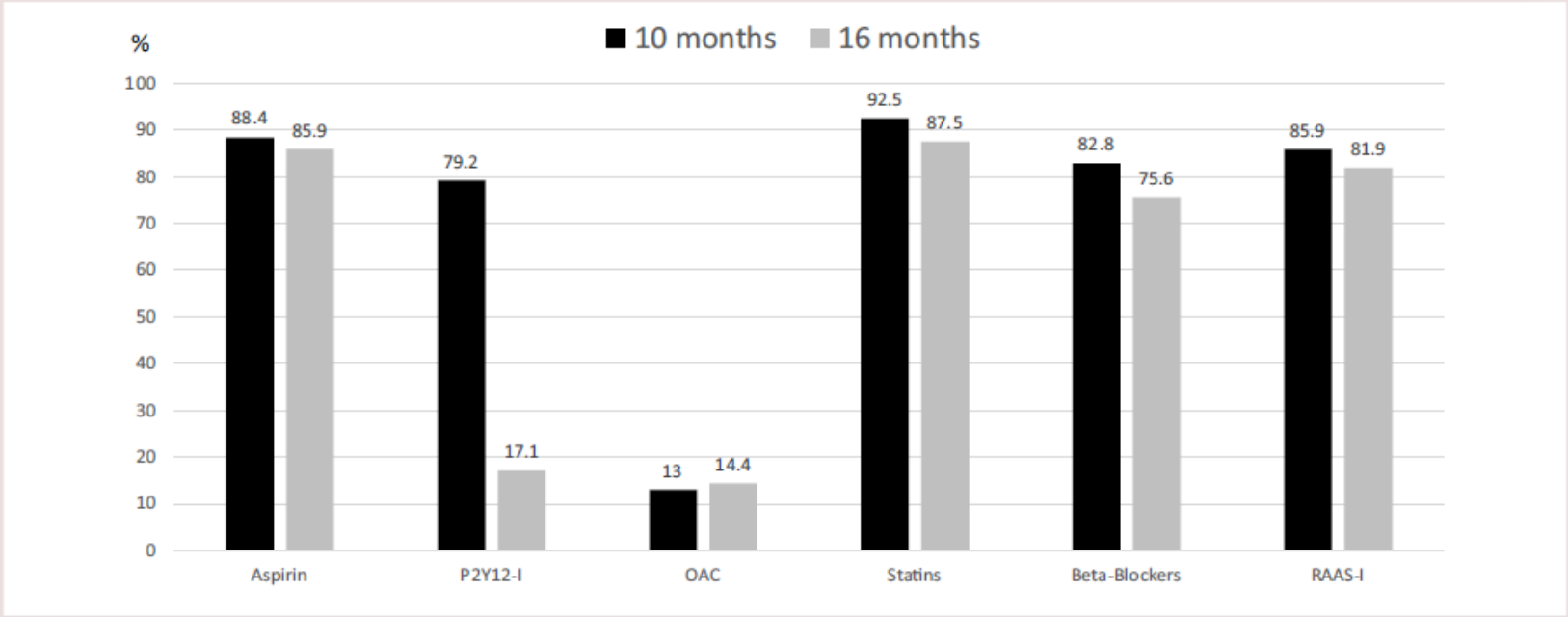


**Figure 2** Evolution of secondary prevention drug therapies between 10 and 16 months after acute myocardial infarction.

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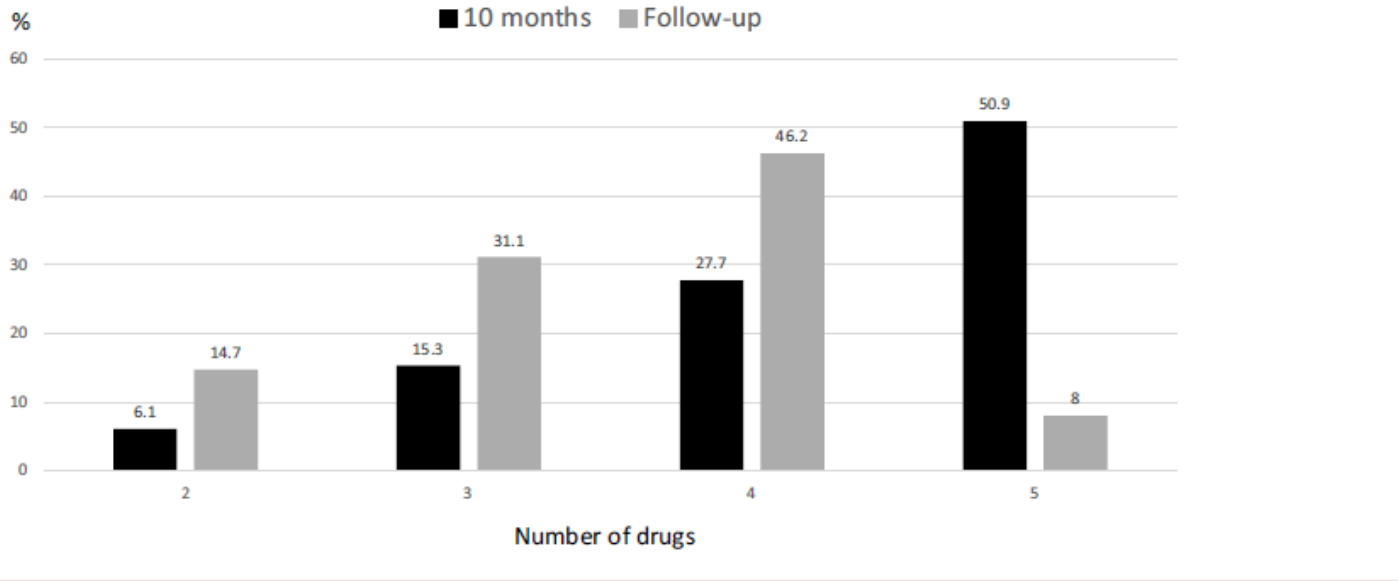


