DAPT POST PCI:

EVIDENCE & CLINICAL APPLICATIONS

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DISCLOSURES

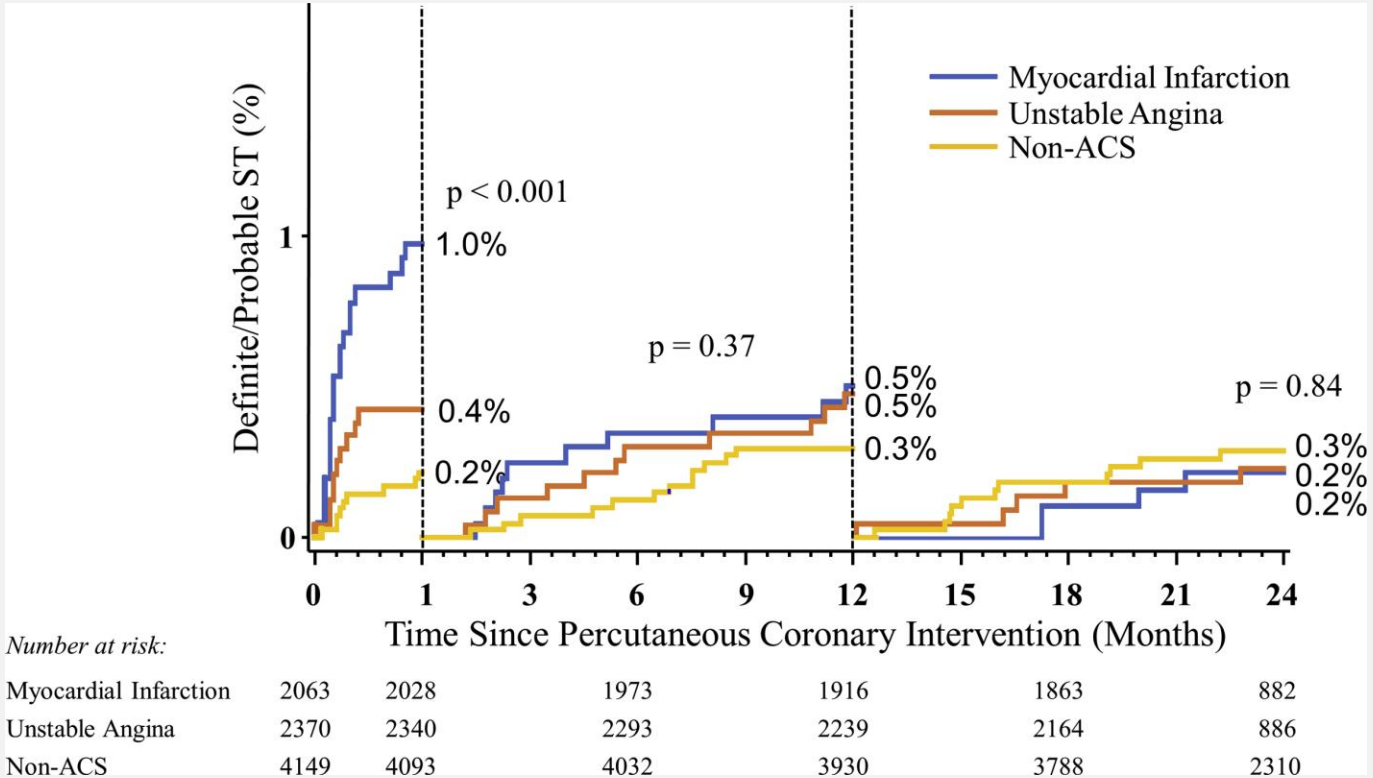
- None

OUTLINE

- Principles of DAPT post-PCI
- Guidelines
- Clinical Data Review
  - DAPT Duration
  - De-escalation
  - Antiplatelet therapy Beyond 1 year
  - Dual antiplatelet / anticoagulant strategies
- Future Directions

PRINCIPLES OF DAPT POST-PCI

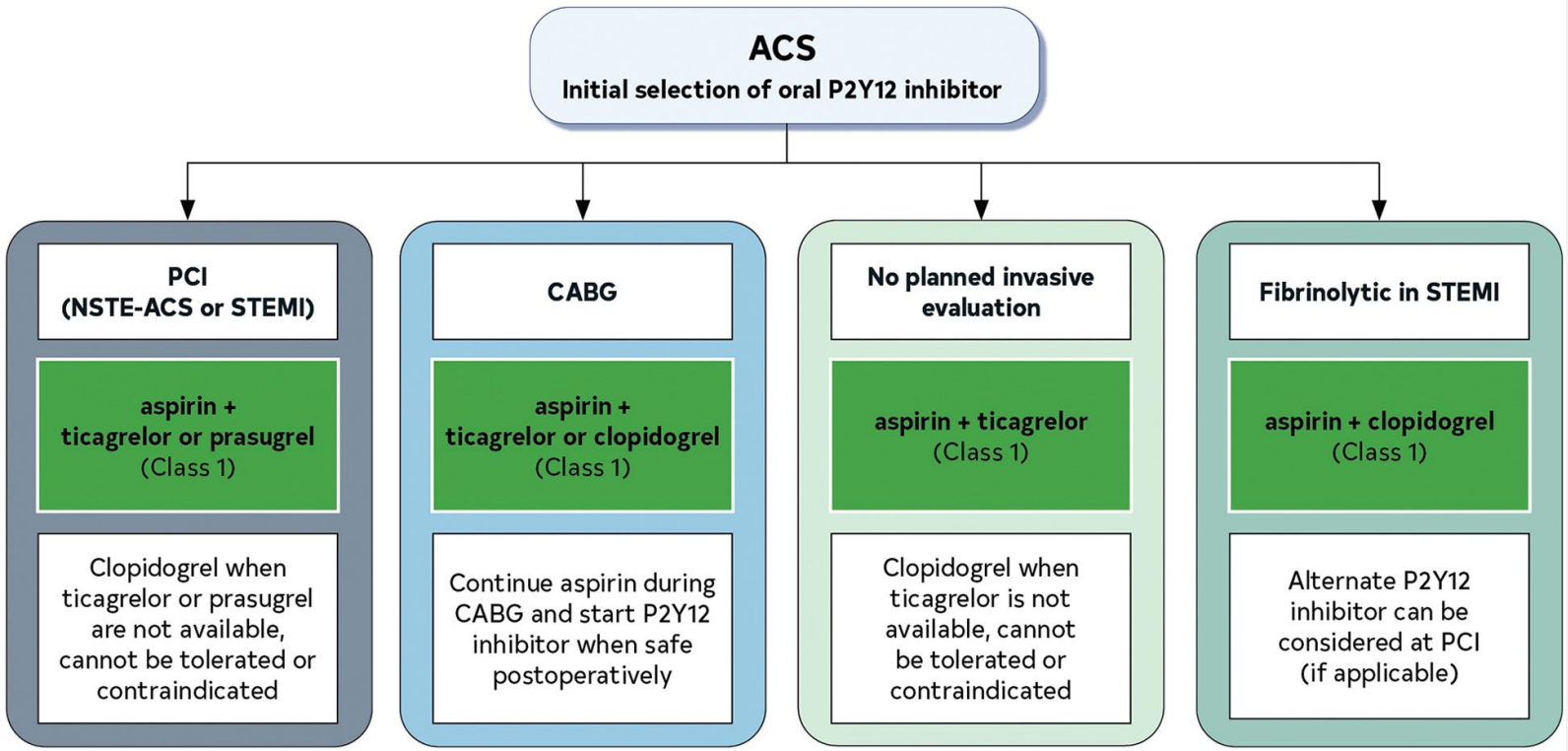
- Majority of events with contemporary DES occur during 1st year post-PCI.
- Annual 0.2-0.5% incremental rate of ST >1 yr, but most events due to progressive atherosclerosis w/in DES or are unrelated to the stented vessel.
- Majority of ST within first 30 days; highest in ACS.



