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Managing Post-Operative Atrial Fibrillation (POAF): Is it the Same?

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ACC/India 2023 Cardiovascular Symposium
Sunday, January 23, 2023

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Overview

- Case
- Incidence
- Outcomes
- Prevention
- Intervention

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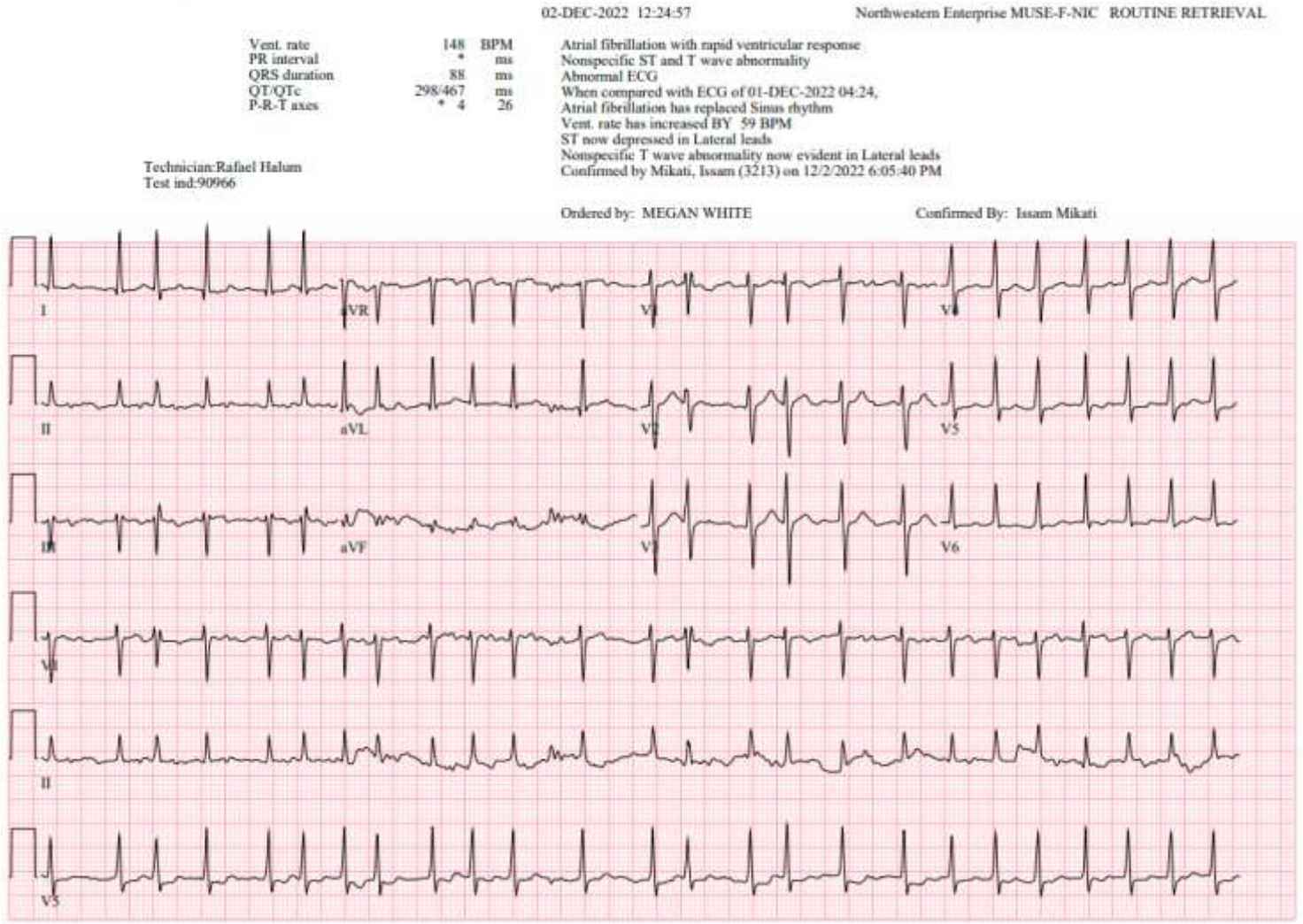
Case

Post-Operative Atrial Fibrillation (POAF) after Cardiac Surgery

- 72 male with peripheral vascular disease, coronary artery disease, **s/p 3-vessel coronary artery bypass graft surgery** presents with atrial fibrillation (AF) with rapid ventricular rates on post-operative Day 2.
  - No prior history of AF.
  - Episode lasted 40 minutes, self-terminated



Next Steps

- Anticoagulation?
- Rate control?
- Rhythm control?

- Unlike management for non-post-surgical patients with atrial fibrillation
  - Lack of large-scale, prospective data to guide post-operative AF (POAF) management
  - Most studies are retrospective, observational or small

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POAF

Incidence

- **Cardiac Surgery 20 – 50%**
- Non-cardiac Thoracic Surgery 10 – 30%
- Vascular or Large Colorectal Surgery 5 – 10%

- All Non-cardiac Surgery <1 - 10%

- Peak incidence between postoperative day 2 and 4.

Hindricks et al. *Eur Heart Jl* 2021
Albini et al. *Eur Jl Int Med* 2021

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Overview

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POAF Outcomes: Cardiac Surgery

ELSEVIER

The Annals of Thoracic Surgery

Volume 98, Issue 2, August 2014, Pages 527-533

Original article

Adult cardiac

Postoperative Atrial Fibrillation Significantly

- Adult Cardiac Surgery Database (Society of Thoracic Surgeons)
- 49,000 patients

Table 4. Risk-Adjusted Associations Between Postoperative Atrial Fibrillation and Outcomes

Procedure Type	Mortality	Major Morbidity	Stroke	ICU LOS	Postoperative LOS	Total Costs	ICU Costs
AV replacement	1.87 [1.23–2.84][a]	2.78 [2.25–3.43][a]	2.70 [1.56–4.67][a]	44.93 [31.01–58.86][a]	3.08 [2.30–3.87][a]	9,091 [6,068–12,114][a]	3,313 [2,170–4,455][a]
AV replacement + CAB	1.86 [1.30–2.65][a]	2.50 [2.09–3.00][a]	1.64 [1.02–2.65][a]	68.40 [48.76–88.02][a]	4.55 [3.41–5.69][a]	17,643 [12,266–23,021][a]	4,844 [3,332–6,355][a]
CAB Only	2.14 [1.82–2.53][a]	2.35 [2.19–2.52][a]	2.31 [1.92–2.79][a]	47.55 [43.67–51.44][a]	2.93 [2.71–3.16][a]	7,629 [7,051–8,207][a]	2,715 [2,492–2,939][a]
MV repair	<0.01 [0.01– 0.01]	1.99 [0.73–5.40]	1.34 [0.13–14.04]	24.13 [9.34–38.93][a]	2.10 [0.92–3.27][a]	7,680 [2,899,12,460][a]	2,617 [1,076–4,358][a]
MV repair + CAB	1.99 [0.84–4.68]	2.44 [1.50–3.98][a]	0.63 [0.12–3.21]	117.65 [76.99–158.30][a]	5.22 [2.79–7.65][a]	21,991 [10,368–33,613][a]	6,841 [3,272–10,409][a]
MV replacement + CAB	0.78 [0.39–1.56]	2.21 [1.50–3.26][a]	0.95 [0.32–2.87]	130.35 [53.05–207.65][a]	7.67 [3.68–11.65][a]	18,855 [3,278–34,432][a]	6,285 [486–12,084][a]
MV replacement only	1.33 [0.61–2.87]	2.71 [1.87–3.92][a]	4.21 [1.60–11.11][a]	55.89 [20.64–91.15][a]	3.29 [0.64–5.94][a]	17,499 [6,586–28,411][a]	5,213 [1,602–8,825][a]

[a] $p < 0.01$. Model adjusted for Society of Thoracic Surgeons predicted risk of morality, surgeon, operative year, hospital.

AV = aortic valve; CAB = coronary artery bypass; ICU = intensive care unit; LOS = length of stay; MV = mitral valve.

