DAPT Therapy in Asians:
What May Be Different Between Asian and Caucasian?

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COI

- I, Jeehoon Kang, have no financial conflicts of interest to disclose concerning the presentation

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1. **Ischemic / Bleeding risk in *East Asians***

2. **New generation P2Y12 inhibitors in East Asians**

3. **Proposal of a new Asian score for Ischemia/Bleeding score**

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2. New generation P2Y12 inhibitors in East Asians

3. Proposal of a new Asian score for Ischemia/Bleeding score
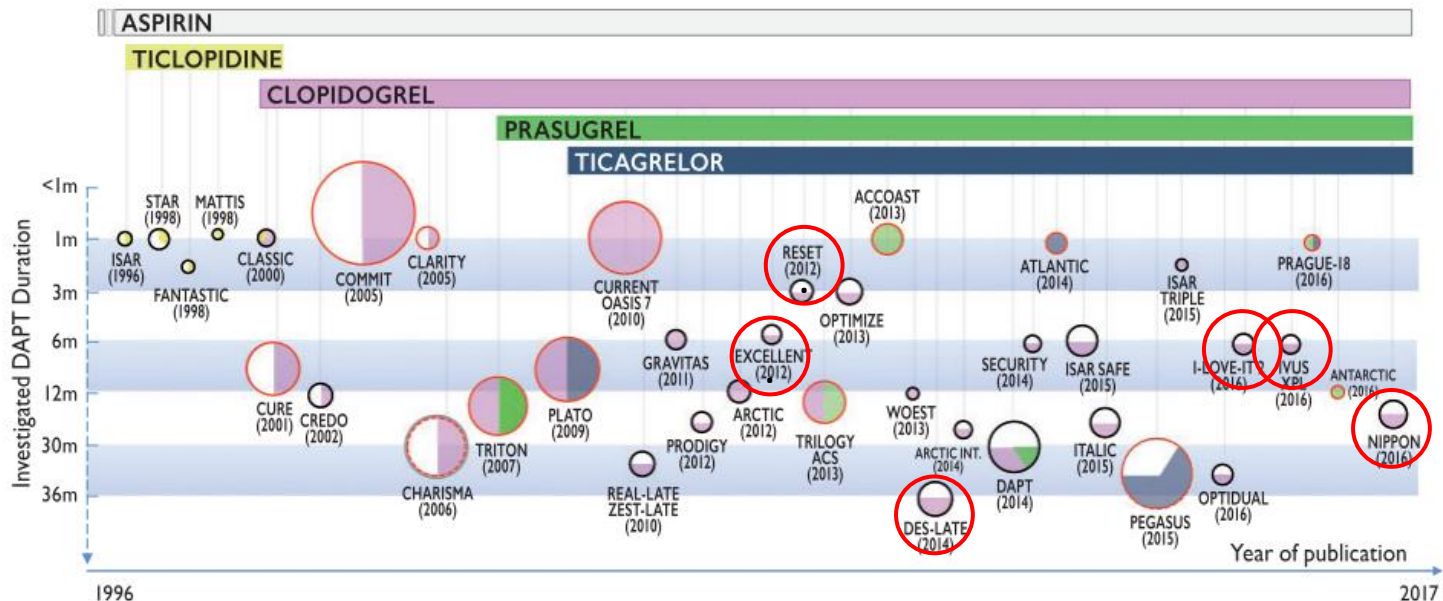
Current Guidelines for Antiplatelet therapy
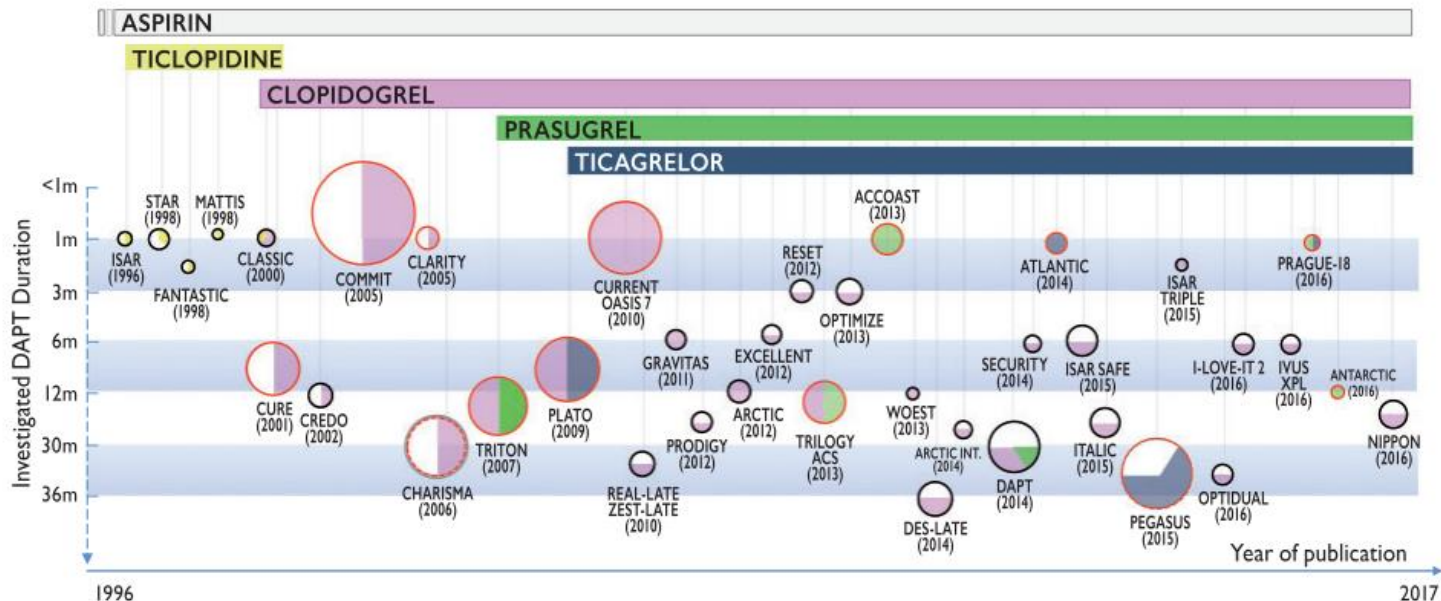
Size of the circles denotes sample size. Perimeter of the circles denotes type of investigated population.

LEGEND: 2K pts, 5K pts, 10K pts, 20K pts
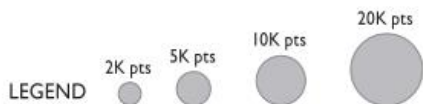
— Mixed clinical presentation at the time of stent implantation
— Acute coronary syndrome at presentation
-- DAPT initiated in patients with prior myocardial infarction
— DAPT for primary prevention

Current Guidelines for Antiplatelet therapy

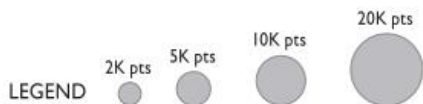Size of the circles denotes sample size Perimeter of the circles denotes type of investigated population

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Ischemic / Bleeding risk in *East Asians*

- ✓ East Asians have a different Ischemic/Bleeding threshold, compared to Westerns

- ✓ East Asian paradox

  - ✓ **Higher** clopidogrel resistance, BUT with **Lower** ischemic events.

- ✓ East Asians are more prone to Bleeding events
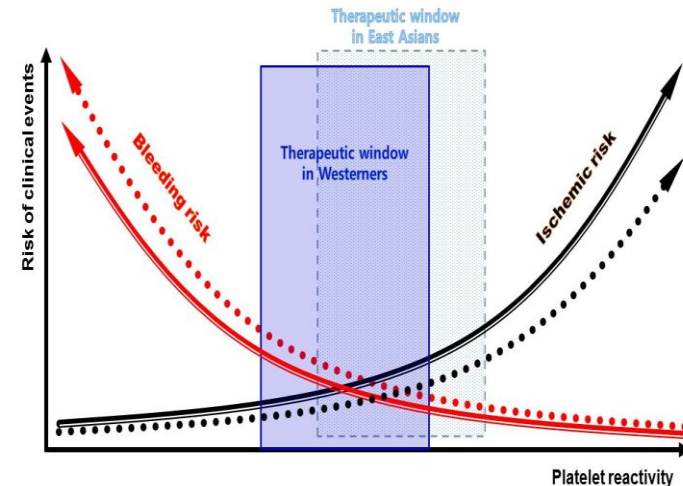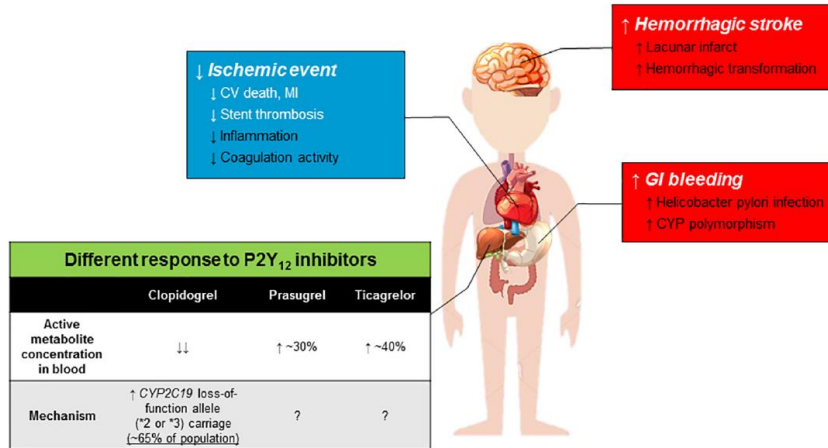
J Kang, HS Kim. Kor Circ J 2018, Levine GL et al. Nature Rev Cardiol 2014., Jeong YH, et al. Science Bulletin 2019.