ADAPT-DES

Lancet, 2013

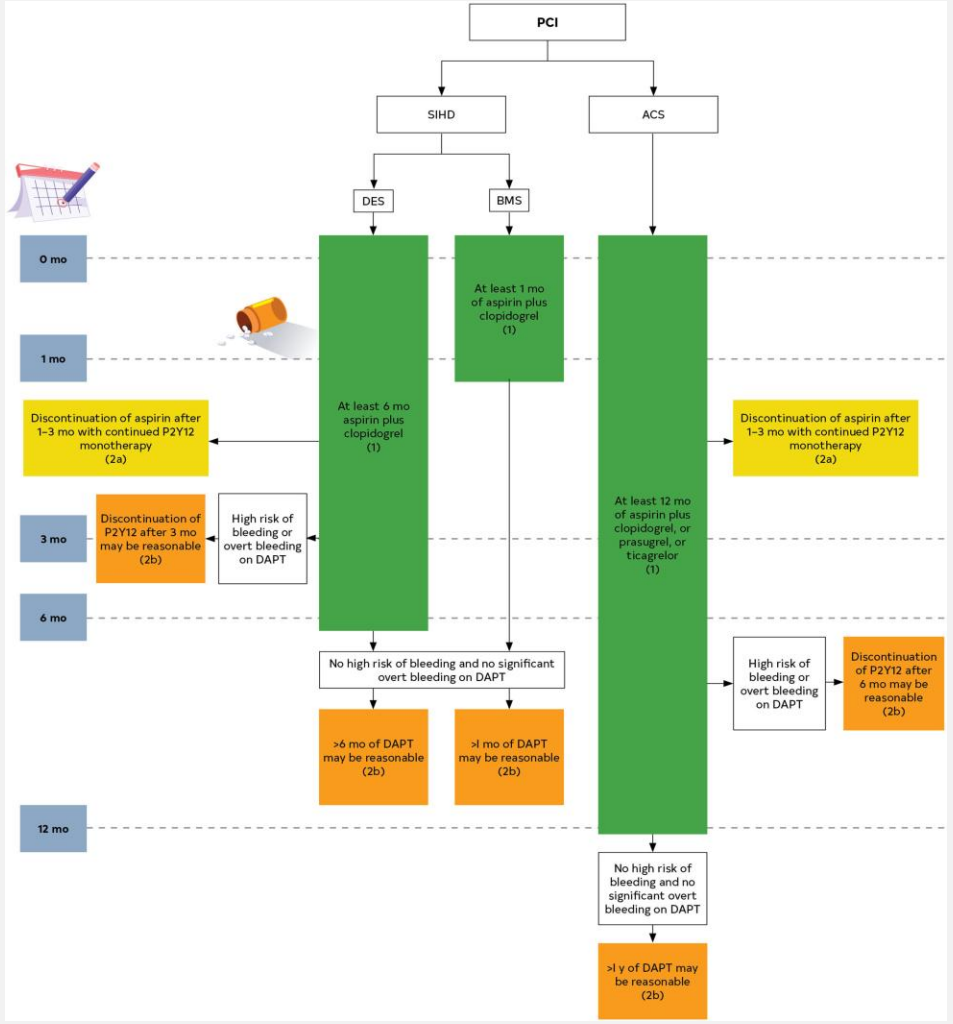
DAPT PRE/DURING PCI



COR	LOE	RECOMMENDATIONS
All Patients With ACS (STEMI and NSTE-ACS)		
1	A	1. In patients with ACS, an oral P2Y12 inhibitor should be administered in addition to aspirin to reduce MACE.[1-5]
3: Harm	B-R	2. In patients with a history of stroke or transient ischemic attack, prasugrel should not be administered because of worse net clinical outcomes.*†[4]
In-Hospital Management in Patients With NSTE-ACS		
1	B-R	3. In patients with NSTE-ACS undergoing PCI, prasugrel or ticagrelor is recommended to reduce MACE and stent thrombosis.[4-6]
1	B-R	4. In patients with NSTE-ACS who are managed without planned invasive evaluation, ticagrelor is recommended to reduce MACE.[5,7]
1	B-R	5. In patients with NSTE-ACS, clopidogrel is recommended to reduce MACE when prasugrel or ticagrelor are unavailable, cannot be tolerated, or are contraindicated.[1]
2b	B-NR	6. In patients with NSTE-ACS planned for an invasive strategy with timing of angiography anticipated to be >24 hours, upstream treatment with clopidogrel or ticagrelor may be considered to reduce MACE.[1,5,8]

