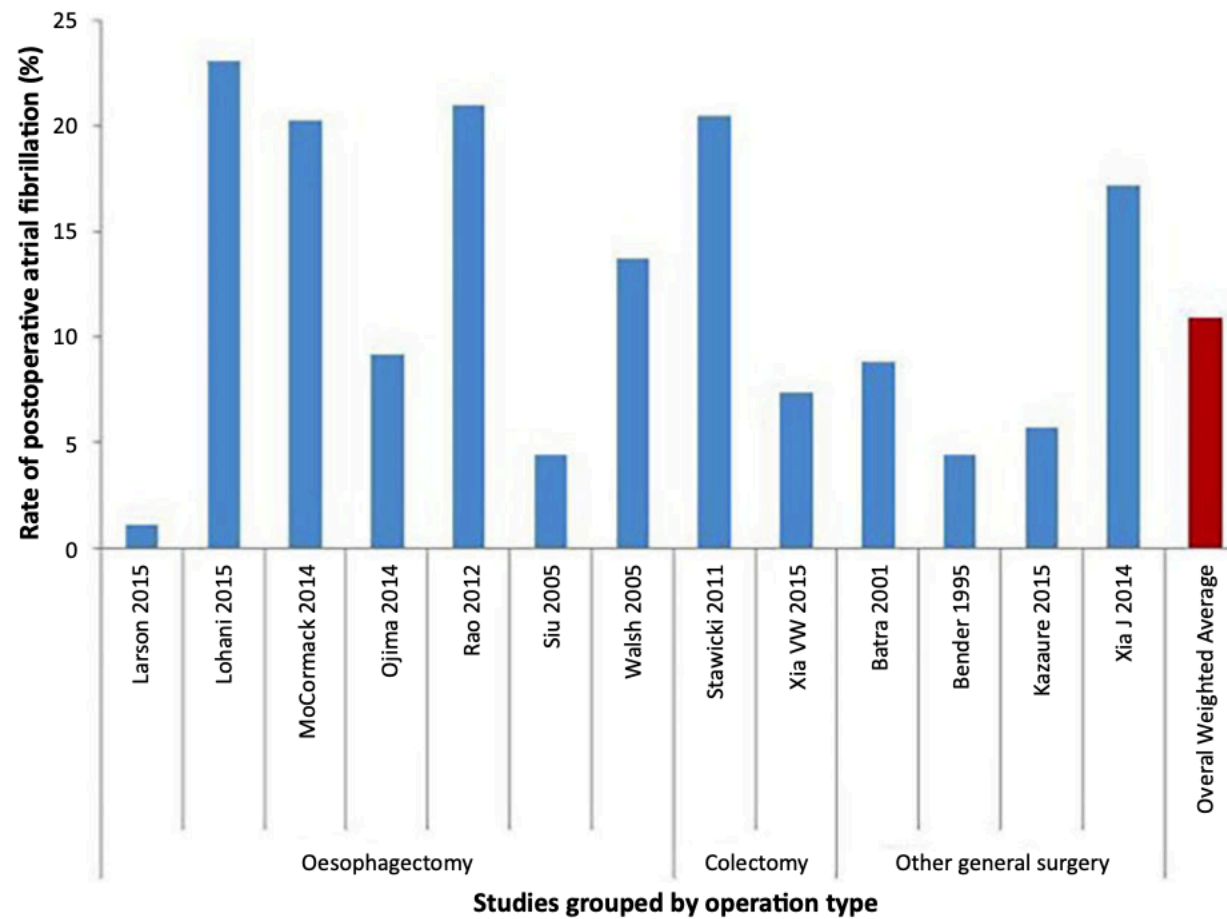


RISCHIO DI ICTUS ED ALTRI EVENTI  
AVVERSI NEI PAZIENTI CON  
FIBRILLAZIONE ATRIALE PERI-  
OPERATORIA A UN ANNO DA  
INTERVENTO DI CHIRURGIA NON  
CARDIACA