POAF Outcomes: Cardiac and Non-Cardiac Surgery

Stroke
Volume 50, Issue 6, June 2019; Pages 1364-1371
https://doi.org/10.1161/STROKEAHA.118.023921

CLINICAL SCIENCES

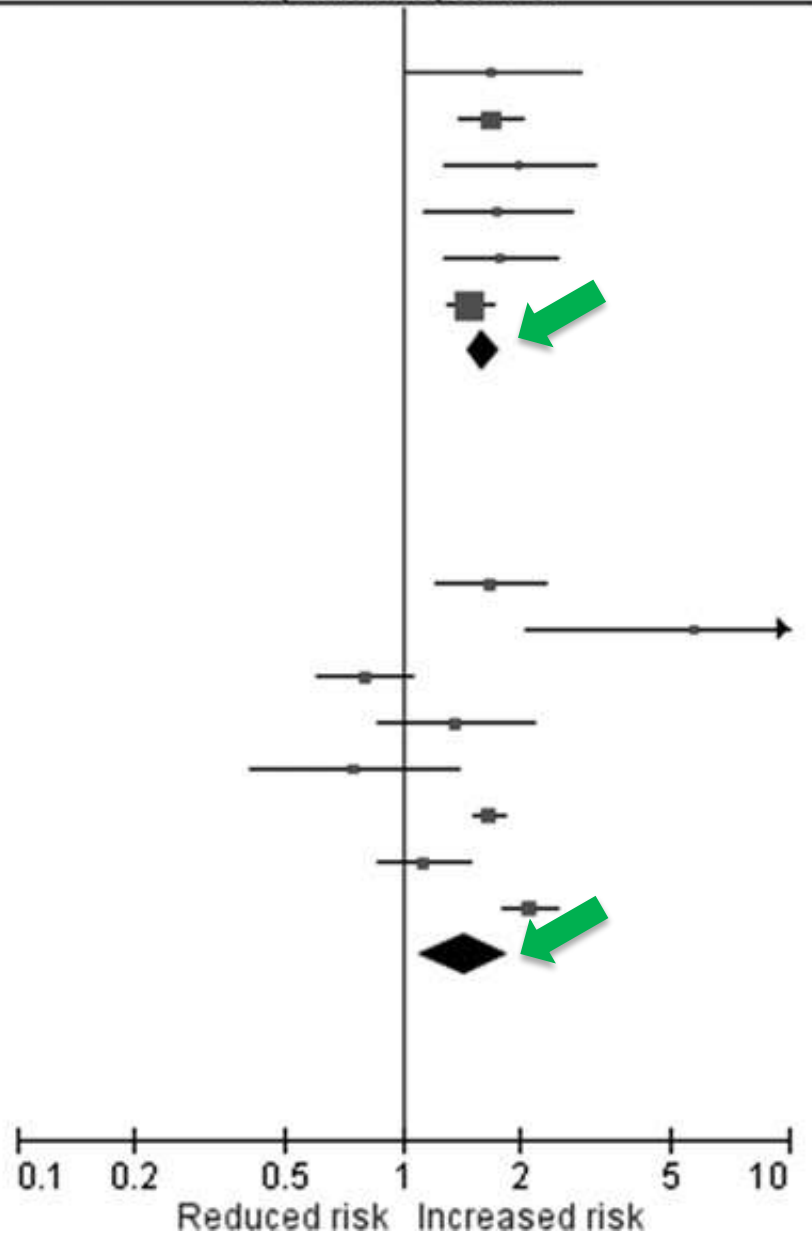
Perioperative/Postoperative Atrial Fibrillation and Risk of Subsequent Stroke and/or Mortality

A Meta-Analysis

Meng-Hsin Lin, MD, Hooman Kamel, MD, Daniel E. Singer, MD, Yi-Ling Wu, DrPH, Meng Lee, MD, and Bruce Ovbiagele, MD, MS

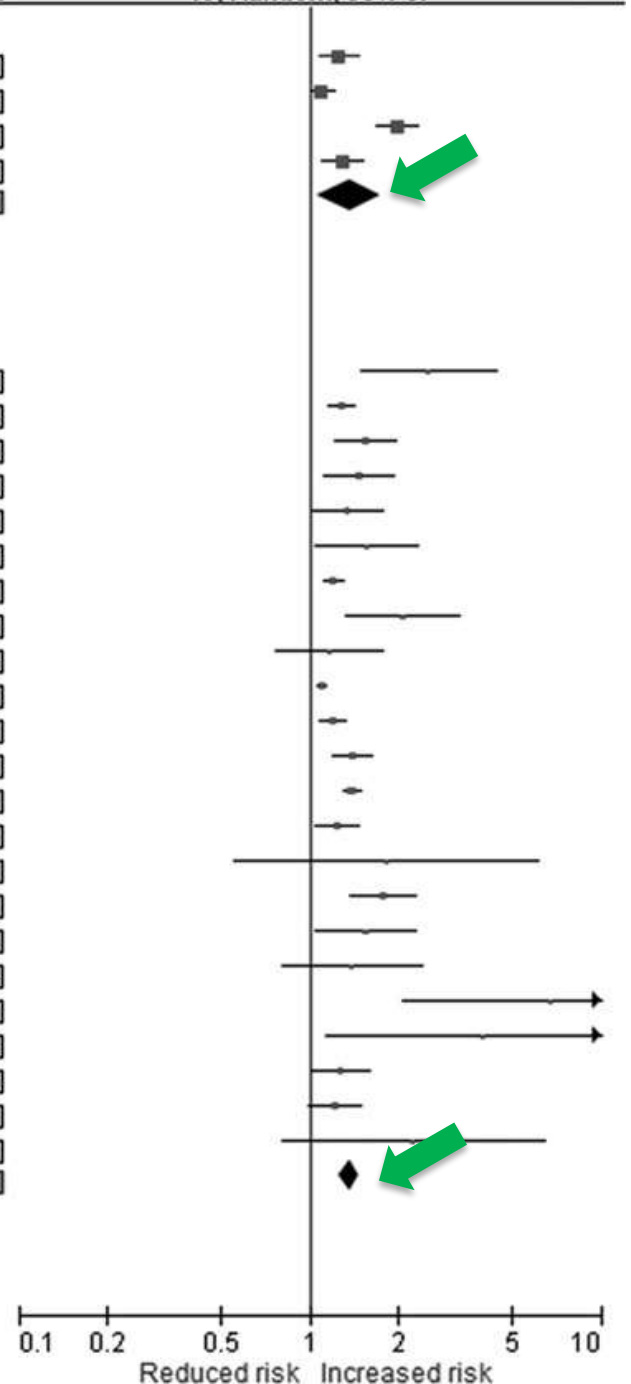
- Both Cardiac and Non-Cardiac Surgery
- 2.5 million participants
- 35 studies
- Early and Late Outcomes

Author	Year	POAF Events	POAF Population	No POAF Events	No POAF Population	Weight	Odds Ratio IV, Random, 95% CI
1.1.1 Early Stroke							
Hogue[19]	1999	NA	1022	NA	1950	3.6%	1.70 [1.00, 2.89]
Stamou[20]	2001	NA	NA	NA	NA	27.0%	1.70 [1.40, 2.06]
Villareal[8]	2004	30	994	82	5481	5.1%	2.01 [1.28, 3.15]
Kalavrouziotis[22]	2007	57	2047	64	5300	5.3%	1.77 [1.14, 2.75]
Saxena[13]	2012	73	5547	94	13950	9.2%	1.80 [1.29, 2.51]
Whitlock[10]	2014	NA	18046	NA	81091	49.8%	1.50 [1.30, 1.73]
Subtotal (95% CI)		**160**	**27656**	**240**	**107772**	**100.0%**	**1.62 [1.47, 1.80]**
Heterogeneity: Tau² = 0.00; Chi² = 2.81, df = 5 (P = 0.73); I² = 0%							
Test for overall effect: Z = 9.40 (P < 0.00001)							
1.1.2 Early Mortality							
Villareal[8]	2004	74	994	186	5481	13.5%	1.70 [1.22, 2.37]
Nielsen[21]	2004	39	78	28	122	5.0%	5.70 [2.10, 15.47]
Kalavrouziotis[22]	2007	61	2047	133	5300	14.3%	0.80 [0.60, 1.07]
Bramer[4]	2010	35	1122	64	3976	11.3%	1.38 [0.87, 2.19]
Bramer[5]	2011	25	361	35	495	8.7%	0.75 [0.40, 1.41]
Bhave[32]	2012	570	10957	6646	359490	16.8%	1.68 [1.52, 1.86]
Saxena[13]	2012	95	5547	170	13950	14.4%	1.14 [0.86, 1.51]
LaPar[36]	2014	370	9255	680	40009	16.1%	2.14 [1.82, 2.52]
Subtotal (95% CI)		**1269**	**30361**	**7942**	**428823**	**100.0%**	**1.44 [1.11, 1.88]**
Heterogeneity: Tau² = 0.11; Chi² = 53.34, df = 7 (P < 0.00001); I² = 87%							
Test for overall effect: Z = 2.72 (P = 0.007)							