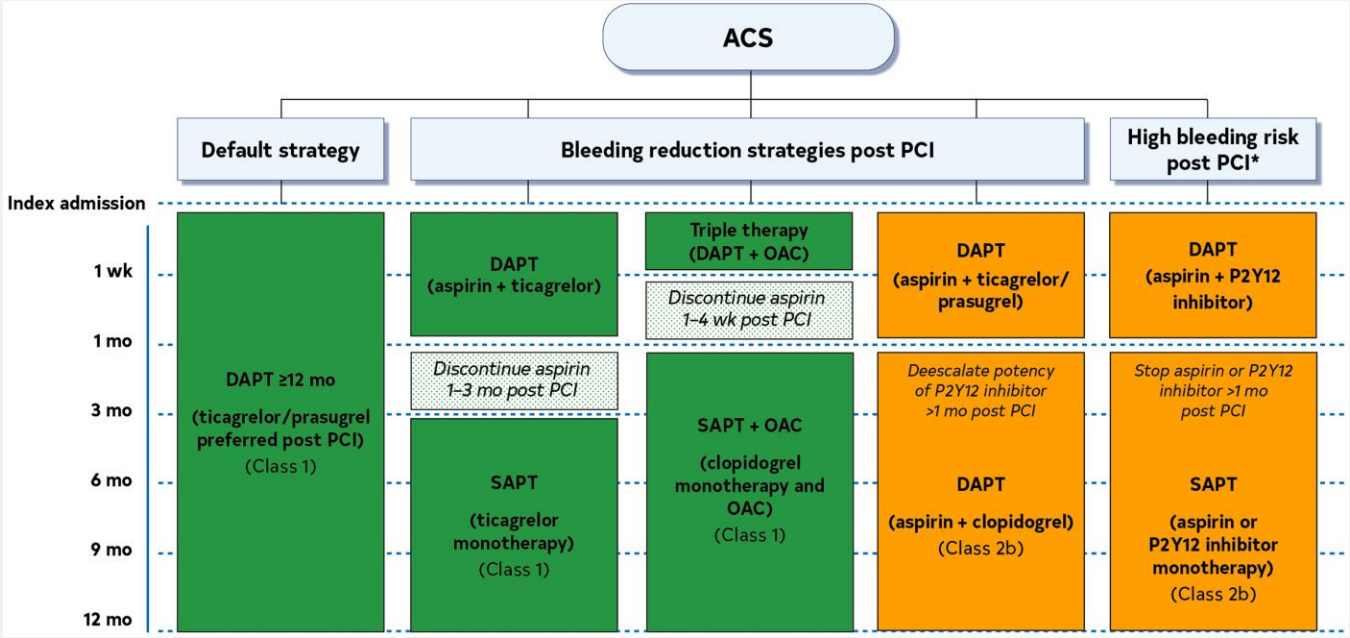
DAPT AFTER PCI

2013/2014/2015/2016/2021 Guidelines[2-6]		2025 Guideline[1]	
COR*	**Old Recommendations**	**COR***	**New Recommendations**
1	In patients with ACS (NSTE-ACS or STEMI) treated with DAPT after BMS or DES implantation, $P2Y_{12}$ inhibitor therapy (clopidogrel, prasugrel, or ticagrelor) should be given for at least 12 mo.[6]	1	In patients with ACS who are not at high bleeding risk, DAPT with aspirin and an oral $P2Y_{12}$ inhibitor should be administered for at least 1 y to reduce MACE.
2a	In patients with ACS (NSTE-ACS or STEMI) treated with DAPT after coronary stent implantation, it is reasonable to use ticagrelor in preference to clopidogrel for maintenance $P2Y_{12}$ inhibitor therapy.[6]	1	In patients with NSTE-ACS undergoing PCI, prasugrel or ticagrelor is recommended to reduce MACE and stent thrombosis.
		1	In patients with STEMI managed with PPCI, prasugrel or ticagrelor should be administered to reduce MACE and stent thrombosis.
2a	In selected patients undergoing PCI, shorter-duration DAPT (1-3 mo) is reasonable, with subsequent transition to $P2Y_{12}$ inhibitor monotherapy to reduce the risk of bleeding events.[5]	1	In patients with ACS who have tolerated DAPT with ticagrelor, transition to ticagrelor monotherapy ≥1 mo post-PCI is useful to reduce bleeding risk.
2b	In patients with ACS treated with DAPT after DES implantation who develop a high risk of bleeding (eg, treatment with oral anticoagulant therapy), are at high risk of severe bleeding complication (eg, major intracranial surgery), or develop significant overt bleeding, discontinuation of $P2Y_{12}$ inhibitor therapy after 6 mo may be reasonable.[6]	2b	In patients with ACS undergoing PCI who are at high bleeding risk, transition to single antiplatelet therapy (aspirin or $P2Y_{12}$ inhibitor) after 1 mo may be reasonable to reduce bleeding risk.
		2b	In patients with ACS undergoing PCI, de-escalation of DAPT (switching from ticagrelor or prasugrel to clopidogrel) after 1 mo may be reasonable to reduce bleeding risk.
1	The duration of triple antithrombotic therapy with a vitamin K antagonist, aspirin, and a $P2Y_{12}$ receptor inhibitor in patients with NSTE-ACS should be minimized to the extent possible to limit the risk of bleeding.[3]	1	In patients with ACS who require oral anticoagulant therapy, aspirin should be discontinued after 1 to 4 wks of triple antithrombotic therapy, with continued use of $P2Y_{12}$ inhibitor (preferably clopidogrel) and oral anticoagulant to reduce bleeding risk.



DAPT AFTER PCI

- Studies have shown feasibility of early P2Y12i withdrawal but often enrolled lower-risk pts and/or underpowered for ischemic events.
- Short duration DAPT (1-3 mo) followed by P2Y12i monotherapy shown to reduce bleeding w/o increases in ischemic risk vs 12-mo DAPT.
- Only Ticagrelor monotherapy after short DAPT has shown reduction in ischemic event risk.