Racial difference in the ischemic/bleeding threshold

Individual patient level, landmark meta-analysis of 7 RCTs

7 Randomized Clinical Trials

DES LATE	EXCELLENT	ITALIC	OPTIMIZE	PRODIGY	RESET	SECURITY
12m (n=2514) vs. 24m (n=2531)	6 m (n=722) vs. 12 m (n=721)	6m (n=953) vs. 24m (n=941)	3m (n=1563) vs. 12m (n=1556)	6m (n=751) vs. 24m (n=750)	3m (n=1059) vs. 12m (n=1058)	6m (n=682) vs. 12m (n=717)

Asian (n=8605)

Non-Asian (n=7913)

Long duration DAPT n=4310

Short duration DAPT n=4295

Long duration DAPT n=3964

Short duration DAPT n=3949

Racial difference in the ischemic/bleeding threshold

Individual patient level, landmark meta-analysis of 7 RCTs
- Ischemic outcomes and Bleeding outcomes from time of randomization
- Analysis by Race

Asian
Non-Asians

A. Ischemic outcomes

(%)

HR 0.480, 95% CI 0.343-0.672, p<0.001
Log rank p<0.001

1.8%

0.8%

No at risk					
Asian	8504	8453	8400	6615	6090
Non-Asian	7564	7344	5369	4671	4510

B. Bleeding outcomes

(%)

HR 2.077, 95% CI 1.183-3.646, p=0.011
Log rank p=0.009

0.6%

0.3%

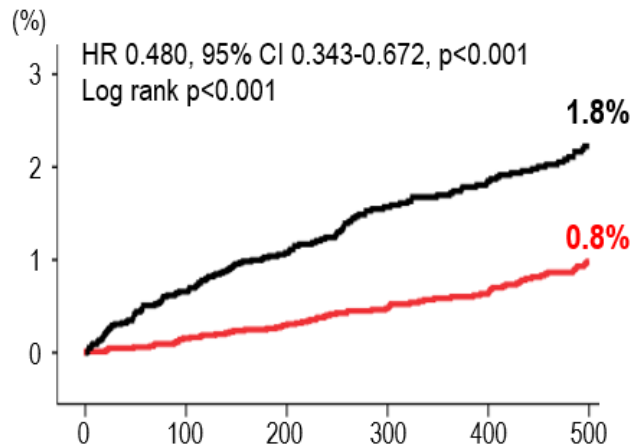| No at risk					
Asian	8530	8468	8410	6618	6098
Non-Asian	7676	7439	5437	4727	4570

Racial difference in the ischemic/bleeding threshold

Individual patient level, landmark meta-analysis of 7 RCTs
- Ischemic outcomes and Bleeding outcomes from time of randomization
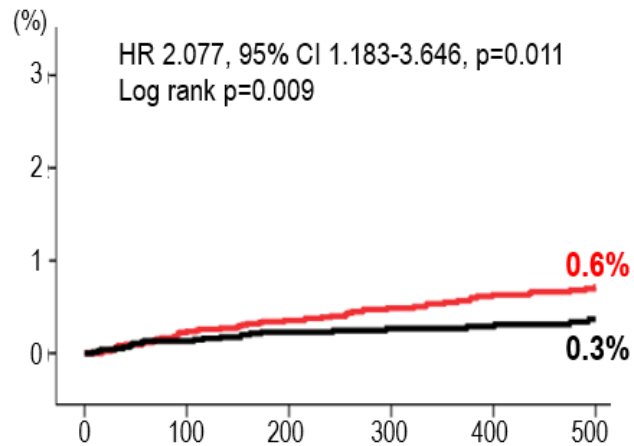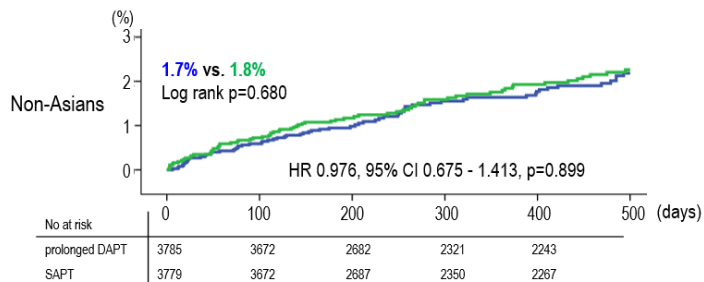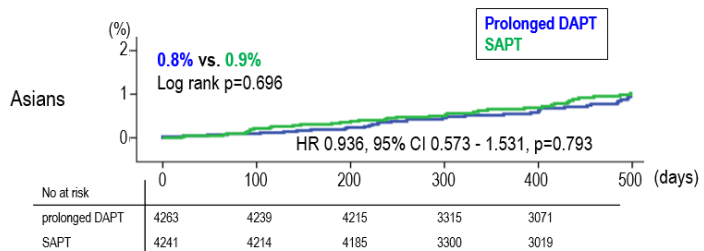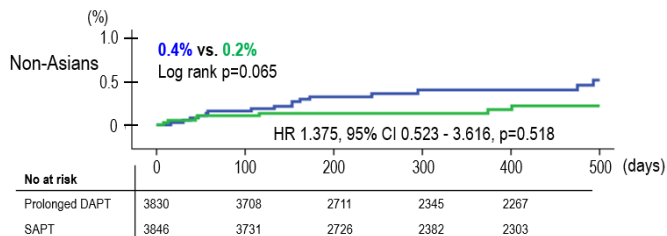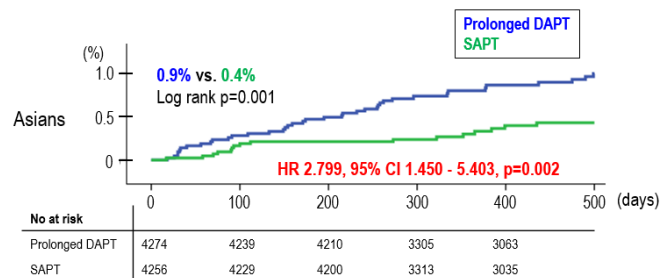- Analysis by DAPT duration and Race
- *Bleeding events significantly increased by prolonged DAPT, only in Asians!*

< Ischemic outcomes >

Asians: 0.8% vs. 0.9%, Log rank p=0.696, HR 0.936, 95% CI 0.573 - 1.531, p=0.793

No at risk
	0	100	200	300	400	500 (days)
prolonged DAPT	4263	4239	4215	3315	3071	
SAPT	4241	4214	4185	3300	3019	

Non-Asians: 1.7% vs. 1.8%, Log rank p=0.680, HR 0.976, 95% CI 0.675 - 1.413, p=0.899

No at risk
	0	100	200	300	400	500 (days)
prolonged DAPT	3785	3672	2682	2321	2243	
SAPT	3779	3672	2687	2350	2267	

< Bleeding outcomes >

Asians: 0.9% vs. 0.4%, Log rank p=0.001, HR 2.799, 95% CI 1.450 - 5.403, p=0.002

No at risk
	0	100	200	300	400	500 (days)
Prolonged DAPT	4274	4239	4210	3305	3063	
SAPT	4256	4229	4200	3313	3035	

Non-Asians: 0.4% vs. 0.2%, Log rank p=0.065, HR 1.375, 95% CI 0.523 - 3.616, p=0.518

No at risk
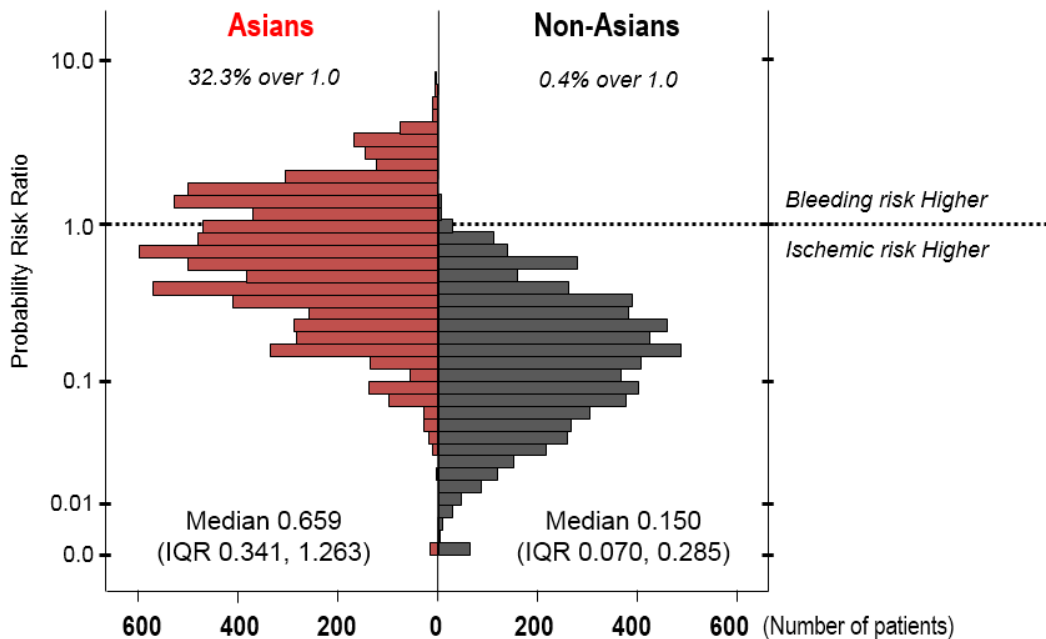|	0	100	200	300	400	500 (days)
Prolonged DAPT	3830	3708	2711	2345	2267	
SAPT	3846	3731	2726	2382	2303	