## BACKGROUND

- Patients with clinical, non-operative atrial fibrillation (AF) have a significantly increased risk of death, stroke, and other adverse outcomes
- Oral anticoagulation in patients with non-operative AF who have additional risk factors for stroke reduces the relative risk of stroke by 60–70%, and clinical guidelines consistently recommend anticoagulation in this patient population
- The risk of stroke and other adverse outcomes is much less clear among patients who develop perioperative atrial fibrillation (POAF) after non-cardiac surgery but are otherwise not known to have AF

# BACKGROUND



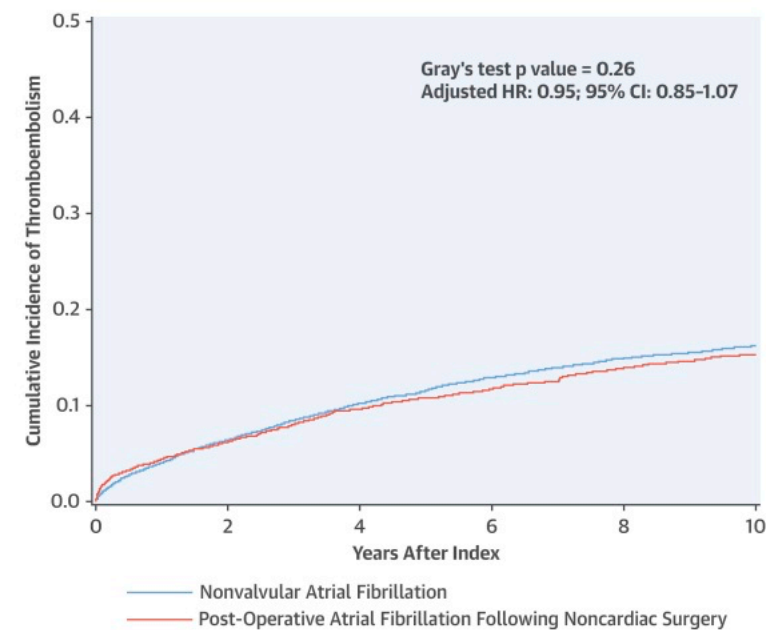
# BACKGROUND

Type of Surgery	Cumulative Rate of Stroke 1 Year After Hospitalization, % (95% CI)		Hazard Ratio (95% CI)
	Perioperative Atrial Fibrillation	No Perioperative Atrial Fibrillation	
Noncardiac	1.47 (1.24–1.75)	0.36 (0.35–0.37)	2.0 (1.7–2.3)
Cardiac	0.99 (0.81–1.20)	0.83 (0.76–0.91)	1.3 (1.1–1.6)

The association with stroke was significantly stronger for POAF after noncardiac vs cardiac surgery ( $P < .001$  for interaction).

JAMA. 2014 August 13; 312(6): 616–622

## CENTRAL ILLUSTRATION: Risk of Thromboembolism Following Post-Operative Atrial Fibrillation Compared With Nonvalvular Atrial Fibrillation



Butt, J.H. et al. J Am Coll Cardiol. 2018;72(17):2027-36.

# Risk of stroke and other adverse outcomes in patients with perioperative atrial fibrillation 1 year after non-cardiac surgery