Within 30 days

Author	Year	POAF Events	POAF Population	No POAF Events	No POAF Population	Weight	Hazard Ratio IV, Random, 95% CI
2.1.1 Long-term stroke							
Horwich[33]	2013	337	2214	581	5844	24.8%	1.26 [1.08, 1.47]
Whitlock[10]	2014	NA	18046	NA	81091	26.3%	1.10 [1.00, 1.21]
Gialdini, non-cardiac[9]	2014	189	12874	5915	1642943	24.5%	2.00 [1.70, 2.35]
Gialdini, cardiac[9]	2014	117	11837	512	61706	24.4%	1.30 [1.10, 1.54]
Subtotal (95% CI)		**643**	**44971**	**7008**	**1791584**	**100.0%**	**1.37 [1.07, 1.77]**
Heterogeneity: Tau² = 0.06; Chi² = 38.77, df = 3 (P < 0.00001); I² = 92%							
Test for overall effect: Z = 2.45 (P = 0.01)							
2.1.2 Long-term mortality							
Marisevalco[24]	2008	73	570	122	1262	1.8%	2.56 [1.50, 4.37]
Filardo[26]	2009	452	1814	753	5085	8.0%	1.29 [1.16, 1.43]
Ahlsson[25]	2009	140	419	191	1000	5.0%	1.56 [1.23, 1.98]
Filardo[29]	2010	110	380	112	659	4.3%	1.48 [1.12, 1.96]
Bramer[4]	2010	168	1122	398	3976	4.3%	1.35 [1.02, 1.79]
Ahlsson[27]	2010	49	165	60	406	2.7%	1.57 [1.05, 2.35]
El-Chami[28]	2010	1701	2985	4878	13184	8.6%	1.21 [1.12, 1.31]
Bramer[5]	2011	65	361	45	495	2.4%	2.09 [1.34, 3.26]
Imperatori[12]	2012	31	45	270	409	2.5%	1.17 [0.76, 1.80]
O'Neal, White[34]	2013	1080	2537	2332	8330	9.1%	1.10 [1.06, 1.14]
Horwich[33]	2013	693	2214	1255	5844	8.0%	1.20 [1.08, 1.33]
O'Neal, Black[34]	2013	171	370	446	1928	6.9%	1.40 [1.20, 1.63]
Thoren[37]	2014	381	2152	548	4669	8.6%	1.40 [1.30, 1.51]
Al-Shaar[35]	2014	884	1211	2751	5094	6.4%	1.25 [1.05, 1.49]
Tulla[14]	2015	46	138	26	138	0.4%	1.83 [0.55, 6.11]
Melduni[38]	2015	112	226	119	377	4.6%	1.79 [1.38, 2.32]
Kothari[40]	2016	68	554	584	14594	2.8%	1.56 [1.05, 2.32]
Omer[41]	2016	82	215	320	1033	1.6%	1.40 [0.80, 2.45]
Leibowitz[44]	2017	9	15	73	395	0.4%	6.70 [2.10, 21.37]
Lee, female[43]	2017	9	79	10	314	0.4%	3.96 [1.13, 13.88]
Fengsrud[42]	2017	105	165	191	406	5.1%	1.28 [1.01, 1.62]
Swinkels[15]	2017	169	241	231	328	5.6%	1.22 [0.99, 1.50]
Lee, male[43]	2017	7	102	5	291	0.5%	2.26 [0.80, 6.39]
Subtotal (95% CI)		**6605**	**18080**	**15720**	**70217**	**100.0%**	**1.37 [1.27, 1.49]**
Heterogeneity: Tau² = 0.02; Chi² = 91.67, df = 22 (P < 0.00001); I² = 76%							
Test for overall effect: Z = 7.89 (P < 0.00001)							



After 30 days

POAF Outcomes: Cardiac and Non-Cardiac Surgery

Study or Subgroup	Number of study	Hazard Ratio (95% CI)	Hazard Ratio (95% CI)	P for subgroup difference
Stroke endpoint				
Surgery type				
cardiac surgery	3	1.20 (1.07-1.34)		<0.0001
non-cardiac surgery	1	2.00 (1.70-2.35)		

Recurrent AF and Mortality in POAF

Cardiac Surgery

Electrophysiology

New-onset atrial fibrillation predicts long-term newly developed atrial fibrillation after coronary artery bypass graft

Seung-Hyun Lee, MD,[a] Dae Ryong Kang, PhD,[b] Jae-Sun Uhm, MD,[a] Jaemin Shim, MD,[a] Jung-Hoon Sung, MD,[c] Jong-Youn Kim, MD,[a] Hui-Nam Pak, MD, PhD,[a] Moon-Hyoung Lee, MD, PhD,[a] and Boyoung Joung, MD, PhD[a]
Seoul, and Seongnam, Republic of Korea

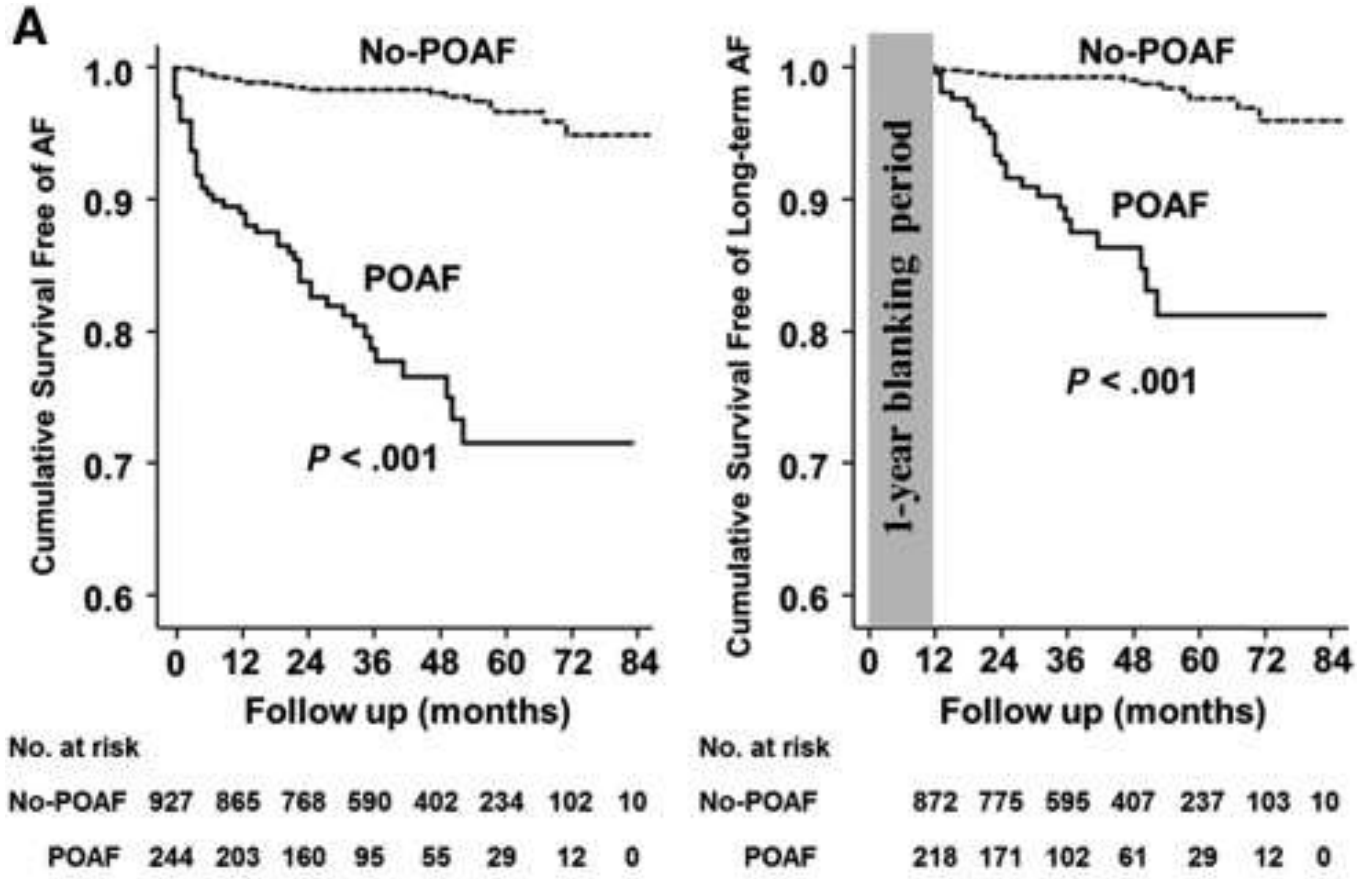
Am Heart Jl 2014

- ~1200 patients
- Post-CABG surgery
- POAF vs No POAF

Long-term AF in POAF

After CABG

Substantially higher incidence of AF long-term in POAF vs. No-POAF



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POAF: Prevention

- Beta-Blockers in **Cardiac Surgery**
  - Propranolol, carvedilol plus N-acetyl cysteine
    - Decreased AF, but not death, stroke, AKI
  - In one ***Non-cardiac surgery*** randomized, controlled trial, **increased mortality**
- Amiodarone