Prolonged DAPT / SAPT

Racial difference in the ischemic/bleeding threshold

Individual patient level, landmark meta-analysis of 7 RCTs
- Probability Risk Ratio of Bleeding to Ischemia
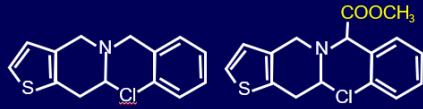- *Calculated as " Bleeding risk / Ischemic risk "*

"Asians have a higher 'probability risk ratio' compared to Non-Asians."
(Asians are more prone to bleeding events)

Contents
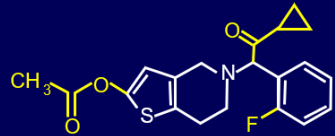
New generation P2Y12 inhibitors in East Asians
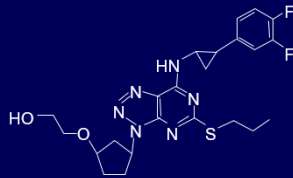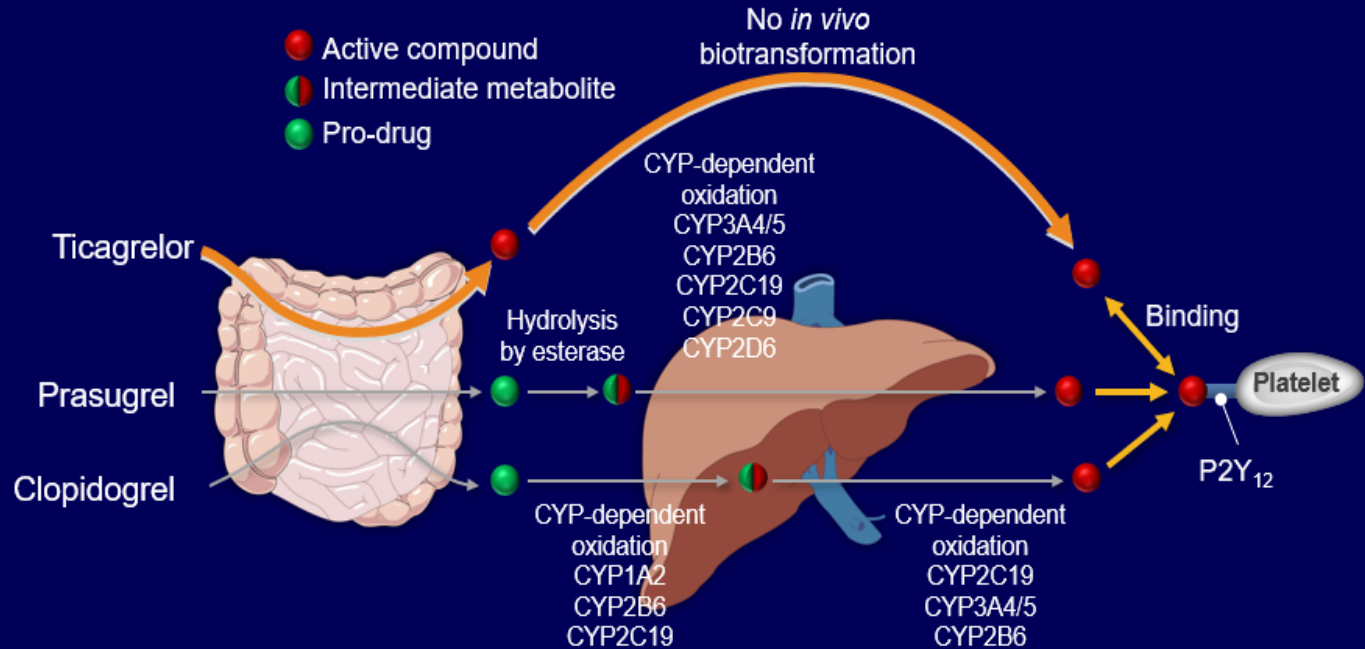
New generation P2Y12 inhibitors in East Asians

Results from the TRITON TIMI 38 / PLATO trials
- Primary endpoint : Cardiovascular Death, Myocardial Infarction, Stroke
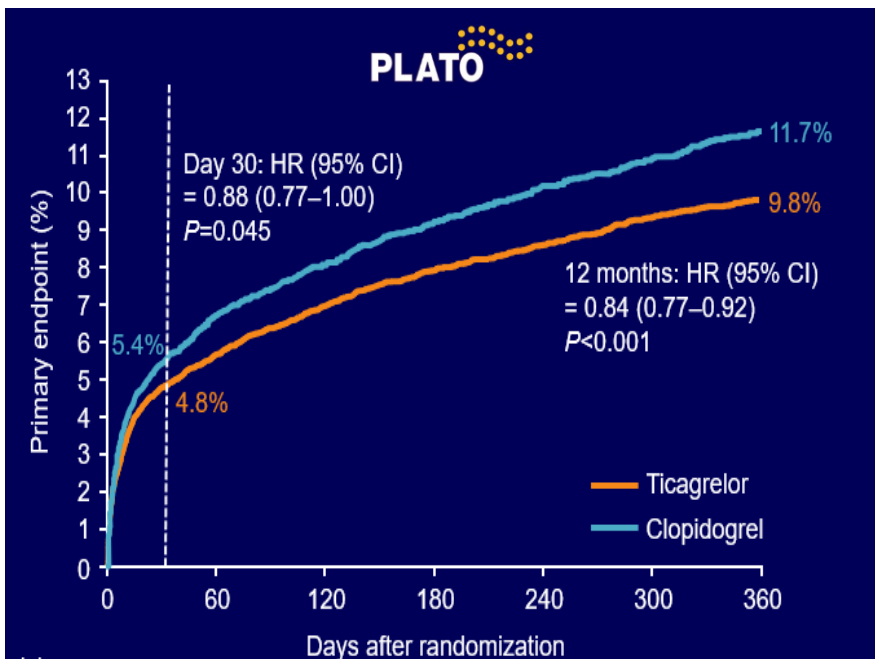
"Both agents proved efficacy and safety outcomes, mainly in the Western population"

New generation P2Y12 inhibitors in East Asians

Results from the PHILO RCT
- An Asian Mirror study of the PLATO trial
- Absence of the beneficial effect of Ticagrelor, rather a positive HR (*hazardous for Ticagrelor!*)

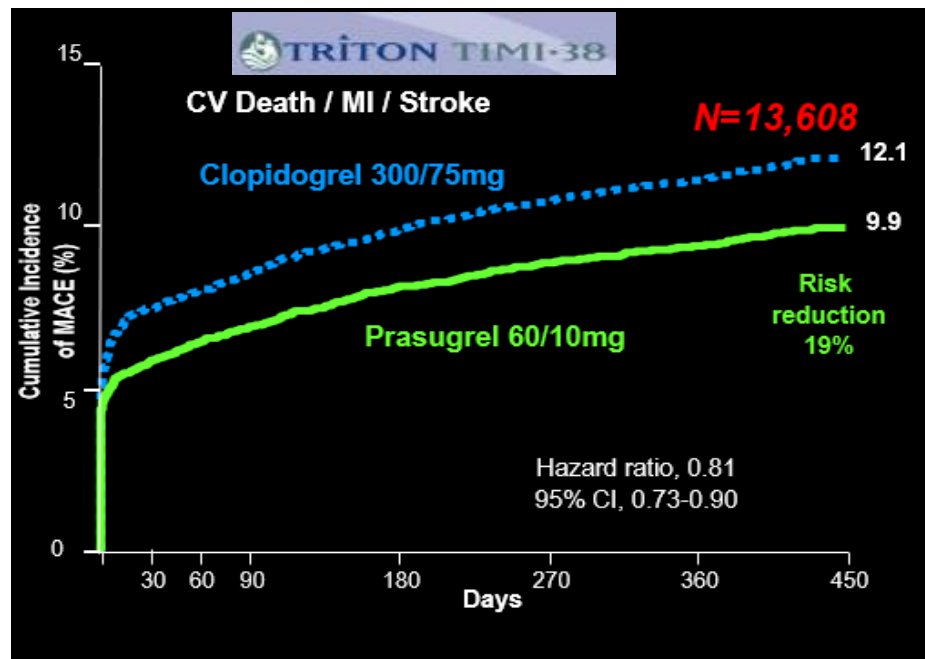|	Ticagrelor	Clopidogrel	HR (95% CI)
	90 mg b.i.d. (n=401)	75 mg o.d. (n=400)	
Primary			
Composite of CV death/MI (excluding silent MI)/stroke	36 (9.0)	25 (6.3)	1.47 (0.88–2.44)
Post-hoc			
Composite of CV death/spontaneous MI/stroke	18 (4.5)	13 (3.3)	1.39 (0.68–2.85)
Secondary			
Composite of all-cause mortality/MI (excluding silent MI)/stroke	37 (9.2)	25 (6.3)	1.51 (0.91–2.50)
Composite of CV death/total MI/stroke/RI (including SRI)/TIA/Other ATE	38 (9.5)	32 (8.0)	1.20 (0.75–1.93)
MI (excluding silent MI)	24 (6.0)	15 (3.8)	1.63 (0.85–3.11)
Peri-procedural MI	18	12	–
Spontaneous MI	6	3	–
CV death	9 (2.2)	7 (1.8)	1.28 (0.48–3.45)
Stroke	9 (2.2)	6 (1.5)	1.50 (0.54–4.23)
All-cause mortality	10 (2.5)	7 (1.8)	1.42 (0.54–3.74)

New generation P2Y12 inhibitors in East Asians

Analysis of the KAMIR-NIH

- 13,707 consecutive AMI patients, a Nationwide Prospective registry of AMI patients.