David Conen<sup>1,2,3\*</sup>, Pablo Alonso-Coello<sup>3,4\*</sup>, James Douketis<sup>2</sup>, Matthew T.V. Chan <sup>5</sup>, Andrea Kurz<sup>6</sup>, Alben Sigamani<sup>7</sup>, Joel L. Parlow<sup>8</sup>, Chew Yin Wang<sup>9</sup>, Juan C. Villar <sup>10</sup>, Sadeesh K. Srinathan <sup>11</sup>, Maria Tiboni<sup>2</sup>, German Malaga<sup>12</sup>, Gordon Guyatt<sup>2,3</sup>, Soori Sivakumaran<sup>13</sup>, Maria-Virginia Rodriguez Funes<sup>14</sup>, Patricia Cruz<sup>15</sup>, Homer Yang<sup>16</sup>, George K. Dresser <sup>17</sup>, Jesus Alvarez-Garcia <sup>18</sup>, Thomas Schricker<sup>19</sup>, Philip M. Jones <sup>16,20</sup>, Leanne W. Drummond <sup>21</sup>, Kumar Balasubramanian<sup>1</sup>, Salim Yusuf<sup>1,2,3</sup>, and P.J. Devereaux <sup>1,2,3</sup>

# METHODS

## Dataset

POISE-1 trial:  
effects of metoprolol vs. placebo in  
8351 patients



POISE-2 trial:  
effect of aspirin vs. placebo, and  
clonidine vs. placebo in 10 010 patients.

Patients with, or at risk of,  
cardiovascular disease who were  
undergoing non-cardiac surgery.

244 patients who were known to have AF before surgery  
were excluded from the analyses

# BASELINE CHARACTERISTICS

	All (N = 18 117)	POAF (N = 404)	No POAF (N = 17 713)	P-value <sup>a</sup>
Age (years)	68.7 ± 10.4	74.3 ± 8.3	68.6 ± 10.4	<0.001
Sex (male)	10 407 (57.4)	247 (61.1)	10 160 (57.4)	0.13
Systolic blood pressure	142 ± 23	142 ± 24	142 ± 23	0.88
Diastolic blood pressure	78 ± 12	76 ± 14	78 ± 12	0.002
Body mass index (kg/m <sup>2</sup> )	28.2 ± 6.7	27.7 ± 5.8	28.2 ± 6.7	0.12
History of smoking within 2 years	4125 (22.8)	90 (22.3)	4035 (22.8)	0.81
History of hypertension	13 691 (75.6)	301 (74.5)	13 390 (75.6)	0.61
History of diabetes	6156 (34.0)	99 (24.5)	6057 (34.2)	<0.001
History of stroke/TIA	2575 (14.2)	72 (17.8)	2503 (14.1)	0.04
History of coronary disease	5775 (31.9)	126 (31.2)	5649 (31.9)	0.76
History of peripheral artery disease	4242 (23.4)	95 (23.5)	4147 (23.4)	0.97
History of congestive heart failure	834 (4.6)	28 (6.9)	806 (4.6)	0.02
Undergoing urgent/emergency surgery	1575 (8.7)	38 (9.4)	1537 (8.7)	0.61
Antithrombotic medication before surgery				
Warfarin	352 (1.9)	16 (4.0)	336 (1.9)	0.003
Other anticoagulant	817 (4.5)	24 (6.0)	793 (4.5)	0.16
Aspirin	5238 (28.9)	138 (34.2)	5100 (28.8)	0.02
Other antithrombotic therapy	815 (4.5)	19 (4.7)	796 (4.5)	0.84

Risk factors present  
also in CHA<sub>2</sub>DS<sub>2</sub>VASc

# BASELINE CHARACTERISTICS

	<b>All (N = 18 117)</b>	<b>POAF (N = 404)</b>	<b>No POAF (N = 17 713)</b>	<b>P-value<sup>a</sup></b>
CHADS <sub>2</sub> score <sup>b</sup>	1.7 ± 1.1	1.9 ± 1.1	1.7 ± 1.1	<0.001
Type of surgery				
Intrathoracic surgery	761 (4.2)	56 (14.0)	705 (4.0)	<0.001
Vascular surgery	4045 (22.5)	122 (30.4)	3923 (22.3)	<0.001
Intra-abdominal surgery	4420 (24.6)	113 (28.2)	4307 (24.5)	0.088
Orthopaedic surgery	5494 (30.5)	78 (19.5)	5416 (30.8)	<0.001
Other surgery	3392 (18.8)	39 (9.7)	3353 (19.1)	<0.001
Randomized to aspirin (POISE-2 only)	4871 (49.9)	104 (53.9)	4767 (49.8)	0.26
Randomized to clonidine (POISE-2 only)	4884 (50.0)	100 (51.8)	4784 (50.0)	0.61
Randomized to Metoprolol (POISE-1 only)	4174 (50.0)	91 (43.1)	4083 (50.2)	0.04



