

Purpose

- In order to differentiate perioperative myocardial infarction/injury (PMI) after noncardiac surgery from preexisting injury from chronic disorders, recent studies have shown the importance of using an acute absolute increase as a criterion for PMI.
- For hs-cTnT, PMI defined as an absolute increase of 14ng/L (the 99th percentile) has been shown to be strongly associated with 30-day mortality.
- The aim of this study was to evaluate the incidence and outcome of PMI diagnosed by a hs-cTnI assay after non-cardiac surgery.

Methods

- We measured hs-cTnI (ARCHITECT high sensitive STAT assay, Abbott Laboratories) in 2,018 consecutive patients undergoing 2,551 surgeries, considered at increased cardiovascular risk before and daily after non-cardiac surgery.
- Patients ≥ 65 years or ≥ 45 years and CAD, PAD or cerebrovascular disease
- PMI = an absolute rise from baseline values of ≥ 26 ng/L (99th percentile).
- The primary endpoint was major adverse cardiovascular events (MACE), a composite of death, myocardial infarction, acute heart failure and arrhythmias within 30 days and one year.
- The secondary endpoint was mortality in 30 days and one year

Statistical Analysis

- Cox regression analysis for the occurrence of MACE and mortality in 30 days and one year.

Funding



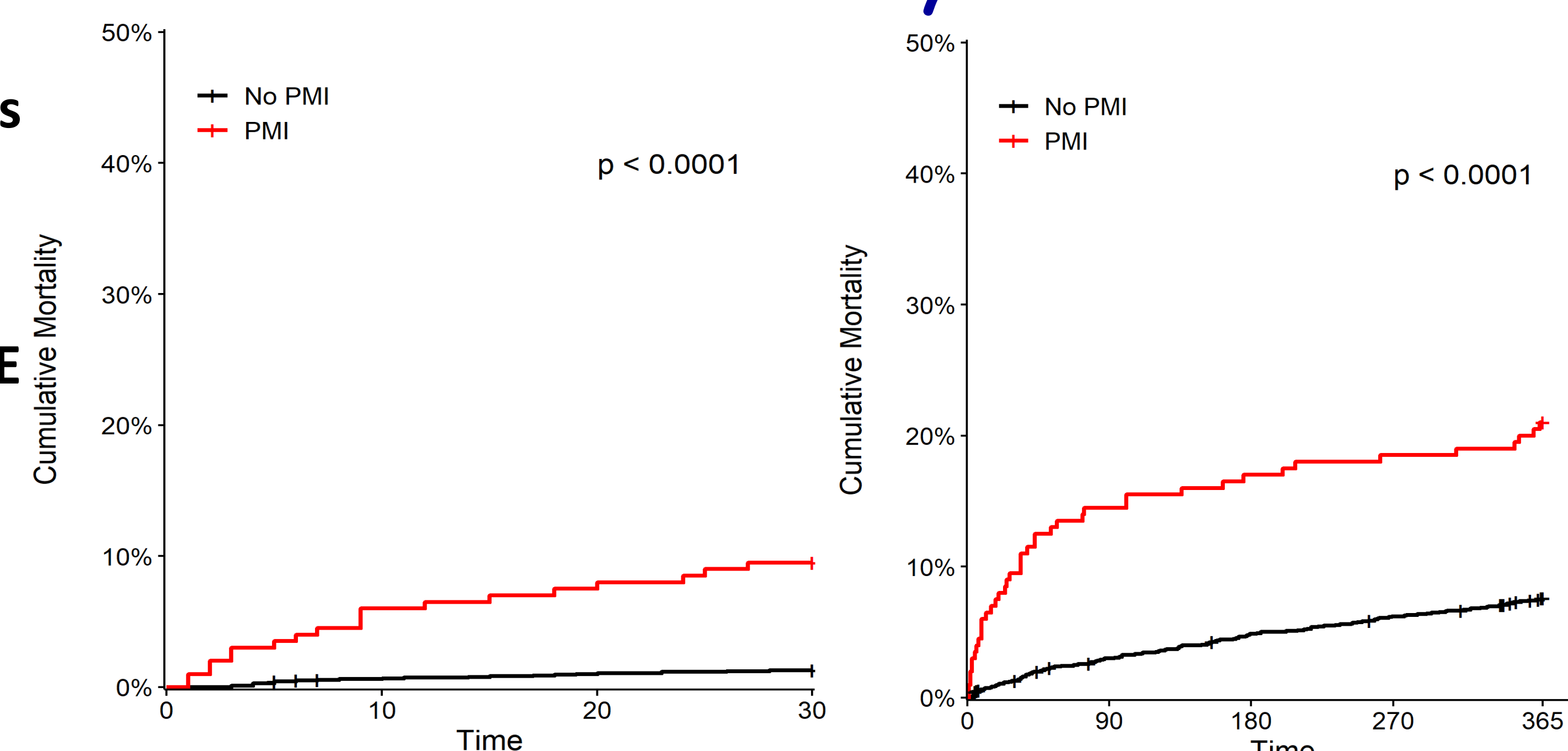
Baseline Characteristics

	All patients n = 2,551	PMI n = 233	No PMI n = 2,318	P