POAF: Prevention

Electrophysiology

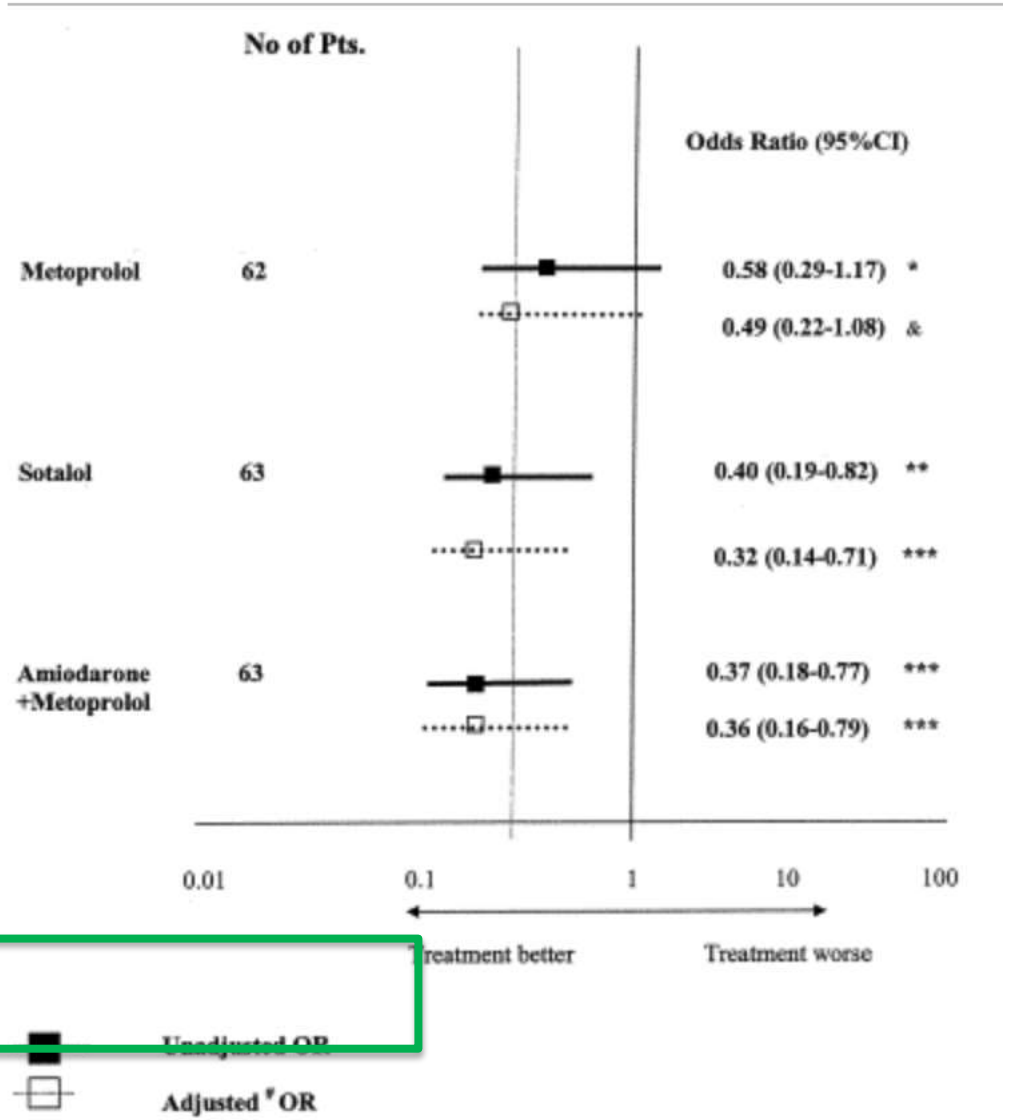
A comparison between oral antiarrhyt
the prevention of atrial fibrillation afte
surgery: The Pilot Study of Prevention

Table I. Incidence of postoperative atrial fibrillation

Event	Total	Placebo	Metoprolol	Sotalol	Amiodarone + met
No. of patients at risk	253	65	62	63	63
AF (%)	99	35 (53.8)	25 (40.3)	20 (31.7)	19 (30.2)
P			.16*	.013*	.008*

*

Versus placebo.



POAF: Prevention

- Beta-Blockers
  - Propranolol, carvedilol plus N-acetyl cysteine
    - Decreased AF, but not death, stroke, AKI
  - In one ***Non-cardiac surgery*** randomized, controlled trial, **increased mortality**
- Amiodarone
  - **Combination amiodarone + beta-blockers** better than metoprolol or sotalol, alone
- Other interventions: lack of compelling data:
  - Statins, magnesium, colchicine, posterior pericardiotomy, (bi)atrial pacing, and corticosteroids

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POAF Intervention: Anticoagulation

Noncardiac Surgery

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY VOL. 72, NO. 17, 2018

PUBLISHED BY ELSEVIER

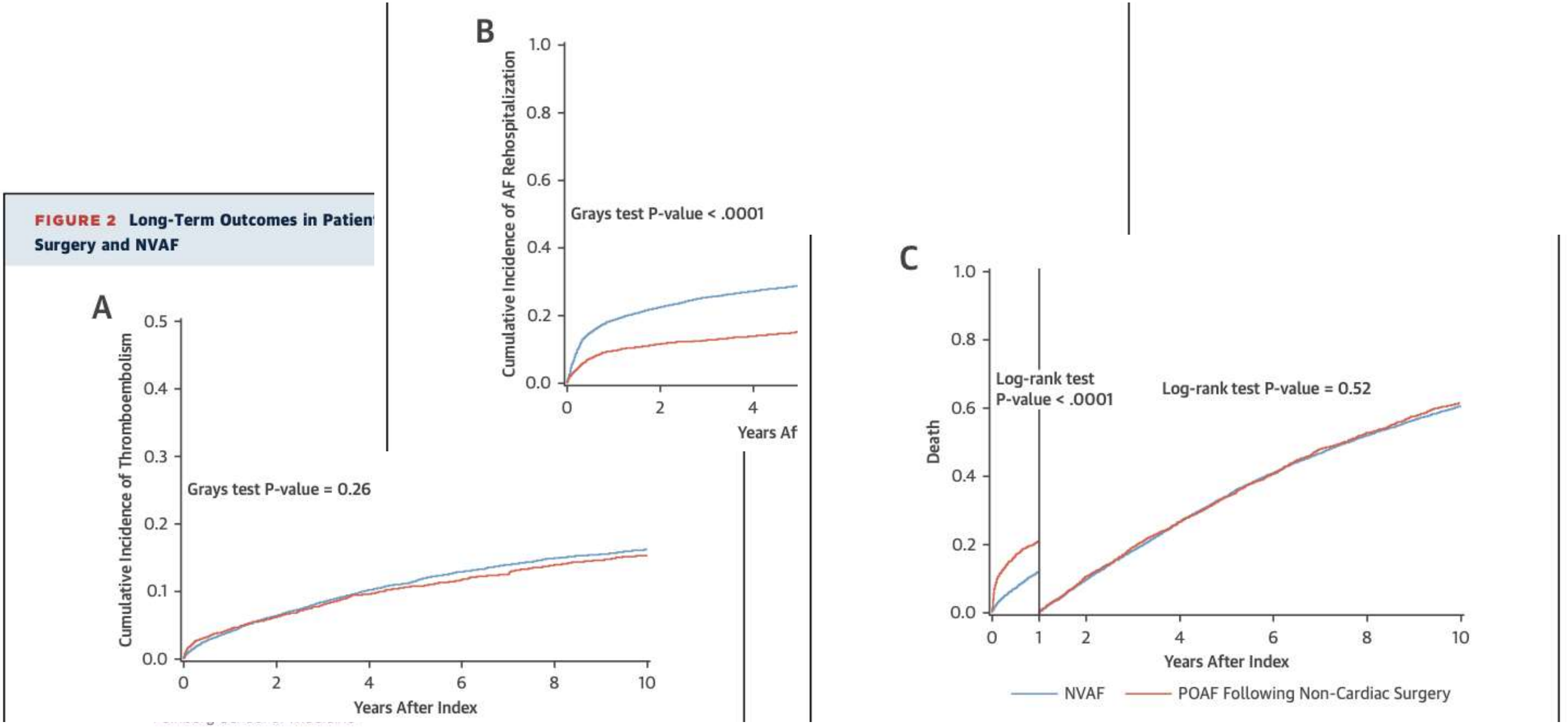
Risk of Thromboembolism Associated With Atrial Fibrillation Following Noncardiac Surgery