Nationwide Registry of Acute Myocardial Infarction Patients (KAMIR-NIH)
Nov. 2011 to Nov. 2015, N=13,707 patients

Coronary artery bypass surgery done (N=270)

Patients treated with percutaneous coronary intervention or medical treatment, N=13,437

Expired during admission (N=519)

Triple antiplatelet agent used (N=2,071)

Patients prescribed with dual antiplatelet agents at discharge, N=10,847

Incomplete follow-up (N=1,735)

Aspirin + Clopidogrel N=6,411

Aspirin + Prasugrel N=993

Aspirin + Ticagrelor N=1,708

New generation P2Y12 inhibitors in East Asians

Analysis of the KAMIR-NIH

- 13,707 consecutive AMI patients, a Nationwide Prospective registry of AMI patients.
- Highly distinct baseline characteristics between patients using clopidogrel, ticagrelor and prasugrel.

	AC (6,411)	AP (993)	AT (1,708)	p-value
Demographics				
Age (y)	64.7 ± 12.7	56.7 ± 10.0[a]	62.5 ± 12.1[b,c]	<0.001
Male	4,755 (72.1%)	911 (89.4%)[a]	1,350 (77.4%)[b,c]	<0.001
BMI (kg/m^2)	23.9 ± 3.5	25.1 ± 3.2[a]	24.2 ± 3.4[b,c]	<0.001
Hypertension	4,387 (72.4%)	570 (66.1%)[a]	1,126 (71.9%)[b]	0.001
Diabetes	2,145 (32.6%)	317 (31.2%)	499 (28.7%)[c]	0.006
Dyslipidemia	755 (15.3%)	118 (18.4%)	187 (15.9%)	0.138
Chronic renal failure	2,373 (37.1%)	120 (12.0%)[a]	453 (26.5%)[b,c]	<0.001
Previous MI	694 (10.6%)	99 (13.1%)	151 (11.6%)	0.079
FHx. of CAD	451 (7.1%)	78 (7.8%)	103 (6.1%)	0.216
Current smoking	2,489 (38.8%)	560 (55.3%)[a]	740 (42.9%)[b,c]	<0.001
Index presentation with STEMI	3,089 (47.0%)	604 (59.4%)[a]	939 (53.8%)[b,c]	<0.001
Laboratory findings				
LVEF (%)	51.8 ± 11.2	52.5 ± 10.3	52.8 ± 10.3[c]	0.001
• RWMI	1.42 ± 0.39	1.43 ± 0.36	1.41 ± 0.37	0.745
WBC (/µL)	10,410 ± 5,090	11,140 ± 4,090[a]	10,460 ± 1,980[b]	<0.001
Haemoglobin (g/dL)	13.7 ± 3.0	14.7 ± 4.6[a]	14.1 ± 2.0[b,c]	<0.001

	AC (6,411)	AP (993)	AT (1,708)	p-value
Angiographic findings				
Type B2/C of target vessel	4,901 (82.5%)	874 (89.8%)	1,514 (90.3%)	<0.001
Vessel disease				<0.001
• One-vessel disease	3,054 (48.5%)	578 (57.5%)[a]	841 (48.6%)[b]	<0.001
• Two-vessel disease	1,884 (29.9%)	267 (26.5%)	509 (29.4%)	0.096
• Three-vessel disease	1,106 (17.5%)	126 (12.5%)[a]	310 (17.9%)[b]	<0.001
• Left main disease	259 (4.1%)	35 (3.5%)	72 (4.2%)	0.621
Stent generation				
• BMS	266 (4.0%)	37 (3.6%)	66 (3.8%)	0.765
• First-generation DES	69 (1.3%)	10 (1.1%)	24 (1.6%)	0.577
• Second-generation DES	4,990 (94.9%)	856 (95.6%)	1,439 (95.6%)	0.413
Stent length	29.2 ± 14.1	28.6 ± 13.8	29.9 ± 13.8	0.056
Stent number	1.0 ± 0.6	1.1 ± 0.5[a]	1.1 ± 0.5[c]	<0.001

New generation P2Y12 inhibitors in East Asians

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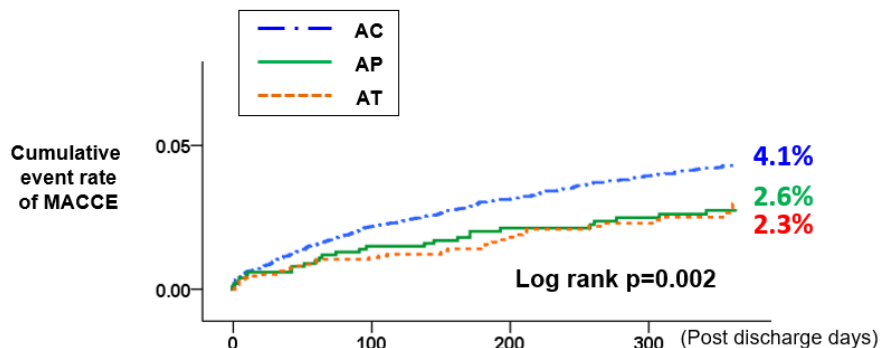J Kang, JK Han, HS Kim et al. Thromb Haemost. 2018;118(3):591

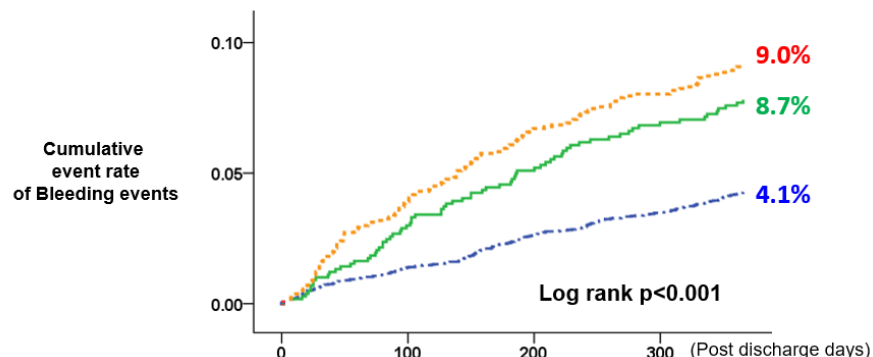# New generation P2Y12 inhibitors in East Asians

Results from the KAMIR-NIH

- 13,707 consecutive AMI patients, a Nationwide Prospective registry of AMI patients.
- Primary endpoint : MACCE (Cardiac death, MI, stent thrombosis, stroke), Major bleeding
- Crude outcome analysis

Can AP and AT decrease events compared to AC ? Which may neutralize the increased bleeding risk?

Cumulative event rate of MACCE

- - AC
- AP
- AT

4.1%
2.6%
2.3%

Log rank p=0.002

(Post discharge days)

No at risk

	0	100	200	300
AC	6411	6236	5352	4998
AP	993	978	837	796
AT	1708	1682	1103	916

Cumulative event rate of Bleeding events

9.0%
8.7%
4.1%

Log rank p<0.001

(Post discharge days)

No at risk

	0	100	200	300
AC	5302	5154	4841	4786
AP	938	904	854	838
AT	1493	1424	1312	1291

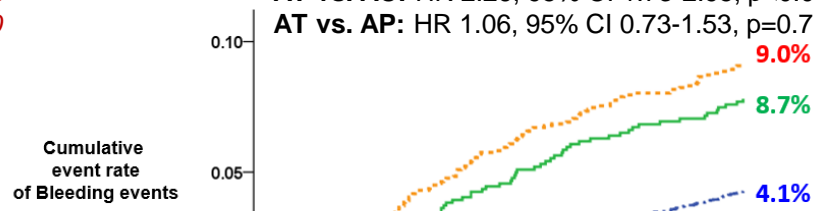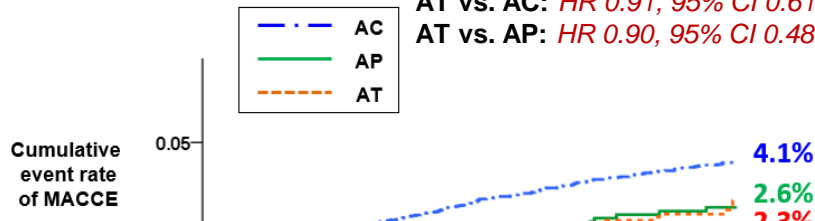# New generation P2Y12 inhibitors in East Asians

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- Primary endpoint : MACCE (Cardiac death, MI, stent thrombosis, stroke), Major bleeding
- Crude outcome

Can AP and AT decrease events compared to AC ? Which may neutralize the increased bleeding risk?

AP vs. AC: *HR 1.02, 95% CI 0.59-1.74, p=0.953*
AT vs. AC: *HR 0.91, 95% CI 0.61-1.36, p=0.655*
AT vs. AP: *HR 0.90, 95% CI 0.48-1.69, p=0.740*

AP vs. AC: HR 2.14, 95% CI 1.53-2.99 , p<0.001
AT vs. AC: HR 2.26, 95% CI 1.73-2.95, p<0.001
AT vs. AP: HR 1.06, 95% CI 0.73-1.53, p=0.767

Cumulative event rate of MACCE

— AC
— AP
---- AT

0.05

4.1%
2.6%
2.3%

Cumulative event rate of Bleeding events

0.10

0.05

9.0%
8.7%

4.1%

After multivariate analysis, the beneficial effect of new generation P2Y12 inhibitors *to decrease MACCE was neutralized*, while the *bleeding risk was still high*.