Male gender, n(%)	1,431 (56)	141 (61)	1,290 (56)	0.154
Age (years), median (IQR)	73 (68-79)	76 (69-82)	73 (68-79)	<0.001
Diabetes mellitus, n (%)	635 (25)	73 (32)	562 (24)	0.042
Hypertension, n(%)	1,756 (69)	192 (82)	1,564 (68)	<0.001
CAD, n (%)	727 (29)	108 (46)	619 (27)	0.001
PAD, n (%)	558 (22)	88 (38)	470 (20%)	<0.001
CHF, n (%)	238 (9)	50 (22)	188 (8)	<0.001
Stroke/TIA, n (%)	310 (12)	42 (18)	268 (12)	0.004
COPD, n (%)	369 (15)	27 (12)	342 (15)	0.190
Atrial Fibrillation, n (%)	403 (16)	53 (23)	350 (15)	0.002
Renal Failure, [§] n (%)	1,234 (48)	140 (60)	1,094 (47)	<0.001
Urg/emerg surgery, n (%)	561 (22)	60 (26)	500 (22)	<0.001
Revised Cardiac Risk Index (RCRI), n (%)				<0.001
I	19 (1)	0 (0)	19 (1)	
II	1,159 (45)	68 (30)	1,091 (47)	
III	820 (32)	69 (30)	751 (32)	
IV	553 (22)	96 (41)	457 (20)	
Laboratory assessment, median (IQR)				
Creatinine (mg/dL)*	0.93 (0.8-1.2)	1.05 (0.83-1.38)	0.92 (0.75-1.2)	<0.001
Haemoglobin (g/dL)&	12.8(11-14)	12.7 (11.1-13.9)	12.8 (11-14)	0.556

[§] chronic kidney disease stage I-IV *n=2,299; &n=2,313; CAD=coronary artery disease; PAD= Peripheral artery disease; COPD=Chronic obstructive pulmonary disease; CHF= chronic heart failure; TIA= transient ischemic attack; urg/emerg= urgent or emergency; IQR= interquartile range;

	30 days			1 Year		
	All	PMI	No PMI	All	PMI	No PMI
MACE	105 5%	49 25%	56 3%	210 10%	64 32%	146 8%
Mortality	42 2%	19 10%	23 1%	179 9%	42 21%	137 8%

