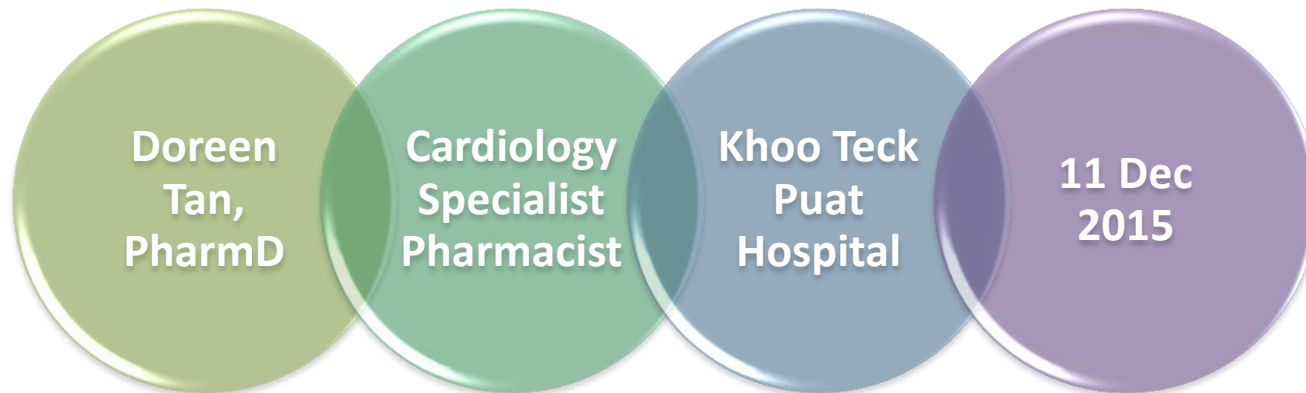


MegaDAPT

Single Center Registry Study
(Singapore)



Background

P2Y12i usage pattern

- Ticagrelor by protocol for STEMI (Jan 2013)
- Prasugrel fallen in favour because of limitations
- Clopidogrel most commonly used

Asians as subgroups in published studies vs Asian PKPD studies

- No difference in Asians?
- More bleeds in Asians?

Prohibitive costs:

- Ticagrelor 27x more expensive, not subsidised
- Switched to Clopidogrel at 3m or 6m

Study Design: Retrospective, Cohort Study

Inclusion criteria

- All PCI patients with visits in 1 Aug 2013 – 31 Dec 2014 (17 mths)
- On Dual Antiplatelets

Exclusion criteria

- Non-cardiac PCI
- Missing data
- Duplicate visits
- Lost to follow-up
- Aspirin allergy

Outcomes

MACE and
bleeding

Index admission, followed
over 6 months

- Any visit to A&E, hospitalisation and/or procedures to manage bleeding

Endpoint Adjudication

Major Adverse Cardiovascular Endpoint

- Cutlip criteria (Circulation. 2007; 115:2344-2351)
 - Repeat revascularisation (TVR, TLR, ISR)
 - Stent Thrombosis
 - Myocardial Infarction
 - Death

Adjudication

2 Cardiologists + 1 Gastroenterologist

Bleeding

- BARC criteria
 - 1: Not actionable
 - 2: Clinically overt signs of bleeding
 - 3: Bleeding +
 - 3a: Transfusion + Hb drop 3-5 g/dL
 - 3b: Hb drop \geq bleed +5g/dL, require sx intervention, vasopressors
 - 3c: ICH, Intraocular bleeding affecting vision
 - 4: CABG-related bleeding
 - 5: Fatal bleeding
 - 5a: Probable
 - 5b: Definite

Recruitment statistics

**Cath Lab
patients**

(Aug 2013-Dec 2014)

After exclusion

N = 1013

Clopidogrel

N = 624

(61.6%)

Ticagrelor

N = 368

(36.3%)

Prasugrel

N = 21

(2.1%)