# POAF AND INCIDENCE OF ADVERSE CLINICAL OUTCOMES

Outcomes	Perioperative AF		No perioperative AF	
	N events	Incidence <sup>a</sup>	N events	Incidence <sup>a</sup>
Total stroke	15	5.58 (4.14–7.02)	207	1.54 (1.43–1.64)
All-cause mortality	86	31.37 (27.98–34.75)	1266	9.34 (9.08–9.59)
Vascular mortality	34	12.40 (10.27–14.53)	528	3.88 (3.71–4.04)
Myocardial infarction	65	26.20 (22.95–29.45)	1072	8.23 (7.99–8.48)
Composite of vascular mortality, myocardial infarction, or stroke	89	35.88 (32.07–39.68)	1612	12.38 (12.08–12.68)

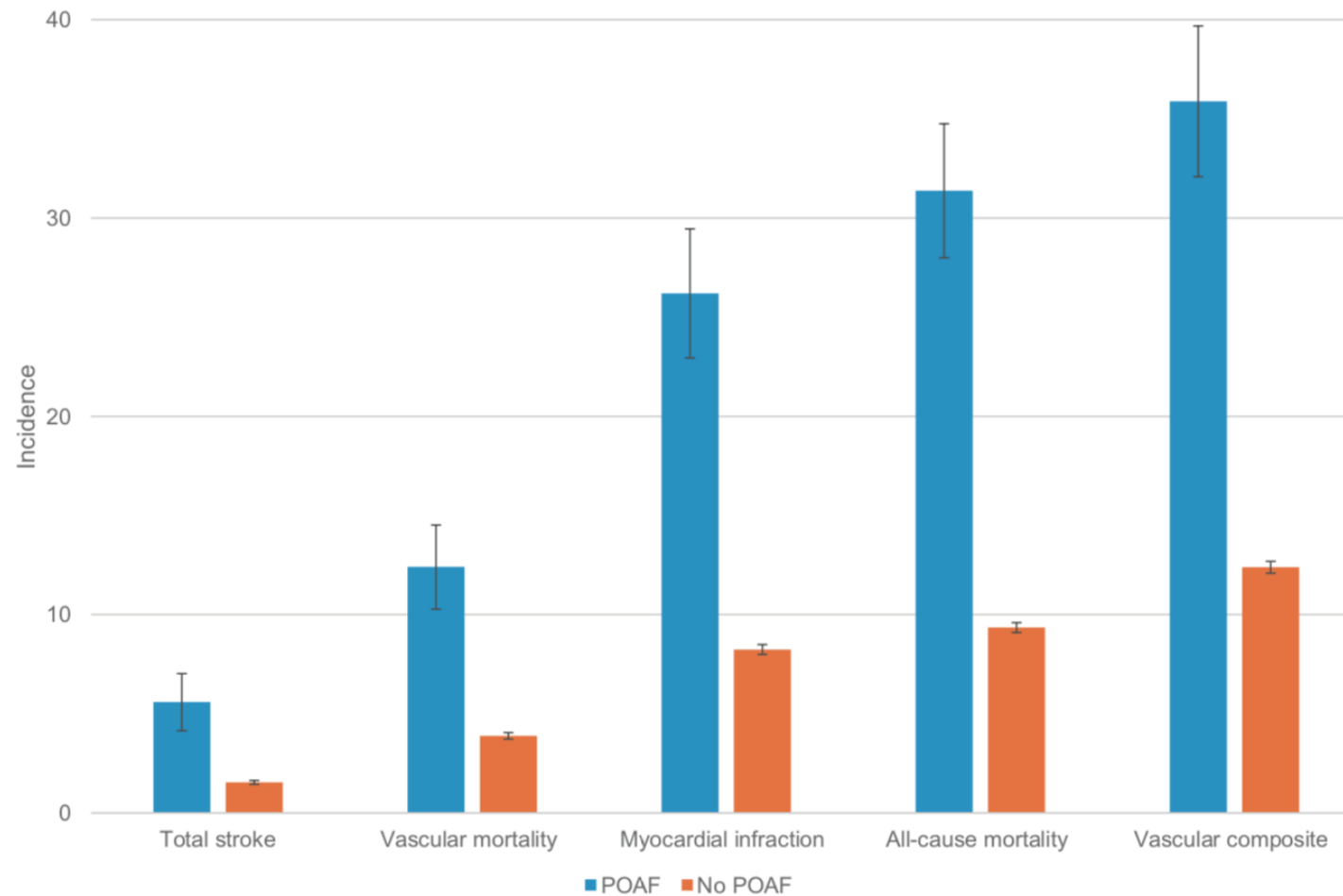
# ADVERSE CLINICAL OUTCOMES ASSOCIATED WITH POAF