**Figure 3** Rate of patients with different numbers of the five most important guideline-recommended therapies (aspirin or oral anticoagulation, P2Y12 inhibitors, statins, beta-blockers, renin–angiotensin–aldosterone system inhibitors).

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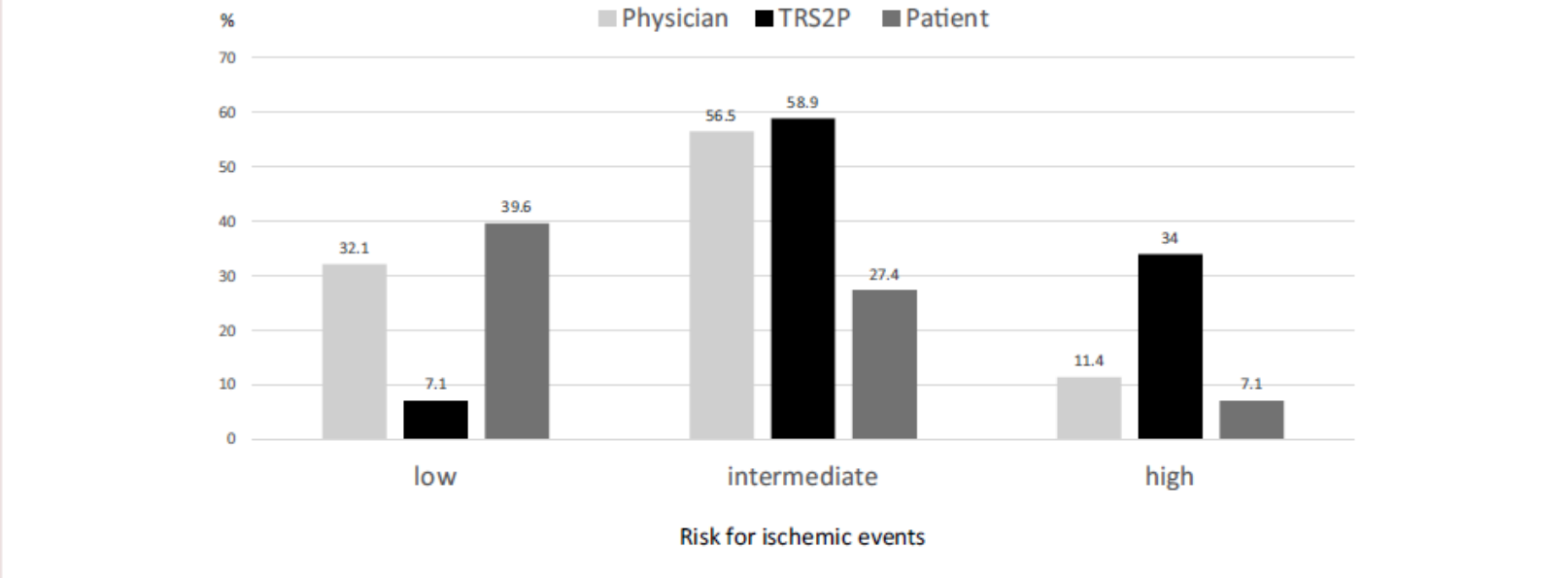


**Figure 4** Comparison of the estimated risk of future ischaemic events (cardiovascular death, myocardial infarction, stroke) as stated by the treating physicians and the patients and the objective risk determined with the TIMI risk score for secondary prevention.[8]

## TIMI-RISK Score for Secondary Prevention

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# Resultados

**Table 3 Patient knowledge about risk factors and target values and lifestyle modifications**

| | Rate |
|---|---|
| Patient states that he has a good knowledge about coronary artery disease | 1918/2185 (87.8%) |
| Patient is still smoking | 356/2236 (15.9%) |
| Patient knows his LDL value | 461/2194 (21.0%) |
| Patient knows the correct LDL target value (<70 mg/dL) | 314/2005 (15.7%) |
| Patient states that his LDL value is in the target range | 890/1229 (72.4%) |
| Patient measures his blood pressure daily | 691/2243 (30.8%) |
| Patient knows the correct target blood pressure (<130 mmHg) | 787/2040 (38.4%) |
| Patient follows diet | 1023/2226 (46.0%) |
| Patient knows about the need for physical exercise 3 × 30 min per week | 720/1948 (37.0%) |

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# Conclusiones

- **Tanto los médicos como los pacientes subestimaron el riesgo objetivo de futuros IAM.**

- **Todavía existe un importante margen de mejora durante la fase crónica tras un IAM, tanto en la educación de los pacientes como en la implementación de las terapias *(farmacológicas y no farmacológicas)* recomendadas por las Guías de Práctica Clínica.**

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MUCHAS GRACIAS