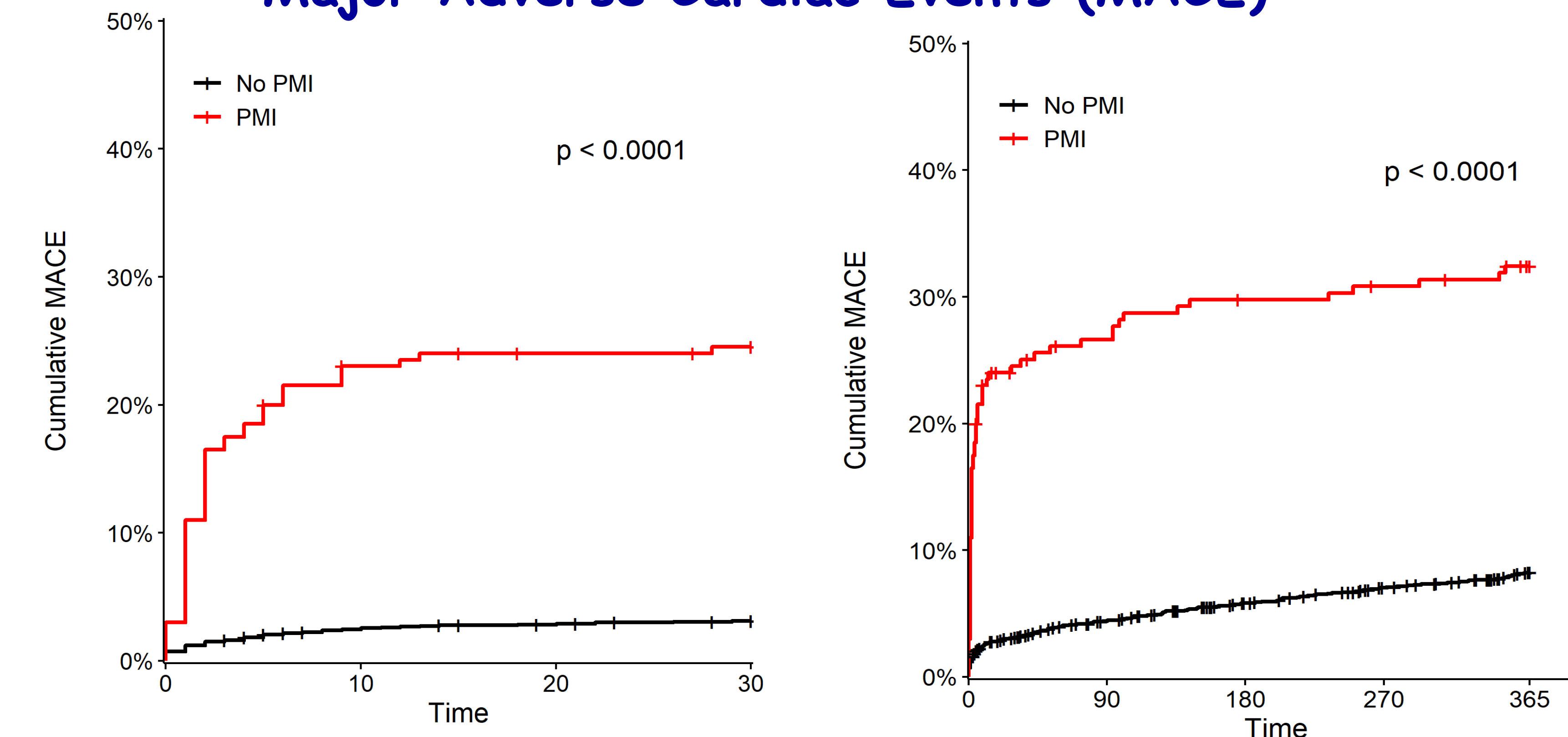
Mortality



Results

PMI Incidence = 9% [95% CI 8-10%]

Major Adverse Cardiac Events (MACE)



MACE	30 days		1 year	
	aHR (95%CI)	P	aHR (95%CI)	P
PMI	5.7 (3.7-8.6)	< 0.001	3.1 (2.3-4.3)	< 0.001
Age	1.0 (0.98-1.0)	0.721	1.03 (1.0-1.1)	0.001
RCRI ≥ 2	2.3 (1.5-3.7)	<0.001	2.7 (2.0-3.8)	<0.001
Sepsis	3.7 (2.0-6.9)	<0.001	4.8 (2.8-8.4)	<0.001
Pneumonia	3.4 (1.7-6.6)	0.001	2.7 (1.5-5.0)	0.001
Stroke	4.3 (1.8-10.4)	0.001	5.3 (2.4-11.8)	<0.001
Urg/emerg Surgery	1.4 (0.9-2.2)	0.122	1.6 (1.2-2.2)	0.002
Mortality				
PMI	3.6 (1.8-7.0)	< 0.001	1.9 (1.3-2.7)	0.001
Age	1.0 (0.98-1.1)	0.258	1.1 (1.0-1.1)	<0.001
RCRI ≥ 2	4.4 (1.8-10.6)	0.001	3.2 (2.2-4.5)	<0.001
Sepsis	16.9 (8.0-35.7)	<0.001	10.4 (6.2-17.5)	<0.001
Pneumonia	0.8 (0.2-3.4)	0.758	1.2 (0.6-2.6)	0.576
Stroke	1.0 (0.2-4.4)	0.976	1.6 (0.6-4.2)	0.383
Urg/emerg Surgery	2.3 (1.2-4.3)	0.015	1.7 (1.2-2.3)	0.002

Conclusions

- PMI is frequent and associated with high rates of MACE and mortality in short- and long-term follow-up after non-cardiac surgery, regardless of the high-sensitivity troponin assay used for diagnosis.