Baseline Demographics

Characteristics	Overall n=1013	Clopidogrel n= 624	Ticagrelor n= 368	Prasugrel n= 21	p-value
Gender					
Male	838 (82.7)	498 (79.8)	324 (88.0)	16 (76.2)	0.003
Female	175 (17.3)	126 (20.2)	44 (12.0)	5 (23.8)	
Age					
Age (years), Mean (SD)	56.7 (±10.4)	57.2 (±10.8)	56.0 (±9.7)	56.1 (±9.0)	0.626
Age <60 Years Old	651 (64.3)	387 (62.0)	249 (67.7)	15 (71.4)	0.158
Age ≥60 Years Old	362 (35.7)	237 (38.0)	119 (32.3)	6 (28.6)	
Age <75 Years Old	952 (94.0)	578 (92.6)	353 (95.9)	21(100)	0.055
Age ≥75 Years Old	61 (6.0)	46 (7.4)	15 (4.1)	0 (0.0)	
Weight (kg)					
≥60kg	787 (77.7)	484 (77.6)	286 (77.7)	17 (81.0)	0.583
<60kg	176 (17.4)	114 (18.3)	59 (16.0)	3 (14.3)	
Data Missing	50 (4.9)	26 (4.2)	23 (6.3)	1 (4.8)	
Ethnicity					
Chinese	500 (49.4)	302 (48.4)	188 (51.5)	10 (47.6)	0.786
If Malay	240 (23.7)	153 (24.5)	81 (22.0)	6 (28.6)	
If Indians	203 (20.0)	122 (19.6)	78 (21.2)	3 (14.3)	
If Eurasians and Others	70 (6.9)	47 (7.5)	21 (5.7)	2 (9.5)	

Baseline Demographics (2)

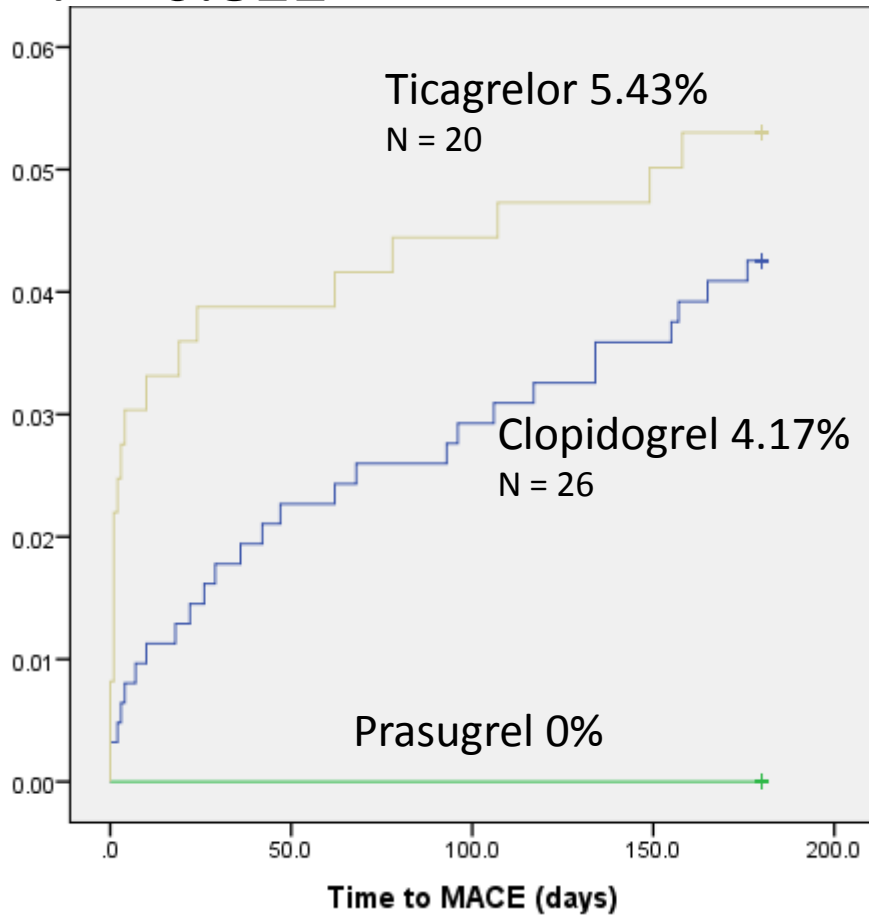
Characteristics	Overall n=1013	Clopidogrel n= 624	Ticagrelor n= 368	Prasugrel n= 21	p-value
Comorbidities					
Hypertension	570 (56.3)	375 (60.1)	180 (48.9)	15 (71.4)	0.001
Hyperlipidaemia	619 (61.1)	415 (66.5)	188 (51.1)	16 (76.2)	<0.001
Type 2 Diabetes Mellitus	399 (39.4)	274 (43.9)	110 (29.9)	15 (71.4)	<0.001
Stroke/TIA	48 (4.7)	34 (5.4)	13 (3.5)	1 (4.8)	0.390
Chronic Kidney Disease	53 (5.2)	45 (7.2)	6 (1.6)	2 (9.5)	<0.001
Cancer	12 (1.2)	9 (1.4)	3 (0.8)	0 (0.0)	0.596
History of Bleeding	40 (3.9)	27 (4.3)	12 (3.3)	1 (0.1)	0.694
Platelet Count					
Normal	982 (96.9)	598 (95.8)	363 (98.6)	21 (100)	0.033
Abnormal	31 (3.1)	26 (4.2)	5 (1.4)	0 (0.0)	
Smoking Status					
Non-Smokers	500 (49.4)	322 (51.6)	165 (44.8)	13 (61.9)	0.011
Current Smokers	436 (43.0)	247 (39.6)	183 (49.7)	6 (28.6)	
Missing Data	77 (7.6)	55 (8.8)	20 (5.4)	2 (9.5)	