Jawad H. Butt, MD,[a] Jonas B. Olesen, MD, PhD,[b] Eva Havers-Borgersen, MB,[a] Anna Gundlund, MD,[b] Charlotte Andersson, MD, PhD,[b] Gunnar H. Gislason, MD, PhD,[b,c,d] Christian Torp-Pedersen, MD, DMSc,[e] Lars Køber, MD, DMSc,[a] Emil L. Fosbøl, MD, PhD[a]

- Danish nationwide registries 1995-2015
- No history of AF
- Noncardiac surgery
- ~6,000 (0.4%) developed POAF during hospitalization
  - highest incidences thoracic/pulmonary, vascular, and abdominal surgery
- POAF matched to NVAF
  - age, sex, heart failure, hypertension, diabetes, previous TE, ischemic heart disease, year of diagnosis
  - ~3800 : 15,300
  - 24% v 41% discharged on anticoagulation

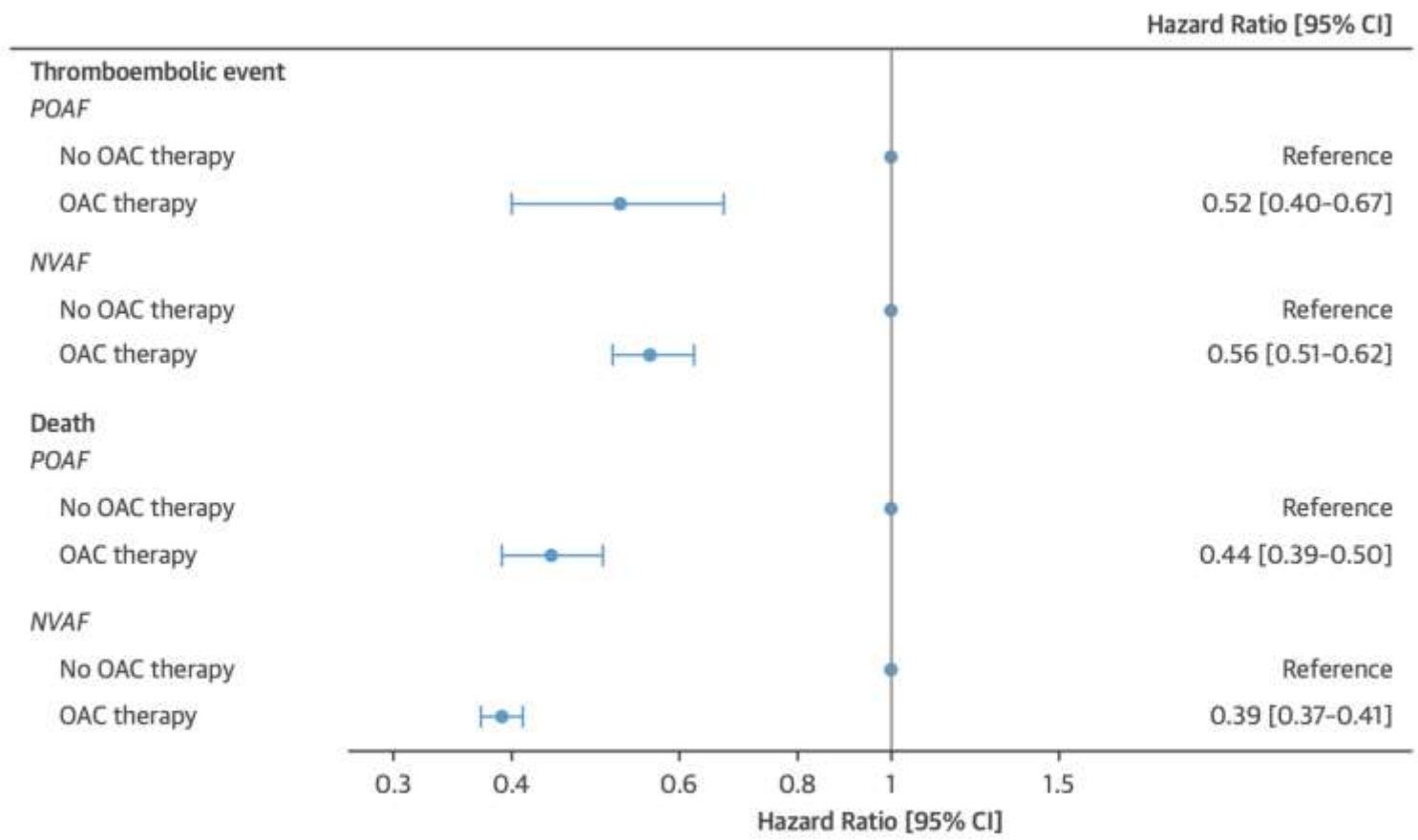
	NVAF (n = 15,320)	POAF (n = 3,830)	p Value
Demographics			
Age, yrs	77 (69-84)	77 (69–84)	N/A
Male	6,576 (42.9)	1,644 (42.9)	N/A
Comorbidities			
Ischemic heart disease	2,296 (15.0)	574 (15.0)	N/A
Heart failure	2,184 (14.3)	546 (14.3)	N/A
Thromboembolism	2,536 (16.6)	634 (16.6)	N/A
Peripheral vascular disease	541 (3.5)	219 (5.7)	<0.001
Hypertension	4,604 (30.1)	1,151 (30.1)	N/A
Coagulopathy	48 (0.3)	19 (0.5)	0.09
Bleeding	1,744 (11.4)	488 (12.7)	0.02
Diabetes	504 (3.3)	126 (3.3)	N/A
Malignancy	1,460 (9.5)	180 (4.7)	<0.001
Chronic renal disease	454 (3.0)	151 (3.9)	<0.001
Chronic obstructive pulmonary disease	1,857 (12.1)	419 (10.9)	0.04
Osteoporosis	891 (5.8)	244 (6.4)	0.19
Liver disease	254 (1.7)	83 (2.2)	0.03
Alcohol abuse	536 (3.5)	168 (4.4)	0.01
Concomitant medical treatment			
Statins	1,856 (12.1)	384 (10.0)	<0.001
Aspirin	4,028 (26.3)	906 (23.7)	<0.001
ADP receptor inhibitors	301 (2.0)	57 (1.5)	0.05
Dipyridamole	430 (2.8)	91 (2.4)	0.14
NSAID	3,028 (19.8)	869 (22.7)	<0.001
Risk scores			
CHA_2DS_2-VASc	3.0 ± 1.7	3.0 ± 1.7	0.58
$CHADS_2$	1.4 ± 1.2	1.4 ± 1.2	0.99
HAS-BLED	1.9 ± 1.1	1.9 ± 1.1	0.08

POAF Intervention: Anticoagulation



POAF Intervention: Anticoagulation

FIGURE 3 Adjusted Hazard Ratios of Thromboembolism and All-Cause Mortality in Patients Developing POAF Following Noncardiac Surgery and NVAF According to OAC Therapy During Follow-Up



Adjusted for age, sex, comorbidity, concomitant pharmacotherapy, and year of inclusion. CI = confidence interval; other abbreviations as in Figures 1 and 2.

POAF Intervention: Anticoagulation

Cardiac Surgery

JAMA Cardiology
View Article

JAMA Cardiol. 2018 May; 3(5): 417–424.
Published online 2018 Mar 28. doi: 10.1001/jamacardio.2018.0405
PMCID: PMC5875315
PMID: 29590304