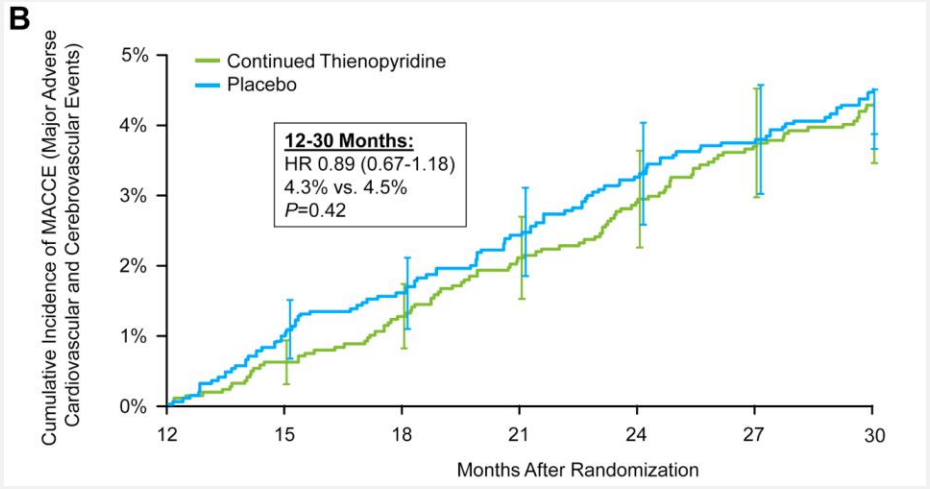


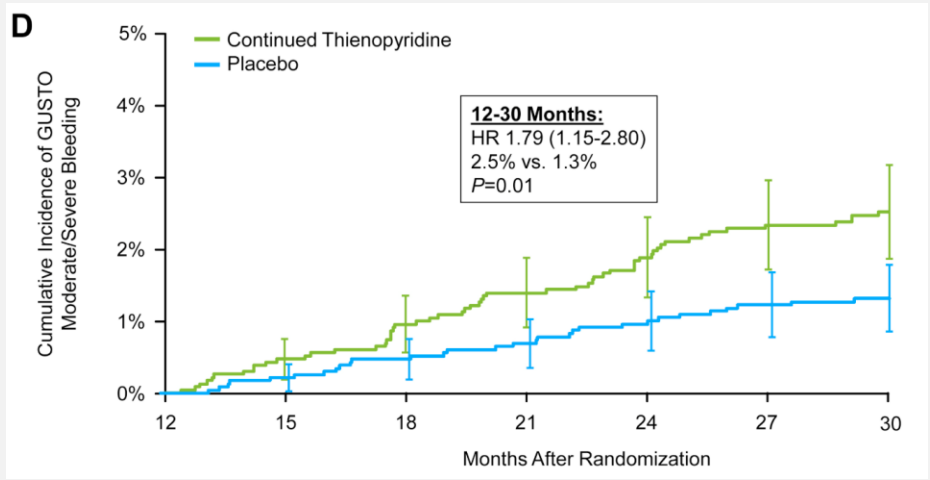
OPTIMAL DURATION OF DAPT

Twelve or 30 Months of Dual Antiplatelet Therapy after Drug-Eluting Stents

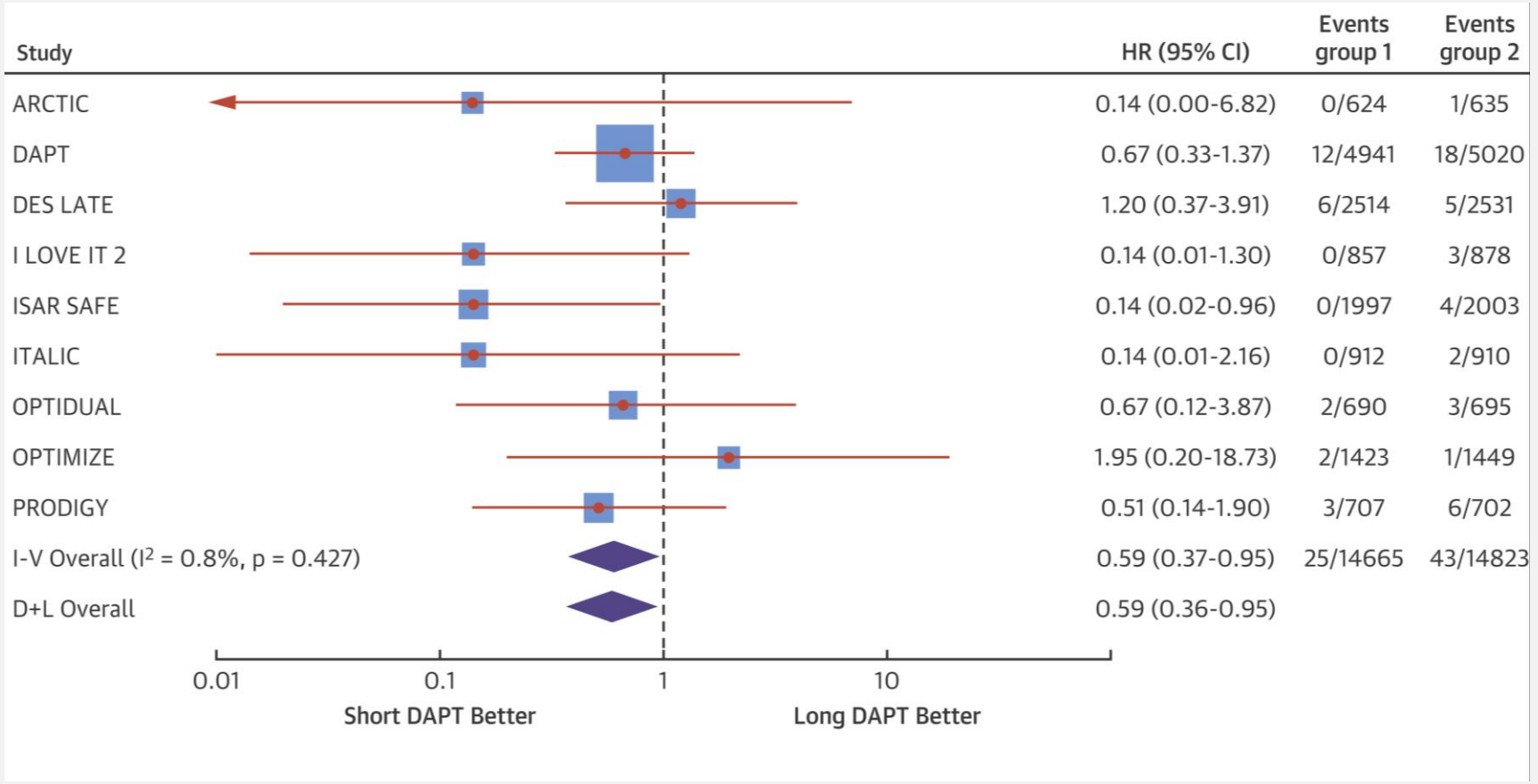
Authors: Laura Mauri, M.D., Dean J. Kereiakes, M.D., Robert W. Yeh, M.D., Priscilla Driscoll-Shempp, M.B.A., Donald E. Cutlip, M.D., P. Gabriel Steg, M.D., Sharon-Lise T. Normand, Ph.D., +15 , for the DAPT Study Investigators* Author Info & Affiliations

- >1 year DAPT after DES vs ASA monotherapy reduced risks of MACCE and ST but at cost of higher bleeding risk.
- ~51% used out of date stents.
- ➢ No MACE benefit with more bleeding in contemporary DES.





SHORT VS PROLONGED DAPT



Meta analysis of 12 RCTs including 34,880 pts.

Palmerini et al. *JACC* 2017; 69:2011-2022.

DAPT DE-ESCALATION

- Aspirin discontinuation
- Switching P2Y12 inhibitors
- P2Y12 inhibitor discontinuation