Baseline Demographics (3)

Characteristics	Overall n=1013	Clopidogrel n= 624	Ticagrelor n= 368	Prasugrel n= 21	p-value
Ejection Fraction					
>40%	711 (70.2)	447 (71.6)	247 (67.1)	17 (81.0)	0.086
≤40%	226 (22.3)	126 (20.2)	98 (26.6)	2 (9.5)	
Data Missing	76 (7.5)	51 (8.2)	23 (6.3)	2 (9.5)	
Staged PCI					
No	981 (96.8)	596 (95.5)	366 (99.5)	19 (90.5)	0.001
Yes	32 (3.2)	28 (24.5)	2 (0.5)	2 (9.5)	
ACS : PCI Indications					
Unstable Angina	91 (9.0)	76 (12.2)	13 (3.5)	2 (9.5)	<0.001
STEMI	434 (42.8)	134 (21.5)	297 (80.7)	3 (14.3)	
NSTEMI	309 (30.5)	267 (42.8)	34 (9.2)	8 (38.1)	
Evolved MI	17 (1.7)	13 (2.1)	3 (0.8)	1 (4.8)	
Others	162 (16.0)	134 (21.5)	21 (5.7)	7 (33.3)	
No. of Stents					
0 (Ref)	59 (5.8)	46 (7.4)	12 (3.3)	1 (4.8)	0.157
1	682 (67.3)	422 (67.6)	249 (67.7)	11 (52.4)	
2	220 (21.7)	127 (20.4)	85 (23.1)	8 (38.1)	
3	45 (4.4)	25 (4.0)	19 (5.2)	1 (4.8)	
4	7 (0.7)	4 (0.6)	3 (0.8)	0 (0.0)	
Type of Stents					
Bare Metal Stents	407 (40.2)	231 (37.0)	168 (45.7)	8 (38.1)	0.075
Drug Eluting Stents	501 (49.5)	320 (51.3)	171 (46.5)	10 (47.6)	
Both	31 (3.1)	17 (2.7)	12 (3.3)	2 (9.5)	
POBA and DEB	60 (5.9)	47 (7.5)	12 (3.3)	1 (4.8)	
Bioabsorbable	8 (0.8)	6 (1.0)	2 (0.5)	0 (0.0)	
Bioactive	6 (0.6)	3 (0.5)	3 (0.8)	0 (0.0)	