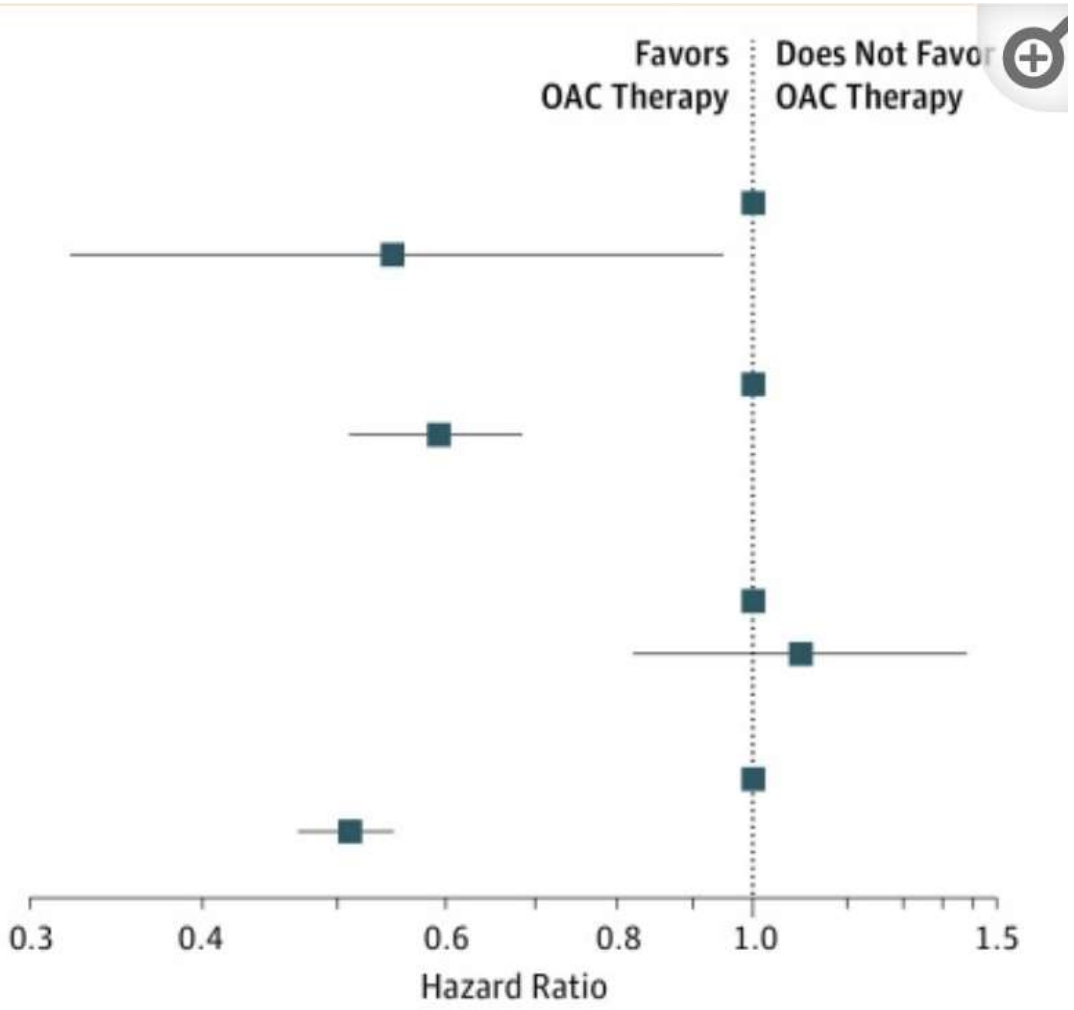
Long-term Thromboembolic Risk in Patients With Postoperative Atrial Fibrillation After Coronary Artery Bypass Graft Surgery and Patients With Nonvalvular Atrial Fibrillation

Jawad H. Butt, MD,[1] Ying Xian, MD, PhD,[2] Eric D. Peterson, MD, MPH,[2] Peter Skov Olsen, MD, DMSc,[3] Rasmus Rørth, MD,[1] Anna Gundlund, MD,[4] Jonas B. Olesen, MD, PhD,[4] Gunnar H. Gislason, MD, PhD,[4,5,6] Christian Torp-Pedersen, MD, DMSc,[7] Lars Køber, MD, DMSc,[1] and Emil L. Fosbøl, MD, PhD[1]

- Danish nationwide registries 2000-2015
- No history of AF
- CABG surgery
- ~2300 (30%) developed POAF during hospitalization
- POAF matched to NVAF
  - Age, sex, C2V score, year of surgery
  - ~2100 : 8700
  - 8.4% v 42.9% started on anticoagulation

POAF Intervention: Anticoagulation

Outcome	Hazard Ratio (95% CI)
Thromboembolic event	
Patients with POAF	
No OAC therapy	1 [Reference]
OAC Therapy	0.55 (0.32-0.95)
Patients with NVAF	
No OAC therapy	1 [Reference]
OAC Therapy	0.59 (0.51-0.68)
Death	
Patients with POAF	
No OAC therapy	1 [Reference]
OAC Therapy	1.09 (0.82-1.43)
Patients with NVAF	
No OAC therapy	1 [Reference]
OAC Therapy	0.51 (0.47-0.55)



POAF: Rhythm Control

- Hemodynamically unstable patients
  - Emergency electrical cardioversion
  - IV administration of amiodarone or vernakalant

POAF: Rhythm Control

Cardiothoracic Surgical Trials Network (CTSN)

The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 19, 2016 VOL. 374 NO. 20

Rate Control versus Rhythm Control for Atrial Fibrillation after Cardiac Surgery

A.M. Gillinov, E. Bagiella, A.J. Moskowitz, J.M. Raiten, M.A. Groh, M.E. Bowdish, G. Ailawadi, K.A. Kirkwood, L.P. Perrault, M.K. Parides, R.L. Smith II, J.A. Kern, G. Dussault, A.E. Hackmann, N.O. Jeffries, M.A. Miller, W.C. Taddei-Peters, E.A. Rose, R.D. Weisel, D.L. Williams, R.F. Mangusan, M. Argenziano, E.G. Moquete, K.L. O'Sullivan, M. Pellerin, K.J. Shah, J.S. Gammie, M.L. Mayer, P. Voisine, A.C. Gelijns, P.T. O'Gara, and M.J. Mack, for the CTSN*

- Hemodynamically stable patients
- 23 centers
- Cardiac surgery
- No prior history of AF
- AF > 60 minutes or recurrent
- 695 (33%) POAF
  - 523 patients randomized

Intervention and Endpoints

- Rate-control: < 100 bpm
- Rhythm-control: Amiodarone + cardioversion if needed
- Cross-over allowed
  - 26.7% rate-control and 24% rhythm-control

- Primary endpoint: Total number of hospital days within 60 days
- Secondary endpoints
  - Duration of the hospital stay from randomization
  - Length of the index hospitalization
  - Need for re- admission
  - Heart rhythm and time to conversion to a sustained stable rhythm without atrial fibrillation
  - Rates of death and adverse events

POAF: Rhythm Control

Cardiothoracic Surgical Trials Network (CTSN)

Table 1. Characteristics of the Patients and Procedures at Baseline.*

Characteristic	Rate (N=		
Age — yr	69.		
Male sex — no. (%)	197		
Race or ethnic group — no. (%)†			
Hispanic	10		
White	242		
Median body-mass index (IQR)‡	27.6 (2		
Medical history — no. (%)			
Diabetes	82		
Heart failure	35		
Hypertension	193		
Previous myocardial infarction	50		
Stroke	17		
Previous revascularization	46		
Valve disease	140		
Medication — no. (%)			
ACE inhibitor	89		
ARB	51		
Beta-blocker	162		
Calcium-channel blocker	52		
Diuretic	79 (30.2)	81 (31.0)	160 (30.6)
Nitrate	60 (22.9)	55 (21.1)	115 (22.0)
Index surgical procedure			
CABG only — no. (%)	112 (42.7)	100 (38.3)	212 (40.5)
Valve repair only — no. (%)	39 (14.9)	43 (16.5)	82 (15.7)
CABG plus valve repair — no. (%)	10 (3.8)	7 (2.7)	17 (3.3)
Valve replacement only — no./total no. (%)	60/262 (22.9)	66/261 (25.3)	126/523 (24.1)
Aortic and mitral valve	5/60 (8.3)	4/66 (6.1)	9/126 (7.1)
Aortic valve only	44/60 (73.3)	52/66 (78.8)	96/126 (76.2)
Mitral valve only	11/60 (18.3)	9/66 (13.6)	20/126 (15.9)
Tricuspid valve only	0	1/66 (1.5)	1/126 (0.8)
CABG plus valve replacement — no./total no. (%)	41/262 (15.6)	45/261 (17.2)	86/523 (16.4)
CABG plus aortic and mitral valve	2/41 (4.9)	1/45 (2.2)	3/86 (3.5)
CABG plus aortic valve only	35/41 (85.4)	36/45 (80.0)	71/86 (82.6)
CABG plus mitral valve only	4/41 (9.8)	8/45 (17.8)	12/86 (14.0)
Median bypass time (IQR) — min§	95.0 (73.5–127.5)	94.0 (78.0–126.0)	95.0 (76.0–127.0)
Median aortic cross-clamp time (IQR) — min¶	73.5 (53.5–96.0)	73.0 (57.5–93.5)	73.0 (55.0–94.5)