Outcomes	Unadjusted HR (95% CI)		Adjusted HR (95% CI)	
	(N = 18 117)	P-value	(N = 17 996) <sup>a</sup>	P-value
Total stroke	4.17 (2.47–7.06)	<0.001	3.43 (2.00–5.90)	<0.001
All-cause mortality	3.59 (2.89–4.47)	<0.001	2.51 (2.01–3.14)	<0.001
Vascular mortality	3.46 (2.45–4.90)	<0.001	2.74 (1.92–3.90)	<0.001
Myocardial infarction	6.28 (4.85–8.12)	<0.001	5.10 (3.91–6.64)	<0.001
Composite of vascular mortality, myocardial infarction, or stroke	4.90 (3.94–6.08)	<0.001	3.93 (3.14–4.91)	<0.001

# ADVERSE CLINICAL OUTCOMES ASSOCIATED WITH POAF EXCLUDING PATIENTS ON ANTICOAGULATION AT RANDOMIZATION

Outcomes	Unadjusted HR (95% CI)		Adjusted HR (95% CI)	
	(N = 17 000)	P-value	(N = 16 899) <sup>a</sup>	P-value
Total stroke	4.71 (2.73–8.13)	<0.001	3.62 (2.06–6.34)	<0.001
All-cause mortality	3.66 (2.89–4.63)	<0.001	2.57 (2.02–3.27)	<0.001
Vascular mortality	3.65 (2.51–5.32)	<0.001	2.91 (1.98–4.26)	<0.001
Myocardial infarction	6.37 (4.87–8.33)	<0.001	5.05 (3.83–6.65)	<0.001
Composite of vascular mortality, myocardial infarction, or stroke	5.26 (4.19–6.60)	<0.001	4.13 (3.27–5.21)	<0.001

# INCIDENCE OF ADVERSE EVENTS AMONG PATIENTS WITH AND WITHOUT POAF



# LIMITATIONS

- Included patients at high risk of vascular disease → unclear to what extent data can be generalized
- No data on a pre-existing history of AF in POISE-I → patients with a prior history of AF would have been included in the non-POAF group → sensitivity analysis excluding patients on therapeutic anticoagulation at the time of randomization provided very similar results
- Predictor of interest: clinically significant POAF → unclear whether less severe or asymptomatic POAF episodes confer the same risk of adverse outcomes
- Unable to take into account the potential influence of the duration of the individual POAF episodes

# CONCLUSIONS

- Patients with POAF after non cardiac surgery have a significantly increased risk of stroke, MI, and death at 1 year
- Intervention studies are needed to evaluate risk reduction strategies in this high-risk population