AT	1708	1682	1103	916

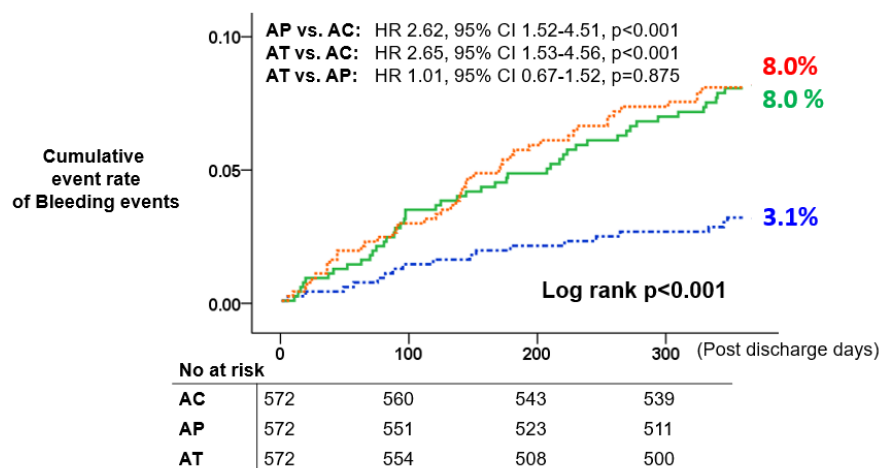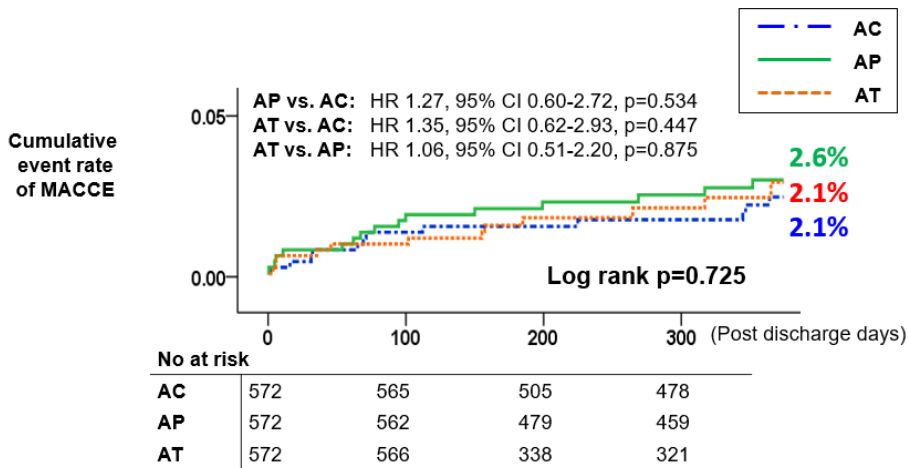|				
AP	938	904	854	838
AT	1493	1424	1312	1291

New generation P2Y12 inhibitors in East Asians

Results from the KAMIR-NIH

- 13,707 consecutive AMI patients, a Nationwide Prospective registry of AMI patients.
- Primary endpoint : MACCE (Cardiac death, MI, stent thrombosis, stroke), Major bleeding
- *PSM analysis*
  : showed *NO DECREASE* in ischemic events, with a *INCREASE* in bleeding events,
 by both ticagrelor and prasugrel.

Left panel (Cumulative event rate of MACCE):

AP vs. AC: HR 1.27, 95% CI 0.60-2.72, p=0.534
AT vs. AC: HR 1.35, 95% CI 0.62-2.93, p=0.447
AT vs. AP: HR 1.06, 95% CI 0.51-2.20, p=0.875

AC, AP, AT

2.6%
2.1%
2.1%

Log rank p=0.725

(Post discharge days)

No at risk				
AC	572	565	505	478
AP	572	562	479	459
AT	572	566	338	321

Right panel (Cumulative event rate of Bleeding events):

AP vs. AC: HR 2.62, 95% CI 1.52-4.51, p<0.001
AT vs. AC: HR 2.65, 95% CI 1.53-4.56, p<0.001
AT vs. AP: HR 1.01, 95% CI 0.67-1.52, p=0.875

8.0%
8.0 %
3.1%

Log rank p<0.001

(Post discharge days)

No at risk				
AC	572	560	543	539
AP	572	551	523	511
AT	572	554	508	500

New generation P2Y12 inhibitors in East Asians

Reduced dose of new generation P2Y12 inhibitors may be a breakthrough
Results from the PRASFIT-ACS trial
- Efficacy outcomes similar to the TRITON-TIMI38 trial despite *1/3 dose of prasugrel*
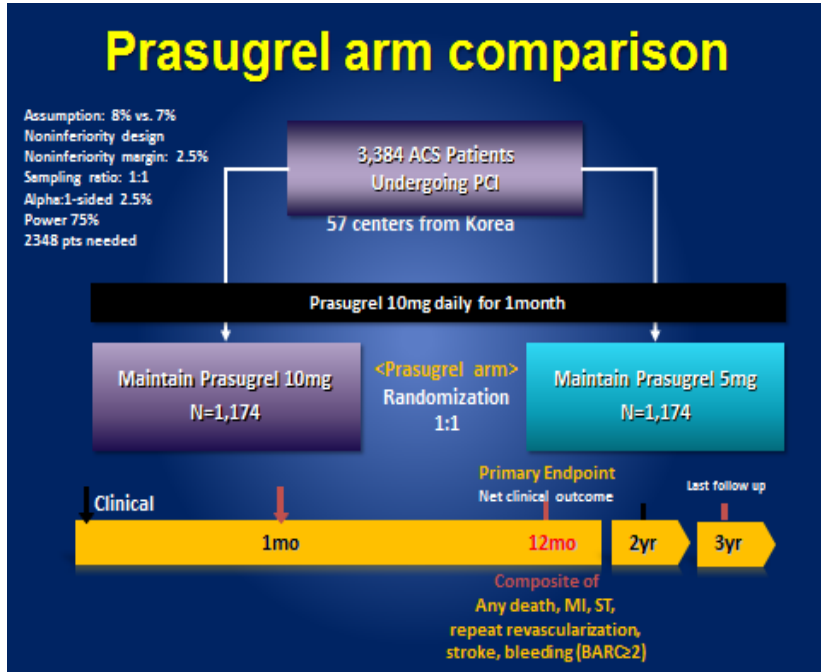
Wiviott S et al. NEJM 2007;357:2001-2015, Saito S et.al. Circ J. 2014;78(7):1684-92
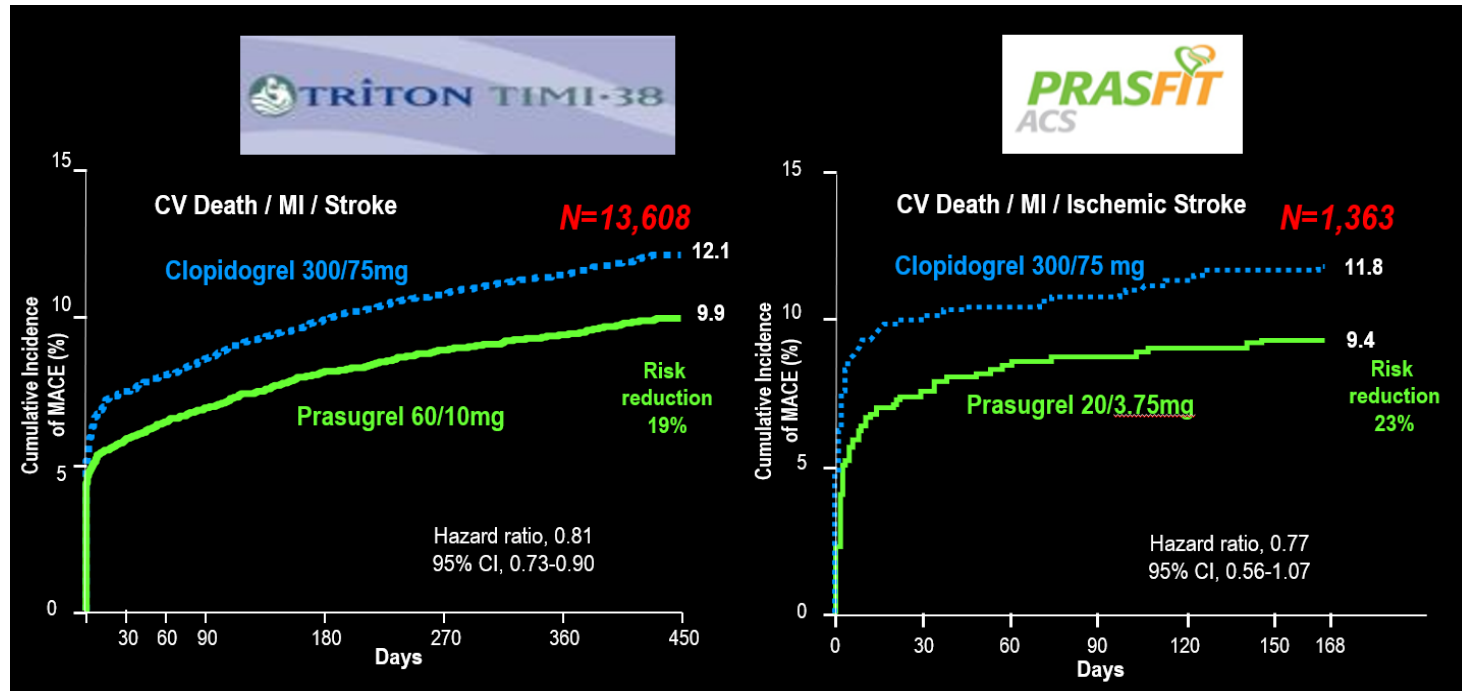
New generation P2Y12 inhibitors in East Asians