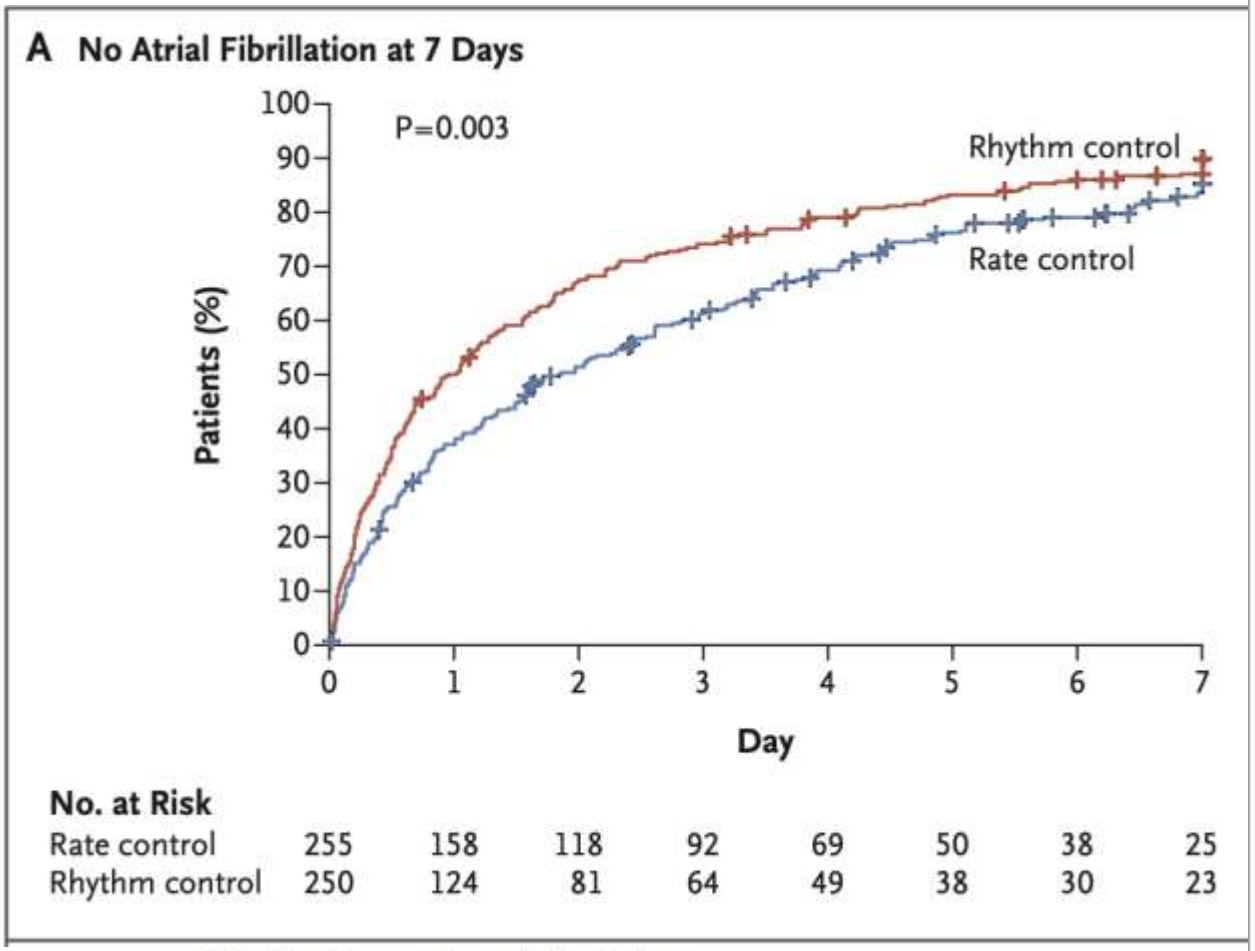
No difference in Hospitalization or Readmission

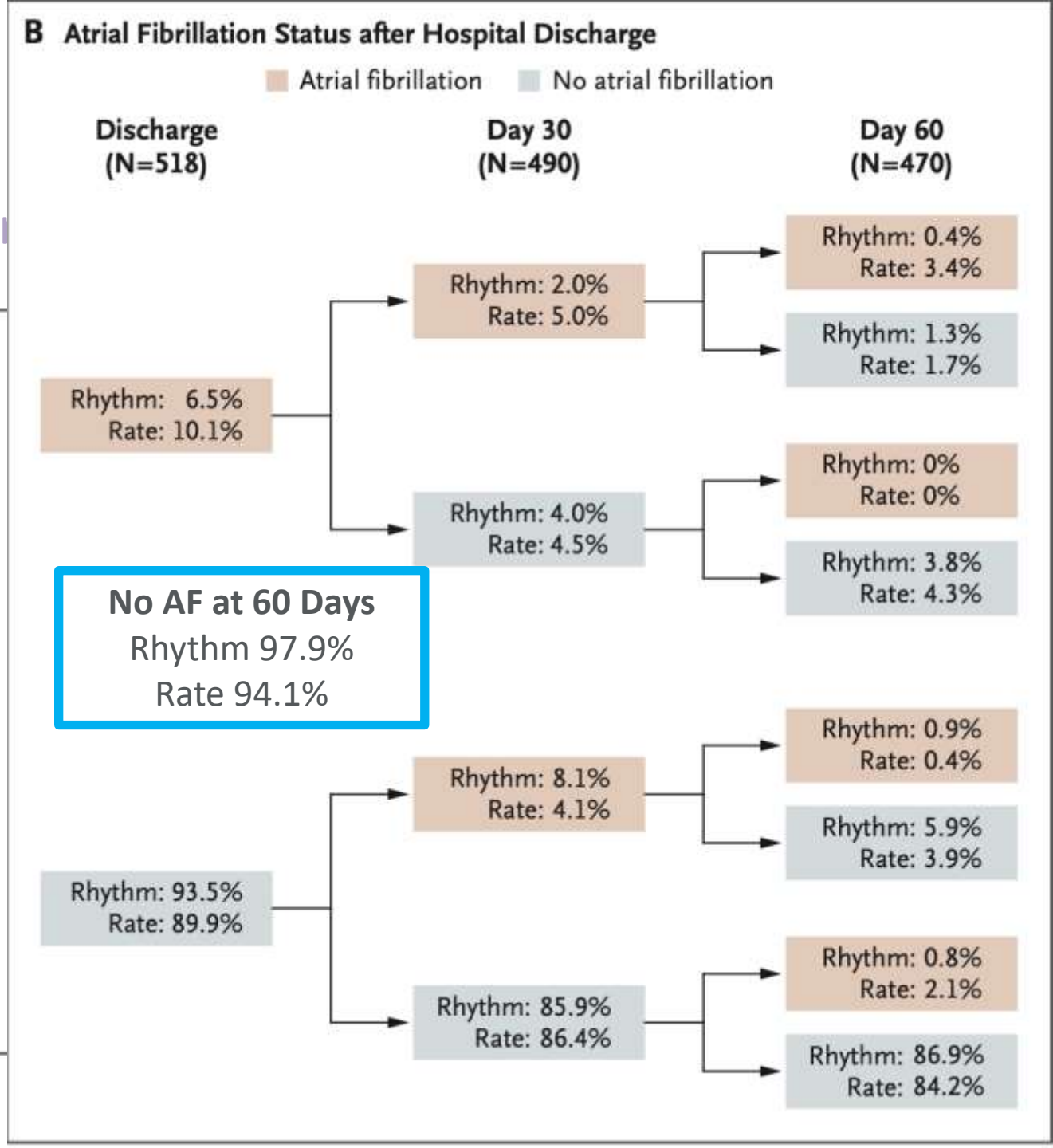
Table 3. Hospitalization and Readmission.

Variable	Rate Control (N = 262)	Rhythm Control (N = 261)	P Value
	median (IQR)		
Hospitalization			
No. of days in hospital from randomization to 60 days	5.1 (3.0–7.4)	5.0 (3.2–7.5)	0.76
After isolated CABG	4.8 (3.0–7.7)	5.1 (3.1–6.8)	0.96
After isolated valve repair or replacement	5.0 (2.6–7.1)	4.4 (3.1–7.0)	0.76
After CABG plus valve repair or replacement	5.3 (4.2–8.4)	7.1 (4.4–9.7)	0.11
No. of days of index hospitalization after randomization	4.3 (2.9–6.6)	4.3 (3.0–7.0)	0.88
No. of days from randomization to eligibility for cardiac discharge*	4.0 (2.0–6.0)	4.0 (3.0–6.0)	0.99
No. of days in hospital after discharge from index hospitalization	2.2 (0.6–5.0)	2.1 (1.0–4.7)	0.82
	no. of events (rate/100 patient-mo)		
Readmission			
Any cause	79 (18.5)	80 (18.5)	0.99
Emergency department visit	28 (6.5)	24 (5.6)	0.55
Hospital stay of <24 hr	5 (1.2)	4 (0.9)	0.73
Rehospitalization	46 (10.8)	52 (12.0)	0.58
Cardiovascular cause	29 (6.8)	35 (8.1)	0.48
Treatment of atrial fibrillation	11 (2.6)	17 (3.9)	0.27
Other cardiovascular reason	18 (4.2)	18 (4.2)	0.97
Noncardiovascular cause	50 (11.7)	45 (10.4)	0.57

POAF: Rhythm Control

Cardiothoracic Surgical Trials Networ





No AF at 60 Days
Rhythm 97.9%
Rate 94.1%

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- Thromboembolic events 2%
- Serious Bleeding events 3%
  - 90% of these on anticoagulation