SHORT DAPT - ASPIRIN WITHDRAWAL

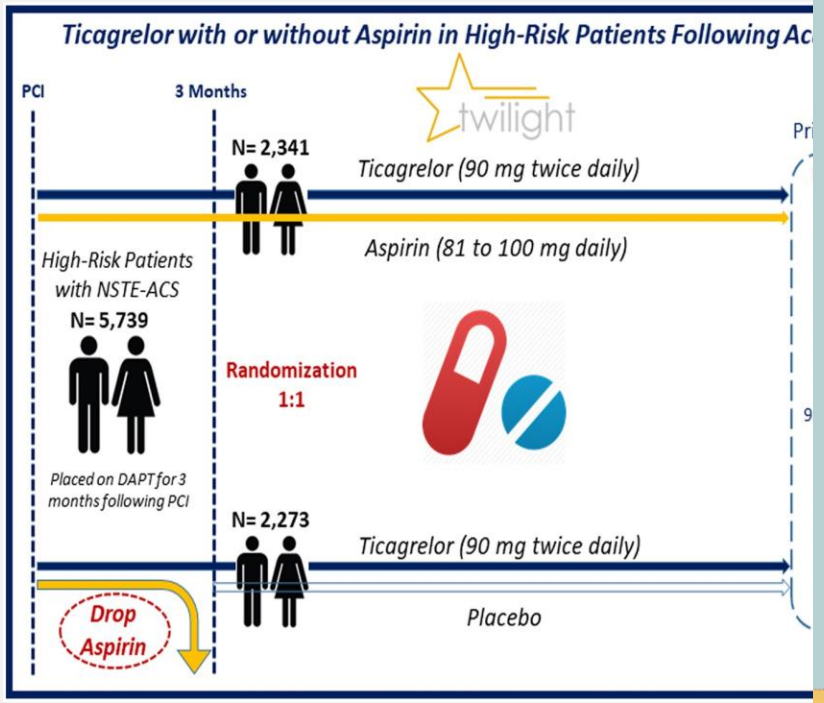
- Data regarding short DAPT with transition to Clopidogrel is mixed
  - Clopidogrel monotherapy 1-2 months after PCI for ACS may increase MACE risk vs longer DAPT.
  - Unclear if due to thrombotic risk (endoluminal disruption) or lack of individual response (CYP219 allele) to Clopidogrel.

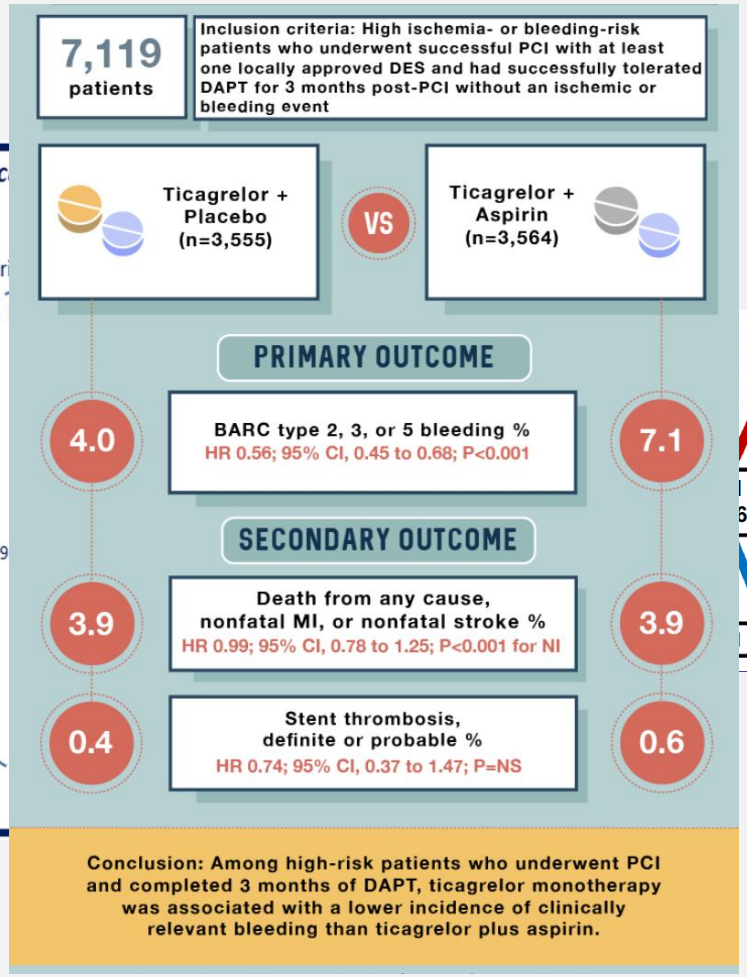
- Safety of prasugrel monotherapy has not yet been reliably proven in patients ≥1 month post ACS.*

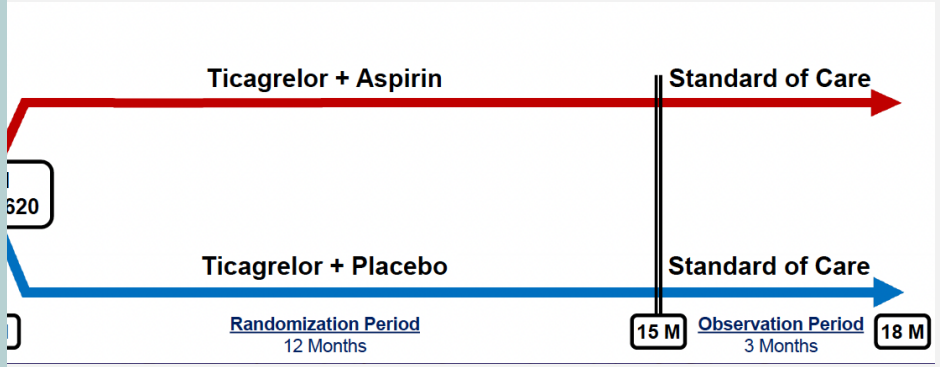
- Experimental studies have demonstrated a physiological basis for the lack of increased ischemic risk after ASA withdrawal on Ticagrelor monotherapy.
  - ASA provides limited additional platelet inhibition in healthy individuals treated w/ potent P2Y12 inhibitors.
  - P2Y12 receptor blockade may also interfere with thromboxane A2–induced ADP release.

3 MONTHS DAPT

TWILIGHT







N Engl J Med, Volume 381(21):2032-2042, November 21, 2019
Eur Heart J, Volume 41, Issue 37, 1 October 2020, Pages 3533–3545

3 MONTHS DAPT

JAMA Network

QUESTION Does switching to ticagrelor monc
among patients with acute coronary syndrom

CONCLUSION This randomized clinical trial fc
12-month DAPT, significantly reduced net ad

POPULATION

2428 Men
628 Women

Adults with acute coronary syndrome treated with drug-eluting stents

Mean age: 61 years

LOCATIONS

38 Centers in South Korea

Kim B-K, Hong S-J, Cho Y-H, et al. Effect of ticagrelor
with acute coronary syndrome: the TICO randomized c

JAMA Cardiology

RCT: Long-term Effects of P2Y12 Inhibitor Monotherapy After Percutaneous Coronary Intervention

POPULATION

2198 Men, 795 Women

Adults who underwent percutaneous coronary intervention (PCI) with drug-eluting stent