Great expectations of the results from the **HOST-RP-ACS trial**

- low dose prasugrel in Korean patients.
- RCT of ~3,400 ACS patients, enrolled finished, in clinical follow-up.
- First report expected in mid 2020
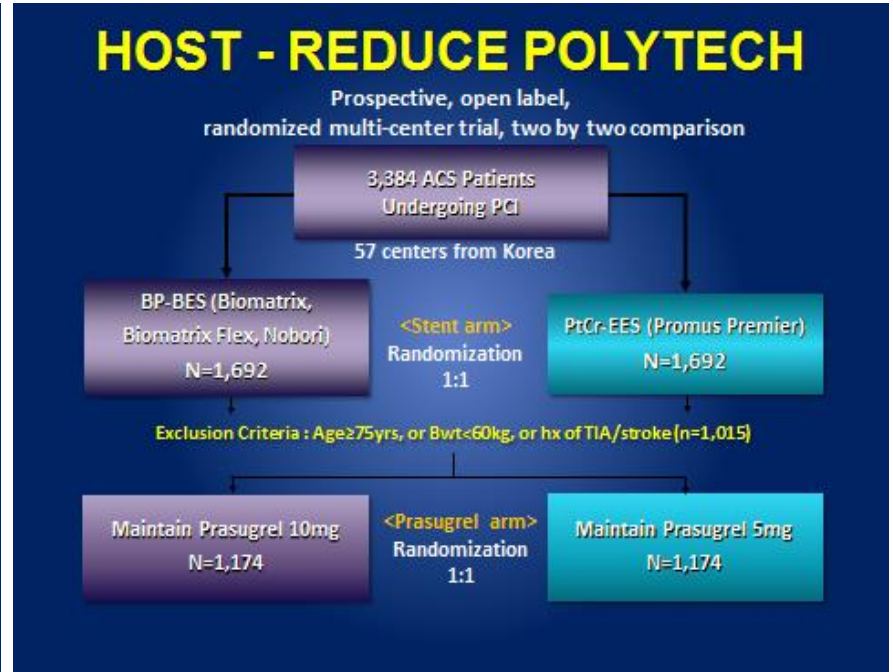
Contents

Ischemic and bleeding risk in East Asians

✓ How can we assess the ischemic and bleeding risk in East Asians?

✓ Previous scores include the **DAPT score, PRECISE-DAPT score, and the PARIS score**

✓ Are these scores applicable to East Asians?

	Setting	Predicted Outcome	Development cohort	Validation cohort	Number of variables
DAPT	PCI patients in DAPT event free for 12 mon	Ischemic/Bleeding endpoints between 12-30 months	DAPT RCT (11648 pts)	C Index: 0.64 for ischemic and bleeding	5 clinical 3 procedural
PARIS	PCI patients on DAPT	Ischemic/Bleeding endpoints at 24 months after PCI	4190 multicenter registry	0.65 for ischemia / 0.64 for bleeding	Thrombotic: 6 clinical Bleeding: 6 clinical
PRECISE-DAPT	PCI patients on DAPT	Bleeding events at 12 months after PCI	14963 patients of pooled RCTs	0.66	5 clinical

JAMA. 2016;315(16):1735-1749, Lancet. 2017;389(10073):1025-1034, JACC 2016;67(19):2224-2234

Grand-DES Registry
10 years of clinical excellence

Dedicated 3-year follow-up for contemporary DESs

Seoul National University Hospital &
other 55 centers across the country

Allocated stent(s)	Biomatrix/ Nobori/ Biomatrix Flex	Xience Prime	Xience V/ Promus	Resolute Integrity	Resolute
Enrollment	2010.4~2014.11.	2010.12~2012.8.	2008.4~2010.5.	2011.10~2014.7	2009.1~2010.6.
Patients	3007	2076	3078	3004	2007
Lesions	4070	2899	4176	4099	2801
Participating centers	24	26	29	22	25

13172 patients
18045 lesions

Biolimus-3000-Korea
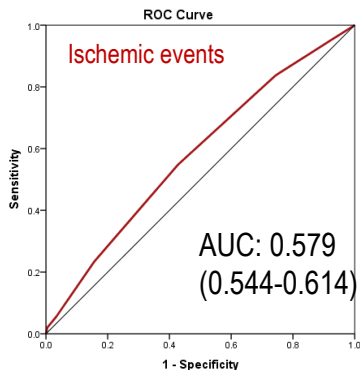
Excellent Prime

Excellent Prospective Cohort

Resolinte

Resolute Korea

Ischemic and bleeding risk in East Asians

Discriminative value of Previous scores: Based on the Grand-DES registry

DAPT score

Ischemic events
AUC: 0.579
(0.544-0.614)

Bleeding events
AUC: 0.496
(0.452-0.540)

PRECISE-DAPT score

Ischemic events
AUC: 0.609
(0.570-0.648)

Bleeding events
AUC: 0.619
(0.577-0.661)

PARIS score

Ischemic events
AUC: 0.587
(0.553-0.622)

Bleeding events
AUC: 0.617
(0.577-0.658)

Proposal of a new Asian score

- Uniquely for East-Asians

Proposal of a new Asian score for Ischemia/Bleeding score

- ✓ In *real world **East Asian patients*** receiving PCI with ***2nd generation DESs***,

- ✓ To assess ***both*** ischemic risk and bleeding risk

- ✓ To assess ***HBR*** patients

- ✓ To evaluate the ***optimal DAPT*** strategy for PCI patients *(escalation, de-escalation of DAPT strategy)*

- ✓ ***Better*** than current scoring systems

- ✓ With a ***clinically applicable*** scoring system.

The A-DAPT score
(Asian Dual Antiplatelet Therapy Score)

Proposal of a new Asian score for Ischemia/Bleeding score

✓ **_The ADAPT score_**

   ✓ Derived from the 'Grand DES registry'
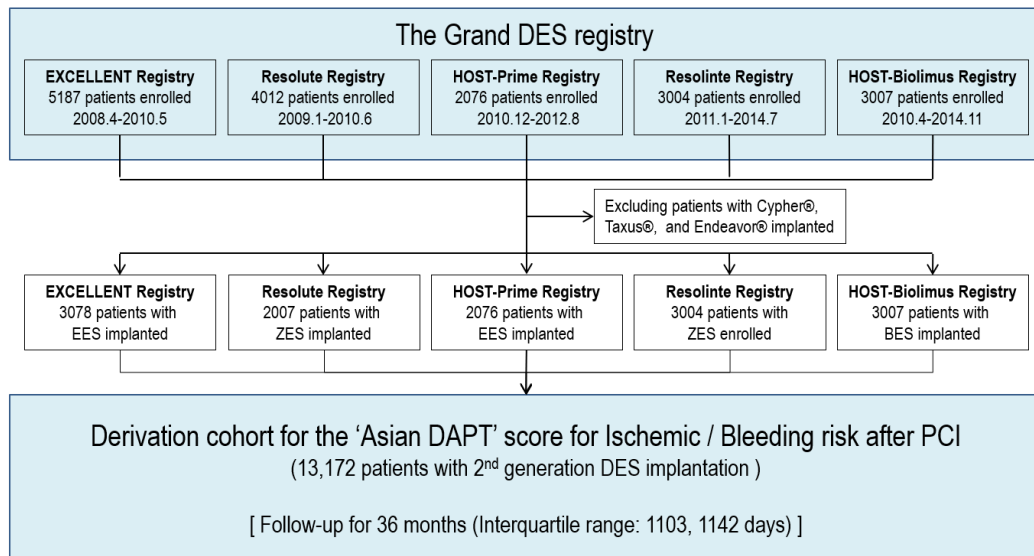
   ✓ Validated in the HOST-ASSURE, NIPPON RCT pooled cohort

The Grand DES registry

EXCELLENT Registry	Resolute Registry	HOST-Prime Registry	Resolinte Registry	HOST-Biolimus Registry
5187 patients enrolled 2008.4-2010.5	4012 patients enrolled 2009.1-2010.6	2076 patients enrolled 2010.12-2012.8	3004 patients enrolled 2011.1-2014.7	3007 patients enrolled 2010.4-2014.11

Excluding patients with Cypher®, Taxus®, and Endeavor® implanted

EXCELLENT Registry	Resolute Registry	HOST-Prime Registry	Resolinte Registry	HOST-Biolimus Registry
3078 patients with EES implanted	2007 patients with ZES implanted	2076 patients with EES implanted	3004 patients with ZES enrolled	3007 patients with BES implanted

Derivation cohort for the 'Asian DAPT' score for Ischemic / Bleeding risk after PCI
(13,172 patients with 2nd generation DES implantation)

[Follow-up for 36 months (Interquartile range: 1103, 1142 days)]

Validation

Adjunctive Cilostazol Versus Double-Dose Clopidogrel After Drug-Eluting Stent Implantation

The HOST-ASSURE Randomized Trial (Harmonizing Optimal Strategy for Treatment of Coronary Artery Stenosis–Safety & Effectiveness of Drug-Eluting Stents & Anti-platelet Regimen)