MACE outcome

P = 0.822



Characteristics	Overall n=1013	Clopidogrel n= 624	Ticagrelor n= 368	Prasugrel n= 21
No MACE	967 (95.5)	598 (95.8)	349 (94.8)	21 (100)
Type 1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Type 2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
ISR	9 (0.9)	8 (1.3)	1 (0.3)	0 (0.0)
Acute IST	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Subacute IST	1 (0.1)	1 (0.2)	0 (0.0)	0 (0.0)
Late IST	1 (0.1)	0 (0.0)	1 (0.3)	0 (0.0)
Very Late IST	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Myocardial Infarction	6 (0.6)	5 (0.8)	1 (0.3)	0 (0.0)
Cardiac Vascular Death	21 (2.1)	8 (1.3)	13 (3.5)	0 (0.0)
Non CV	8 (0.8)	4 (0.6)	4 (1.1)	0 (0.0)
Total	46	26	20	0

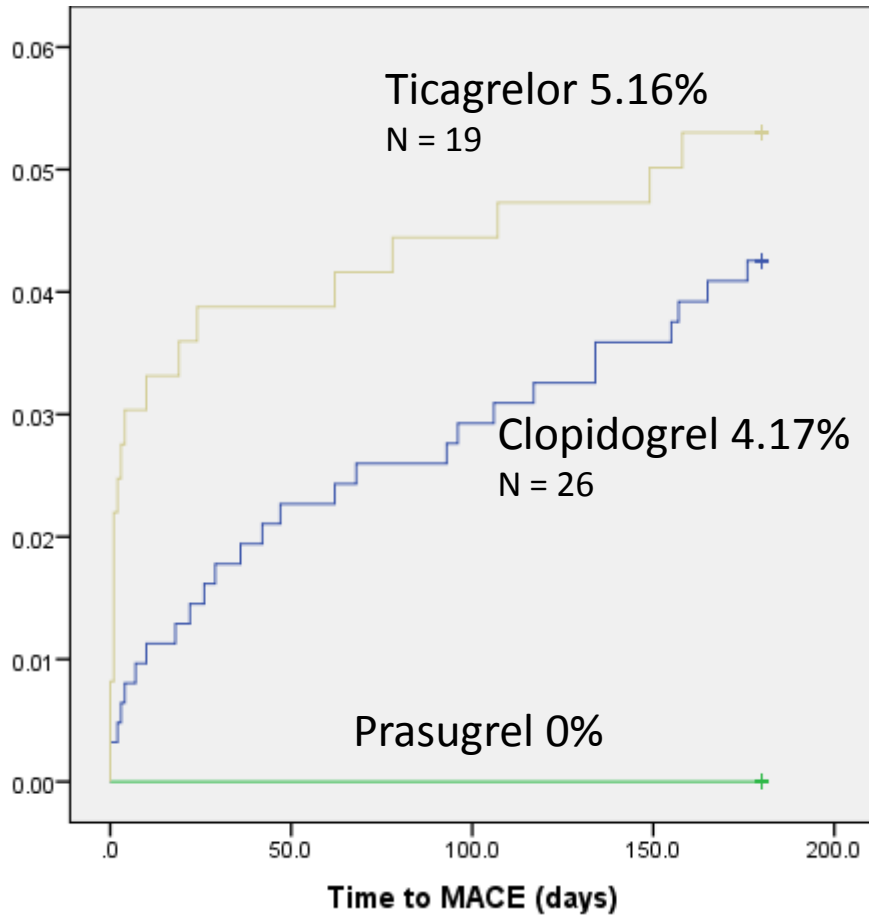
MACE Multivariate Analysis

Factor	OR	CI	Sig
Age	1.04	1.005-1.081	0.025
Hyperlipidaemia	0.44	0.210-0.902	0.025
Type 2 Diabetes Mellitus	2.22	1.071-4.599	0.032
Use of H2 blockers (compared with none)	0.268	0.117-0.615	0.002
Use of PPIs (compared with none)	0.311	0.111-0.870	0.026
EF < 40%	4.493	2.113-9.551	< 0.0001
At least 1 DES used	0.501	0.253-0.992	0.047

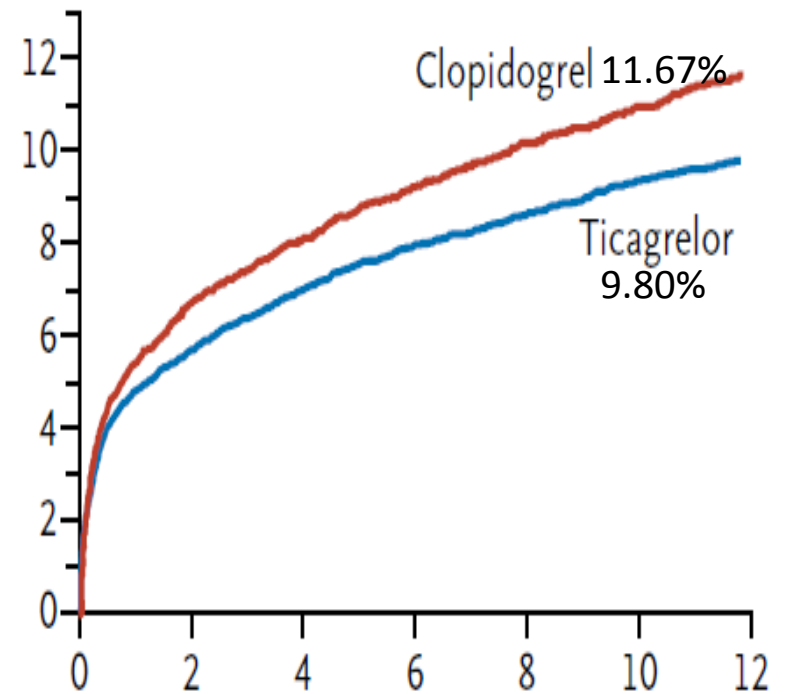
Controlled for gender, smoking, hypertension, CKD, number of stents, ethnicity, and P2Y12i choice