Mean age, 64.5 y

INTERVENTION

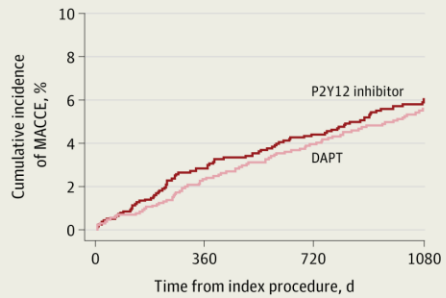
2993 Participants randomized

1495 P2Y12 inhibitor monotherapy
Dual antiplatelet therapy (DAPT) for 3 mo followed by P2Y12 inhibitor monotherapy

1498 Prolonged DAPT
Extended use of DAPT up to 36 mo

FINDINGS

There was no significant difference in MACCE between the P2Y12 inhibitor monotherapy group and the prolonged DAPT group at 3 y



Hazard ratio, 1.06 (95% CI, 0.79-1.44); *P* = .69

SETTINGS / LOCATIONS

33 hospitals in Republic of Korea

PRIMARY OUTCOME

Occurrence of a major adverse cardiac or cerebrovascular event (MACCE), a composite outcome including all-cause death, myocardial infarction, or stroke up to 3 y after the index PCI procedure

Choi KH, Park YH, Song YB, et al; SMART-CHOICE Investigators. Long-term effects of P2Y12 inhibitor monotherapy after percutaneous coronary intervention: 3-year follow-up of the SMART-CHOICE randomized clinical trial. *JAMA Cardiol.* Published online September 28, 2022. doi:10.1001/jamacardio.2022.3203

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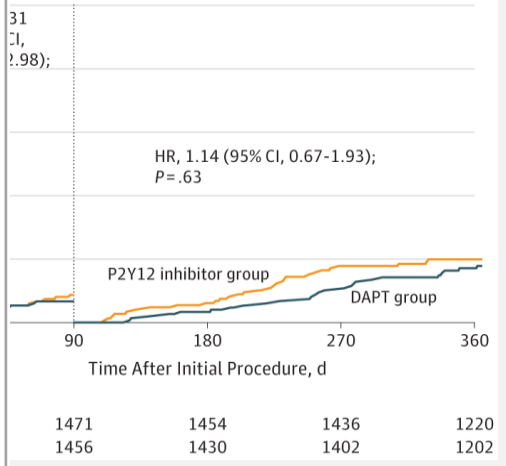
nalysis of composite events



2993 pts w/ CAD or ACS – P2Y12i monotherapy (77% Clopidogrel) after 3 months DAPT vs standard DAPT

JAMA Cardiol. 2019;321(24):2428-2437. doi:10.1001/jama.2019.8146

JAMA Cardiol. 2022;7(11):1100-1108. doi:10.1001/jamacardio.2022.3203

1 MONTH DAPT

GLOBAL LEADERS

Effect of 1-Month Dual Antiplatelet Therapy Followed by Clopidogrel vs 12-Month Dual Antiplatelet Therapy on Cardiovascular and Bleeding Events in Patients Receiving PCI

The STOPDAPT-2 Randomized Clinical Trial

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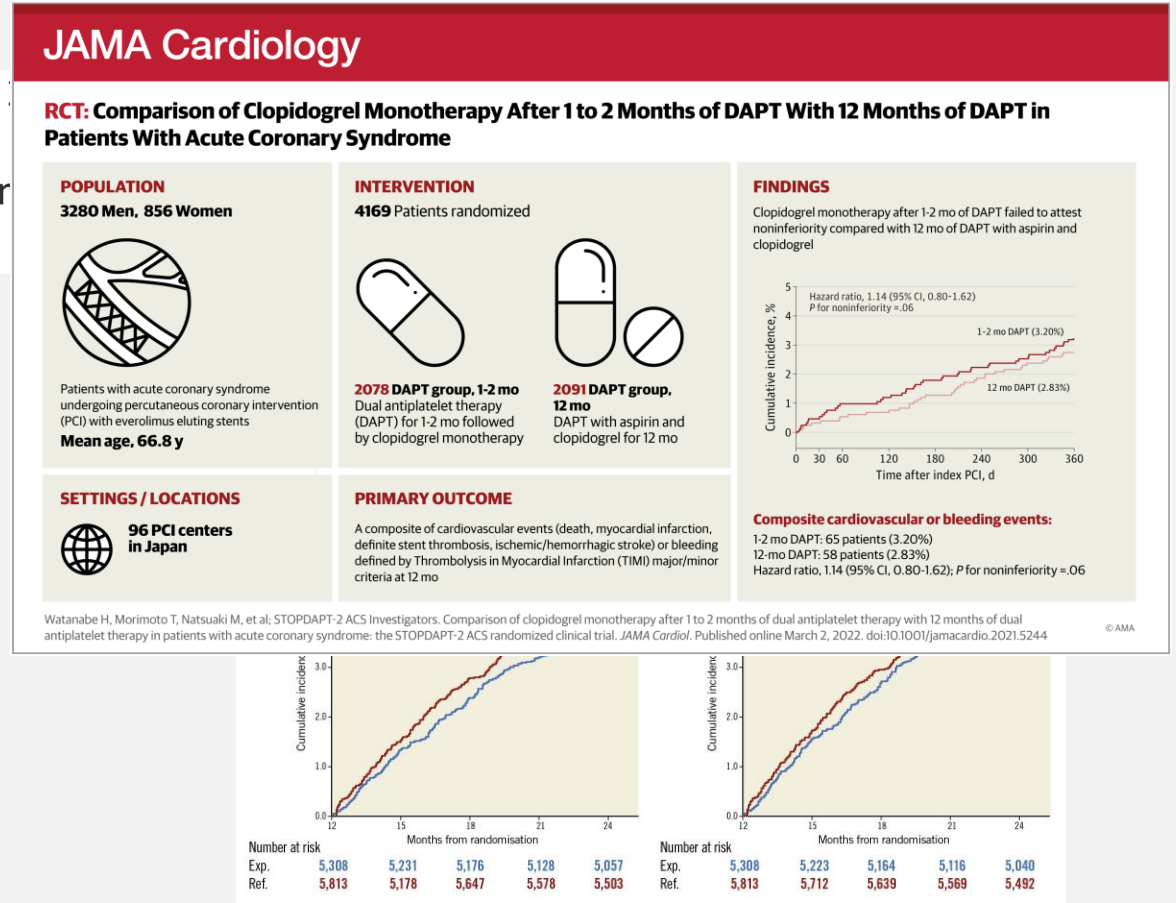
- 1 month DAPT not superior to standard DAPT for mortality at 2 years.
- STOPDAPT-2 (CCS + ACS,): Clopidogrel monotherapy after 1-2 months DAPT was superior in bleeding outcome and noninferior in CV outcome vs 12 months of DAPT with Aspirin + Clopidogrel
  - No significant difference in MI, ST or bleeding.
- STOPDAPT2 ACS: Clopidogrel monotherapy after 1-2 months DAPT associated with a reduction in major bleeding events, but with numerical increase in CV events.
  - Ticagrelor monotherapy was associated with fewer ischemic events (death, MI, or stroke) and numerically increased serious bleeding events (BARC type 3 or 5).