Kyung Woo Park, MD, PhD,[*] Si-Hyuck Kang, MD,[*] Jin Joo Park, MD,[*] Han-Mo Yang, MD, PhD,[*] Hyun-Jae Kang, MD, PhD,[*] Bon-Kwon Koo, MD, PhD,[*] Byoung-Eun Park, MD, PhD,[‡] Kwang Soo Cha, MD, PhD,[‡] Jay Young Rhew, MD, PhD,[§] Hui-Kyoung Jeon, MD, PhD,[||] Eun Seok Shin, MD, PhD,[¶] Ju Hyeon Oh, MD, PhD,[#] Myung-Ho Jeong, MD, PhD,[**] Sanghyun Kim, MD, PhD,[††] Kyung-Kuk Hwang, MD, PhD,[‡‡] Jung-Han Yoon, MD, PhD,[§§] Sung Yun Lee, MD, PhD,[||||] Tae-Ho Park, MD, PhD,[¶¶] Keon Woong Moon, MD, PhD,[##] Hyuck-Moon Kwon, MD, PhD,[***] In-Ho Chae, MD, PhD,[†††] Hyo-Soo Kim, MD, PhD[*]

Seoul, Cheonan, Busan, Jeonju, Uijeongbu, Ulsan, Changwon, Gwangju, Cheongju, Wonju, Goyang, Suwon, and Seongnam, Republic of Korea

KW Park, HS Kim. JACC Cardiovasc Interv. 2013

Dual Antiplatelet Therapy for 6 Versus 18 Months After Biodegradable Polymer Drug-Eluting Stent Implantation

Masato Nakamura, MD, PhD,[a] Raisuke Iijima, MD, PhD,[a] Junya Ako, MD, PhD,[b] Toshiro Shinke, MD, PhD,[c] Hisayuki Okada, MD, PhD,[d] Yoshiaki Ito, MD, PhD,[e] Kenji Ando, MD,[f] Hitoshi Anzai, MD, PhD,[g] Hiroyuki Tanaka, MD,[h] Yasunori Ueda, MD, PhD,[i] Shin Takiuchi, MD, PhD,[j] Yasunori Nishida, MD,[k] Hiroshi Ohira, MD,[l] Katsuhiro Kawaguchi, MD, PhD,[m] Makoto Kadotani, MD, PhD,[n] Hiroyuki Niinuma, MD, PhD,[o] Kazuto Omiya, MD, PhD,[p] Takashi Morita, MD, PhD,[q] Kan Zen, MD, PhD,[r] Yoshinori Yasaka, MD, PhD,[s] Kenji Inoue, MD, PhD,[t] Sugao Ishiwata, MD, PhD,[u] Masahiko Ochiai, MD, PhD,[v] Toshimitsu Hamasaki, MSc, PhD,[w] Hiroyoshi Yokoi, MD,[x] on behalf of the NIPPON Investigators
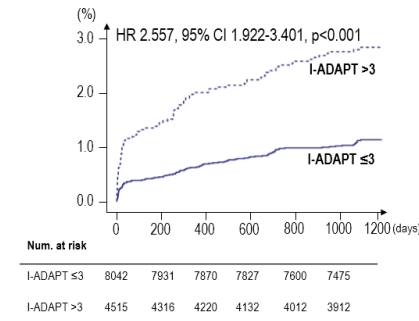
M Nakamura. JACC Cardiovasc Interv. 2017

J Kang, HS Kim et al. Thrombosis and Haemostatsis 2019 in press

The ADAPT score

- Model for the

  Ischemic

  ADAPT score

Ischemic-ADAPT score
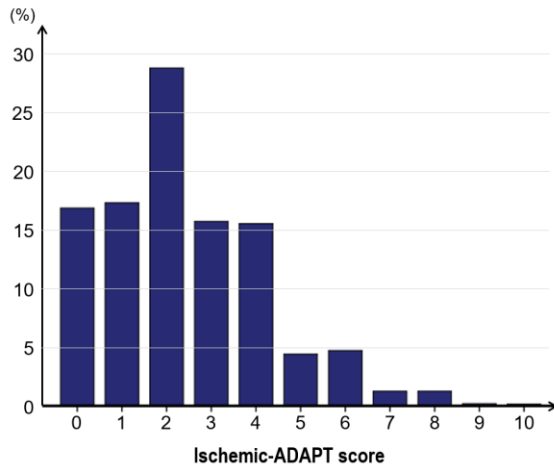
Variable	Score	*Weight*	Weighted score
Previous MI or PCI	1	*2*	2
Presentation as AMI	1	*2*	2
Anemia - Hb ≥ 12mg/dL - 10 mg/dL ≤ Hb < 12mg/dL - Hb < 10mg/Dl	0 1 2	*2*	0 2 4
Total Stent Length ≥30mm	1	*1*	1
Minimal stent diameter <3mm	1	*1*	1
Total score			10

Ischemic events

HR 2.557, 95% CI 1.922-3.401, p<0.001

Num. at risk						
I-ADAPT ≤3	8042	7931	7870	7827	7600	7475
I-ADAPT >3	4515	4316	4220	4132	4012	3912

* Best cutoff value of "3" for both scores

- Model for the

  Bleeding

  ADAPT score

Bleeding - ADAPT score
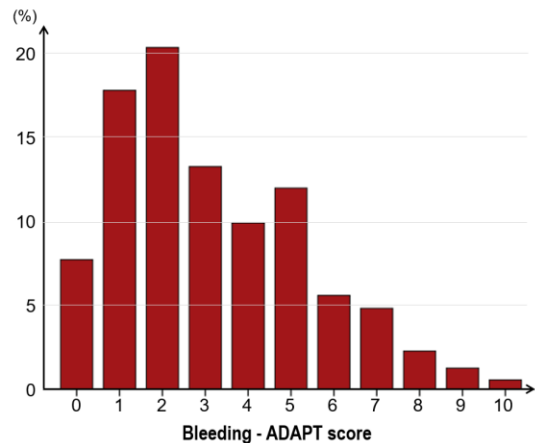
Variable	Score	*Weight*	Weighted score
Old Age - Age <50 years old - 50 ≤ Age < 60 years old - 60 ≤ Age < 70 years old - 70 ≤ Age < 80 years old - Age ≥ 80 years old	0 1 2 3 4	*1*	0 1 2 3 4
Previous CKD or CrCl <60ml/min	1	*2*	2
Anemia - Hb ≥ 12mg/dL - 10 mg/dL ≤ Hb < 12mg/dL - Hb < 10mg/dL	0 1 2	*2*	0 2 4
Total score			10

Bleeding events

HR 2.841, 95% CI 2.068-3.901, p<0.001

Num. at risk						
B-ADAPT ≤3	9950	9804	9737	9683	9425	9207
B-ADAPT >3	2797	2605	2512	2447	2348	2250

J Kang, HS Kim et al. Thrombosis and Haemostatsis accepted
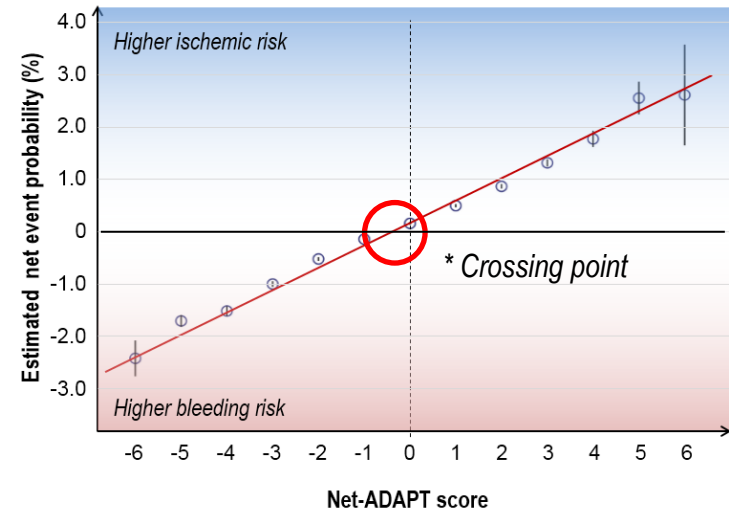
The ADAPT score

✓ Calculation of a "Net ADAPT score"

    ✓ *(Ischemic ADAPT score) – (Bleeding ADAPT score)*

    ✓ *Well-plotted with the 'estimated net event probability', with a crossing point around the **'Net ADAPT score =0'***

    ✓ 'Net ADAPT score > 0' denotes a higher 'ischemic risk', with a need of *HIGHER* intensity antiplatelet therapy

    ✓ 'Net ADAPT score < 0' denotes a higher 'bleeding risk', with a need of *LOWER* intensity antiplatelet therapy
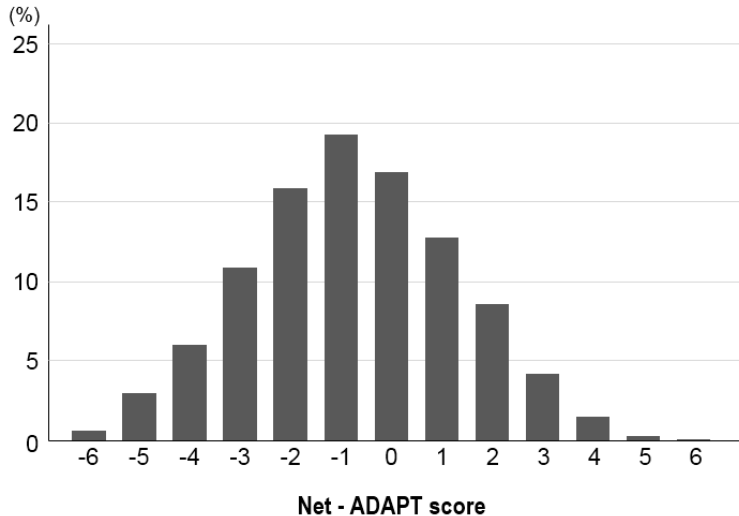
Variable	Score
Previous MI or PCI	2
Presentation as AMI	2
Total Stent Length ≥30mm	1
Minimal stent diameter <3mm	1
Previous CKD or CrCl <60ml/min	-2
Old Age	
- Age <50 years old	0
- 50 ≤ Age < 60 years old	-1
- 60 ≤ Age < 70 years old	-2
- 70 ≤ Age < 80 years old	-3
- Age ≥ 80 years old	-4
Total score range	*-6 to 6*