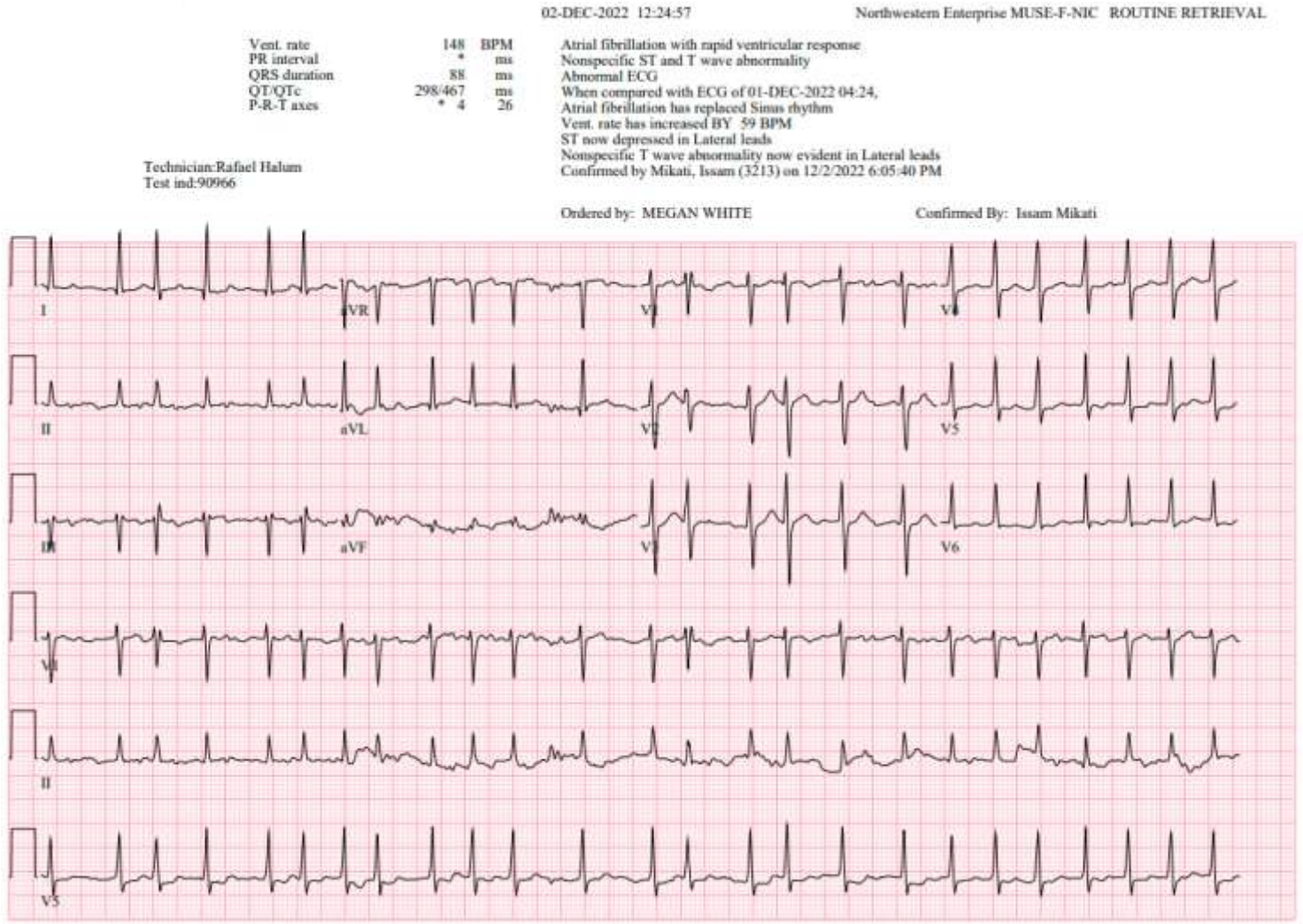
Table 4. Serious and Protocol-Defined Adverse Events.*

Event	Serious Adverse Events			Nonserious Adverse Events			Total Events		
	Rate Control	Rhythm Control	P Value	Rate Control	Rhythm Control	P Value	Rate Control	Rhythm Control	P Value
	no. of events (rate/100 patient-mo)			*no. of events (rate/100 patient-mo)*			*no. of events (rate/100 patient-mo)*		
Any	122 (24.8)	132 (26.4)	0.61	33 (6.7)	28 (5.6)	0.48	155 (31.5)	160 (32.0)	0.88
Bleeding	11 (2.2)	6 (1.2)	0.21	2 (0.4)	2 (0.4)	0.99	13 (2.6)	8 (1.6)	0.26
Anemia	0	3 (0.6)	0.08	NA	NA	NA	0	3 (0.6)	0.08
Cardiac arrhythmia	21 (4.3)	23 (4.6)	0.80	2 (0.4)	8 (1.6)	0.06	23 (4.7)	31 (6.2)	0.30
Sustained supraventricular	13 (2.6)	16 (3.2)	0.61	0	3 (0.6)	0.08	13 (2.6)	19 (3.8)	0.31
Sustained ventricular	0	0	0	1 (0.2)	0	0.32	1 (0.2)	0	0.32
Conduction abnormality									
With pacemaker placement	5 (1.0)	7 (1.4)	0.58	0	0	0	5 (1.0)	7 (1.4)	0.59
Without pacemaker placement	2 (0.4)	0	0.16	0	0	0	2 (0.4)	0	0.16
Corrected QT interval >500 msec	1 (0.2)	0	0.32	1 (0.2)	5 (1.0)	0.10	2 (0.4)	5 (1.0)	0.27
Cerebrovascular thromboembolism	4 (0.8)	2 (0.4)	0.40	0	0	0	4 (0.8)	2 (0.4)	0.40
Stroke	4 (0.8)	1 (0.2)	0.18	0	0	0	4 (0.8)	1 (0.2)	0.18
Transient ischemic attack	0	1 (0.2)	0.32	0	0	0	0	1 (0.2)	0.32
Noncerebral thromboembolism	3 (0.6)	1 (0.2)	0.31	0	0	0	3 (0.6)	1 (0.2)	0.31
Heart failure	9 (1.8)	9 (1.8)	0.97	0	0	0	9 (1.8)	9 (1.8)	0.97
Major infection	28 (5.7)	22 (4.4)	0.37	18 (3.7)	11 (2.2)	0.18	46 (9.3)	33 (6.6)	0.13
Renal event	5 (1.0)	6 (1.2)	0.78	4 (0.8)	6 (1.2)	0.54	9 (1.8)	12 (2.4)	0.53
Respiratory failure	5 (1.0)	8 (1.6)	0.42	0	0	0	5 (1.0)	8 (1.6)	0.42
Warfarin toxic effect	1 (0.2)	1 (0.2)	0.99	NA	NA	NA	1 (0.2)	1 (0.2)	0.99
Hypotension or syncope	6 (1.2)	4 (0.8)	0.51	NA	NA	NA	6 (1.2)	4 (0.8)	0.51
Amiodarone toxic effect	0	2 (0.4)	0.16	NA	NA	NA	0	2 (0.4)	0.16
Pericardial-fluid collection	2 (0.4)	0	0.16	0	0	0	2 (0.4)	0	0.16
Pleural effusion	10 (2.0)	23 (4.6)	0.03	5 (1.0)	1 (0.2)	0.10	15 (3.0)	24 (4.8)	0.16
Other	17 (3.5)	22 (4.4)	0.45	2 (0.4)	0	0.16	19 (3.9)	22 (4.4)	0.67

Case

Post-Operative Atrial Fibrillation (POAF) after Cardiac Surgery

- 72 male with peripheral vascular disease, coronary artery disease, **s/p 3-vessel coronary artery bypass graft surgery** presents with atrial fibrillation (AF) with rapid ventricular rates on post-operative Day 2.
  - No prior history of AF.
  - Episode lasted 40 minutes, self-terminated



Case

- Recurrent paroxysmal atrial fibrillation
- **CHA_2DS_2-VASc = 2 (age, CAD)**
- Given significant symptoms, he was discharged with amiodarone, metoprolol, and apixaban 5 mg bid
  - Ambulatory monitor in 2 months
    - Consider suspending anticoagulation if no atrial fibrillation
      - Self-monitor after that for recurrent AF

Conclusions

Management of POAF

- Robust data are lacking
- POAF associated with increased
  - Recurrent AF, Thromboembolic Events, Length/Cost of Stay, Death
- **Prioritize**
  - **Rate control**
  - **Symptom control**
- Anticoagulation
  - Risk/benefit unclear
- Rhythm control
  - No clear advantage
- **AF may recur long-term**

Thank you

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