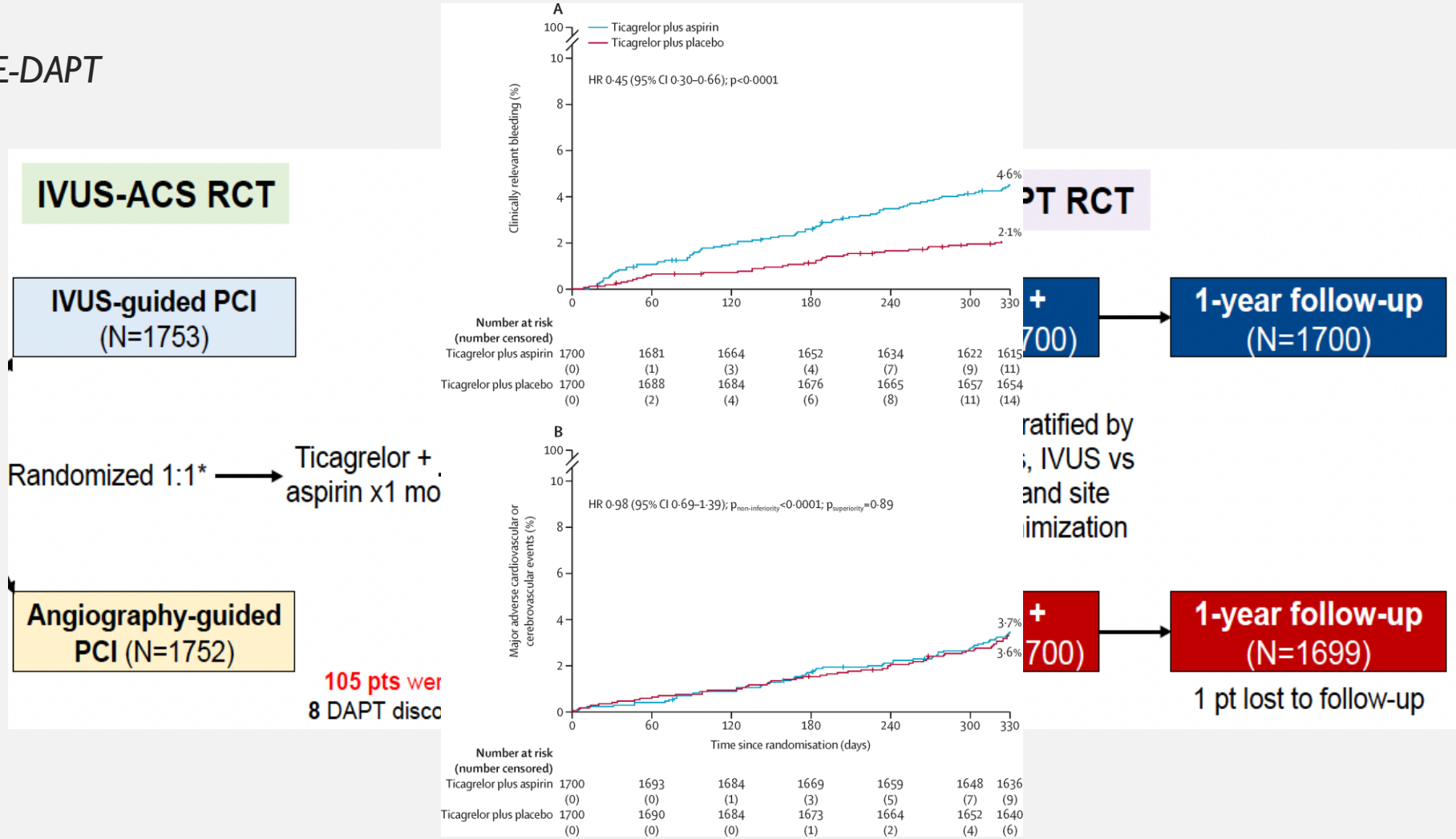
GLOBAL LEADERS – Post hoc analysis



Ono et al, 2022

1 MONTH DAPT

ULTIMATE-DAPT



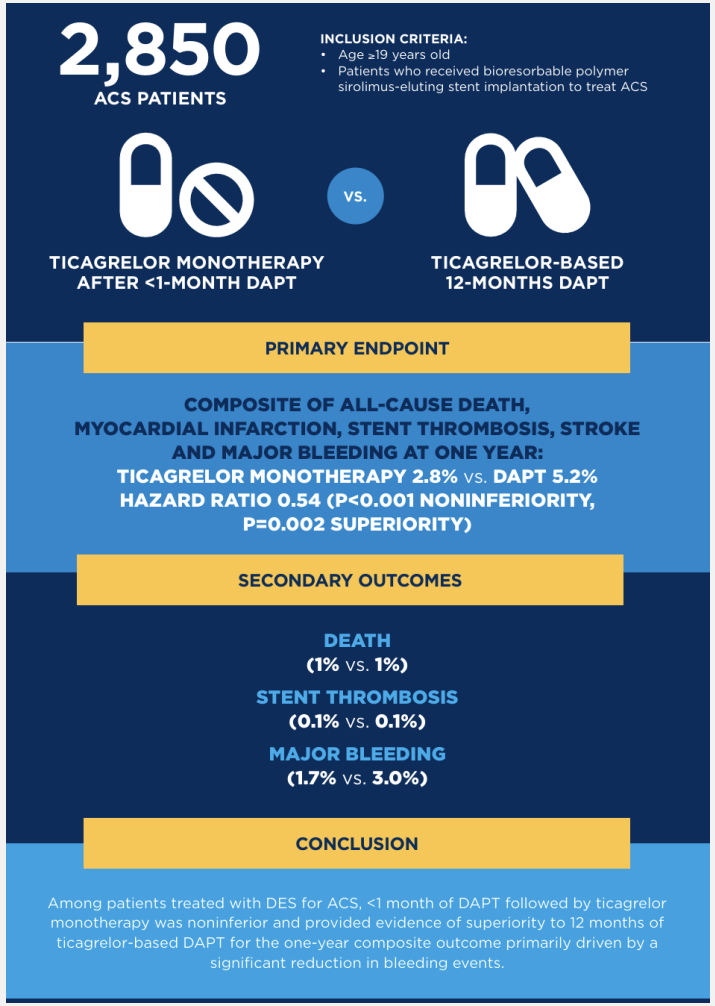
<1 MONTH DAPT

T-PASS

Stopping Aspirin Within 1 Month After Stenting for Ticagrelor Monotherapy in Acute Coronary Syndrome: The T-PASS Randomized Noninferiority Trial

Sung-Jin Hong, MD, Seung-Jun Lee, MD, Yongsung Suh, MD, Kyeong Ho Yun, MD, Tae Soo Kang, MD, Sanghoon Shin, MD, Sung Woo Kwon, MD, ... SHOW ALL ... on behalf of the T-PASS (Ticagrelor Monotherapy in Patients Treated With New-Generation Drug-Eluting Stents for Acute Coronary Syndrome) Investigators | AUTHOR INFO & AFFILIATIONS

- <1 month DAPT resulted in less major bleeding.
- <1 month DAPT superior for MACE, primarily driven by significantly less bleeding.