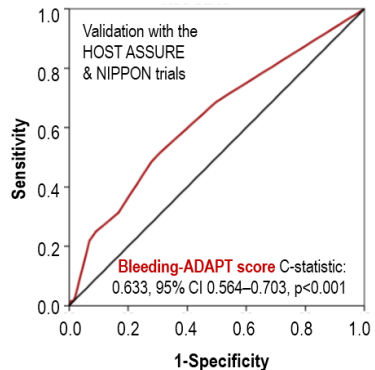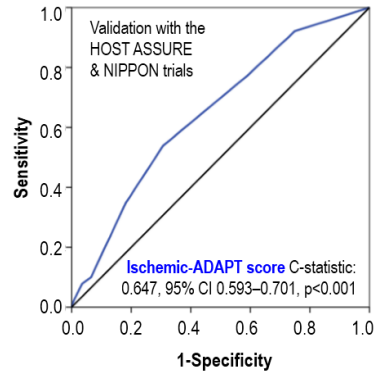*J Kang, HS Kim et al. Thrombosis and Haemostatsis accepted*

The ADAPT score
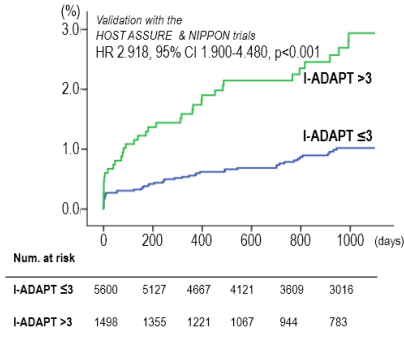
✓ **Validation cohort** *(HOST-ASSURE, NIPPON RCT pooled cohort)*

✓ Moderate discriminative value with the ROC curve

Ischemic-ADAPT score C-statistic: 0.647, 95% CI 0.593–0.701, p<0.001

Bleeding-ADAPT score C-statistic: 0.633, 95% CI 0.564–0.703, p<0.001

Ischemic events

Validation with the HOST ASSURE & NIPPON trials
HR 2.918, 95% CI 1.900-4.480, p<0.001

I-ADAPT >3

I-ADAPT ≤3

Num. at risk						
I-ADAPT ≤3	5600	5127	4667	4121	3609	3016
I-ADAPT >3	1498	1355	1221	1067	944	783

Bleeding events

Validation with the HOST ASSURE & NIPPON trials
HR 2.409, 95% CI 1.420-4.087, p=0.001

B-ADAPT >3

B-ADAPT ≤3

Num. at risk						
B-ADAPT ≤3	5458	5111	4752	4296	3848	3302
B-ADAPT >3	1099	987	878	762	653	526

✓ Well-plotted Net-ADAPT score

J Kang, HS Kim et al. Thrombosis and Haemostatsis accepted

The ADAPT score

✓ **Validation cohort** *(HOST-ASSURE, NIPPON RCT pooled cohort)*

✓ Moderate discriminative value with the ROC curve

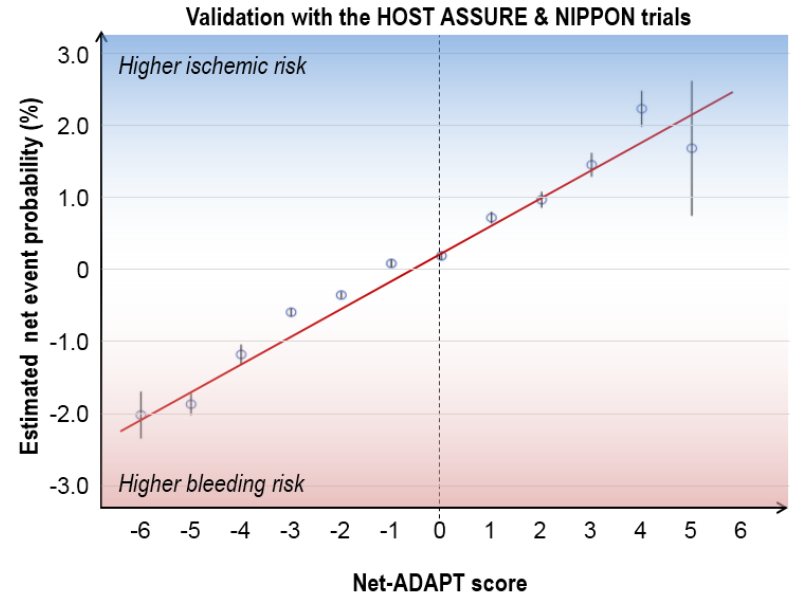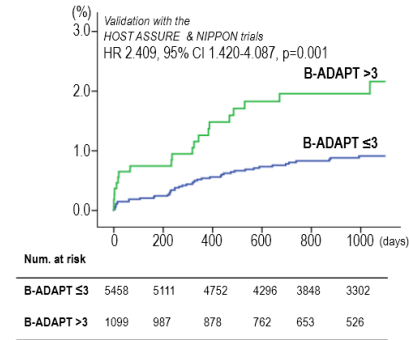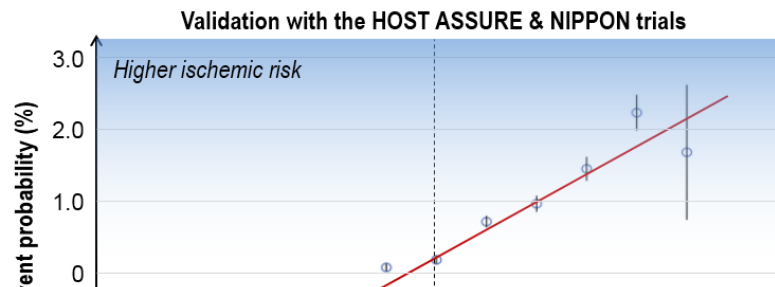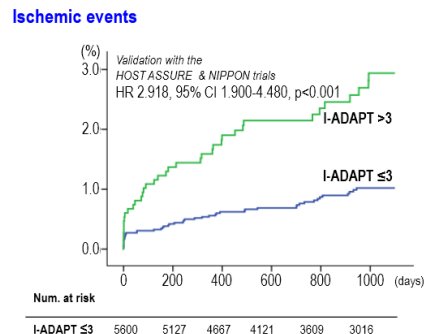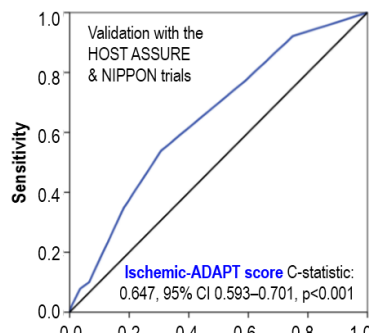Validation with the HOST ASSURE & NIPPON trials

Ischemic-ADAPT score C-statistic: 0.647, 95% CI 0.593–0.701, p<0.001

Ischemic events

Validation with the HOST ASSURE & NIPPON trials
HR 2.918, 95% CI 1.900-4.480, p<0.001

I-ADAPT >3

I-ADAPT ≤3

Num. at risk

| I-ADAPT ≤3 | 5600 | 5127 | 4667 | 4121 | 3609 | 3016 |

✓ Well-plotted Net-ADAPT score

Validation with the HOST ASSURE & NIPPON trials

Higher ischemic risk

The ADAPT score is

#. A unique '*Asian oriented*' scoring system

#. In real-world patients receiving PCI with *2nd generation DESs*.

#. Can evaluate *both ischemic and bleeding risk*.

#. Can integrate ischemic and bleeding risks to guide *optimal antiplatelet therapy intensity*.

0.633, 95% CI 0.564–0.703, p<0.001

1-Specificity
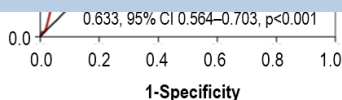
Num. at risk

| B-ADAPT ≤3 | 5458 | 5111 | 4752 | 4296 | 3848 | 3302 |
| B-ADAPT >3 | 1099 | 987 | 878 | 762 | 653 | 526 |

Ischemic and Bleeding risk in East Asians

- ✓ East Asians have a ***distinct ischemic/bleeding trade-off*** compared to the Western population.

    - ✓ Lower ischemic risk with a higher bleeding risk

    - ✓ Therefore, ***high bleeding risk*** is a very important issue in East Asians.

- ✓ New generation P2Y12 inhibitors should be prescribed with caution in ***East Asians***.

    - ✓ A lower dose may be a feasible strategy to maintain efficacy and minimize bleeding events.

- ✓ The ***'ADAPT score'*** can be used to assess the ischemic and bleeding risk of an individual, and the ***Net-ADAPT*** score can be used to guide optimal DAPT therapy.

Thank you for your attention!