MACE outcome

MegaDAPT

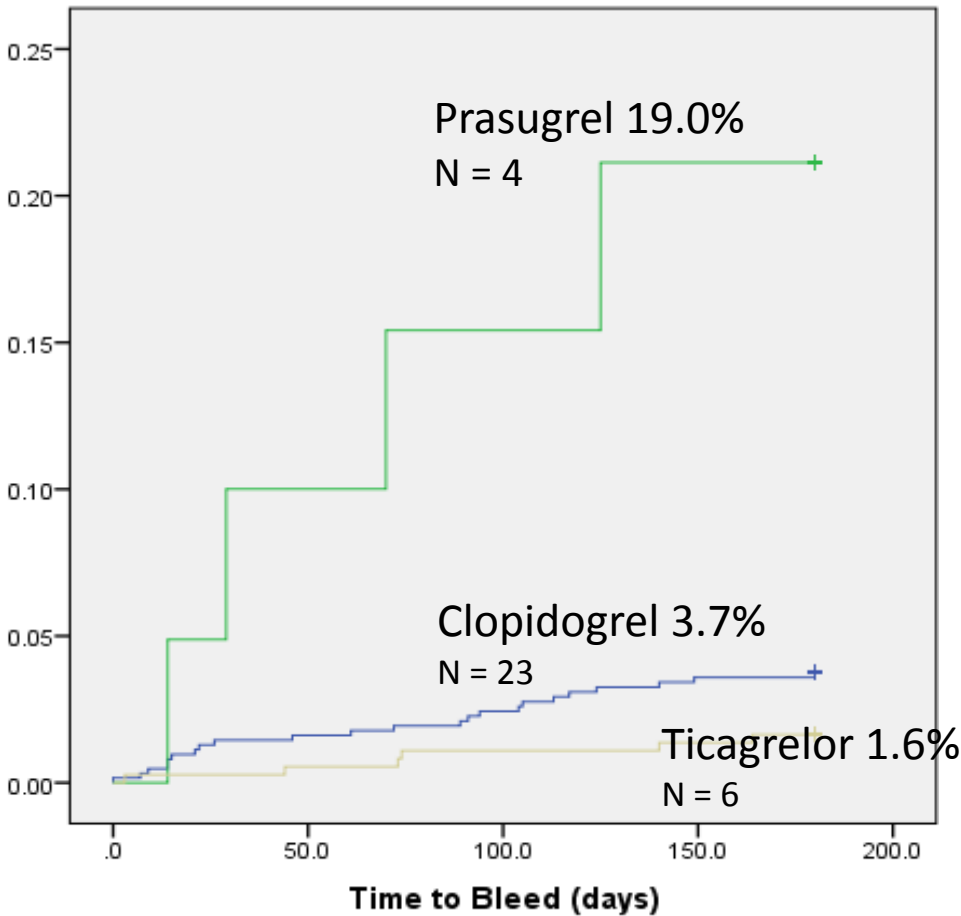


PLATO



Bleed Outcome

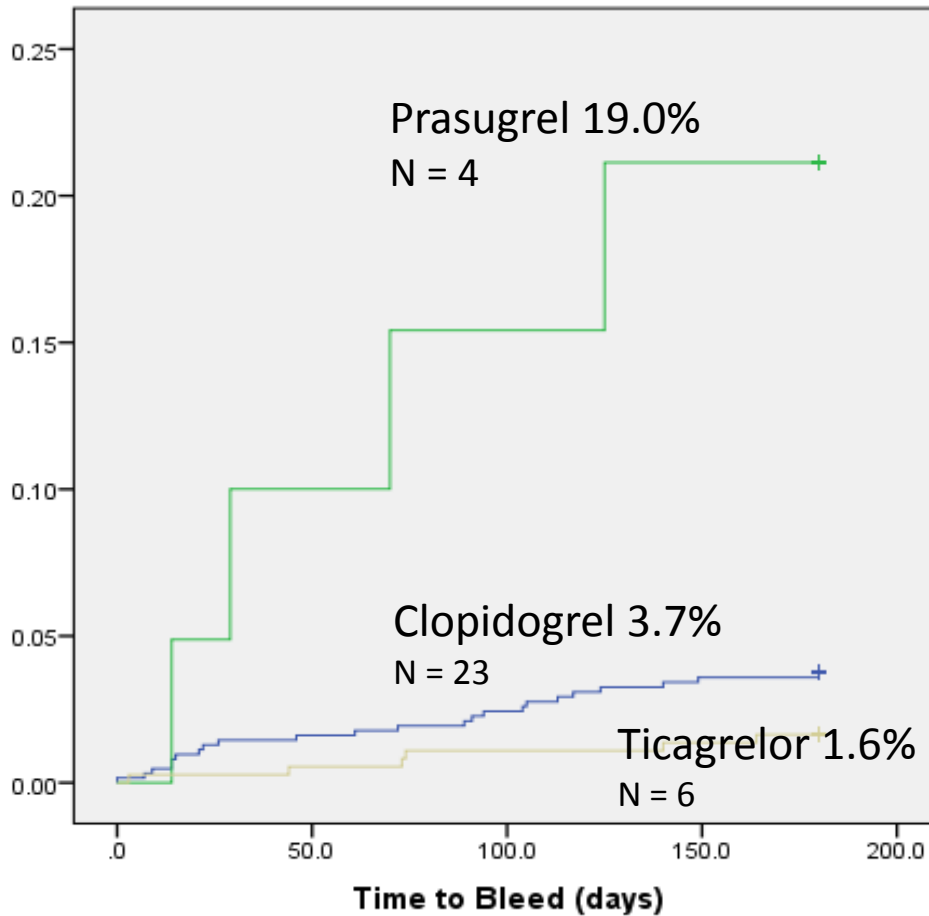
- $P < 0.001$



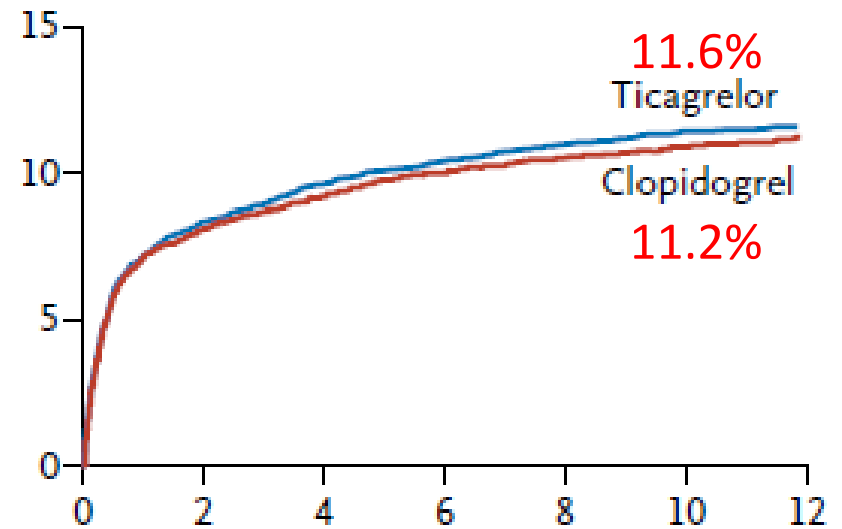
Characteristics	Overall n=1013	Clopidogrel n= 624	Ticagrelor n= 368	Prasugrel n= 21
No Bleeds	980 (96.7)	601 (96.3)	362 (98.4)	17 (81.0)
Type 1	4 (0.4)	3 (0.5)	1 (0.3)	0 (0.0)
Type 2	11 (1.1)	9 (1.4)	1 (0.3)	1 (4.8)
Type 3a	5 (0.5)	5 (0.8)	0 (0.0)	0 (0.0)
Type 3b	10 (1.0)	4 (0.6)	3 (0.8)	3 (14.3)
Type 3c	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Type 4: CABG	1 (0.1)	0 (0.0)	1 (0.3)	0 (0.0)
Type 5a	1 (0.1)	1 (0.2)	0 (0.0)	0 (0.0)
Type 5b	1 (0.1)	1 (0.2)	0 (0.0)	0 (0.0)
Total Bleeding	33 (3.3)	23 (3.7)	6 (1.6)	4 (19.0)

Bleeding Outcome

MegaDAPT



PLATO



Conclusion

Commendable outcomes

Unexpected effects on MACE & Bleeding

- Appropriate choice of P2Y12i: Clopidogrel may be used for NSTEMI, save costs
- Ticagrelor associated with less bleeding than Clopidogrel

Type 2 Diabetes Mellitus and HFrEF (EF < 40%) patients

- May modify choice of P2Y12i
- TRITON TIMI 38: Subgroup of Prasugrel patients (DM)

THANK YOU