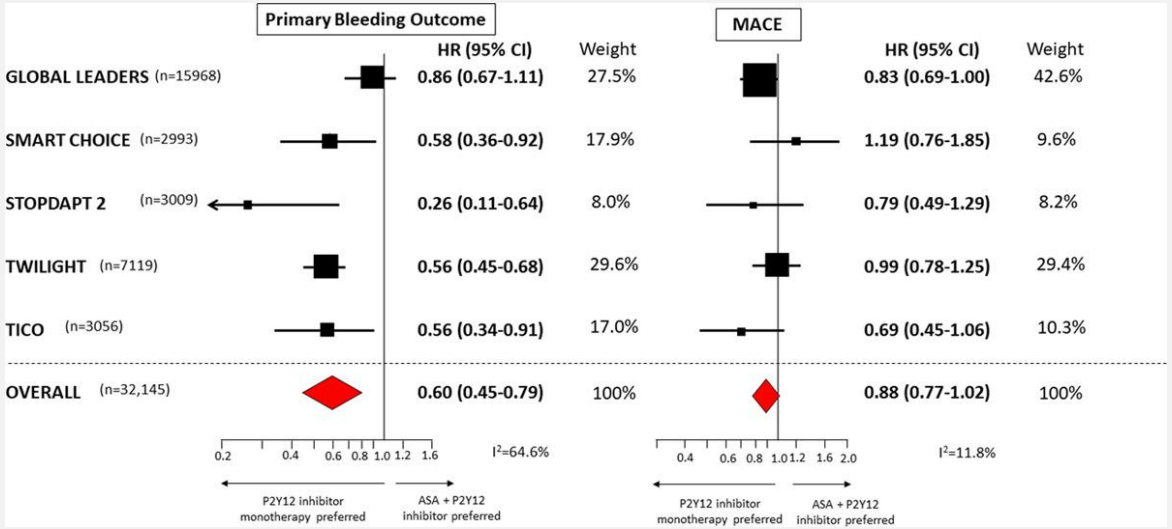


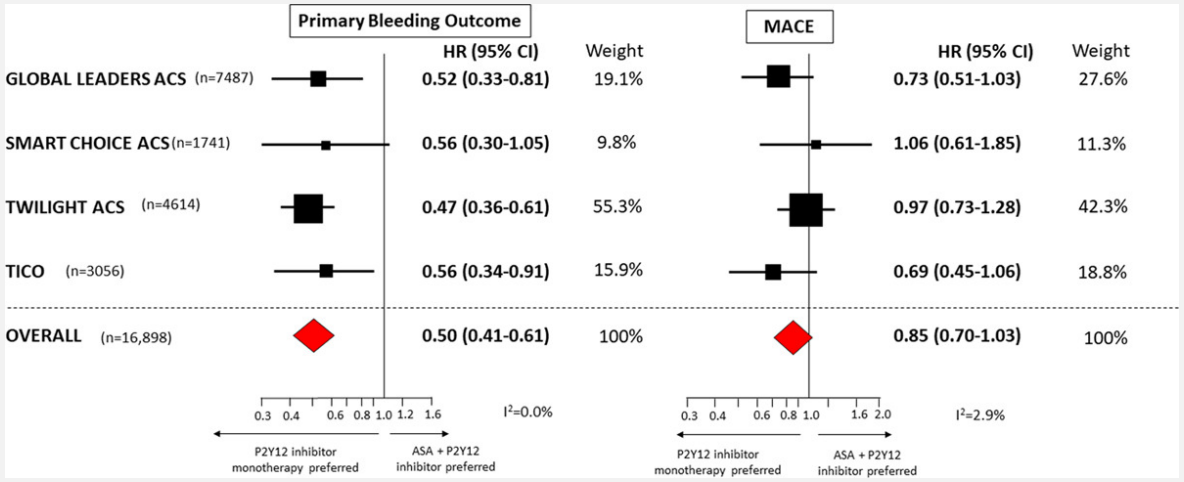
META-ANALYSIS

The Safety and Efficacy of Aspirin Discontinuation on a Background of a $P2Y_{12}$ Inhibitor in Patients After Percutaneous Coronary Intervention: A Systematic Review and Meta-Analysis

Michelle L. O'Donoghue, MD, MPH, Sabina A. Murphy, MPH, and Marc S. Sabatine, MD, MPH | AUTHOR INFO & AFFILIATIONS

- Meta-analysis of RCTs (32,145 pts):
  - Aspirin stopped 1-3 months post-PCI then transitioned to P2Y12i monotherapy vs traditional DAPT.





META-ANALYSIS

- Recent meta-analysis at SCAI 2026:
  - RCTs comparing Ticagrelor monotherapy after 1-3 months DAPT vs 12 months Ticagrelor + ASA after PCI in ACS.
  - Four RCTs w/17,981 pts
  - Ticagrelor monotherapy significantly reduced all-cause mortality and cardiac death, w/ a 51% reduction in major bleeding.
  - Modest but significant reduction in composite ischemic endpoint (MACCE).

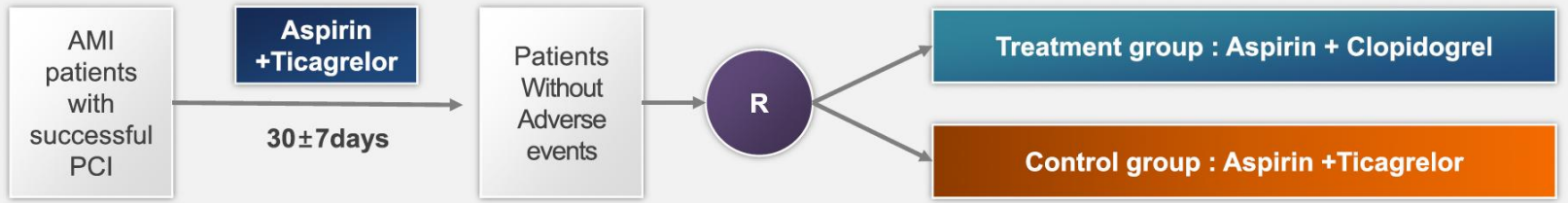
- Meta analysis by Ibrahim et al (J Cardiovasc Med, 2026): (16,289 pts) after 6 months DAPT post-PCI for stable CAD, Plavix monotherapy showed a 31% reduction in MACCE compared with ASA monotherapy.
  - Plavix led to significantly less risk of stroke and MI vs ASA.
  - No differences in major bleeding or all-cause death.

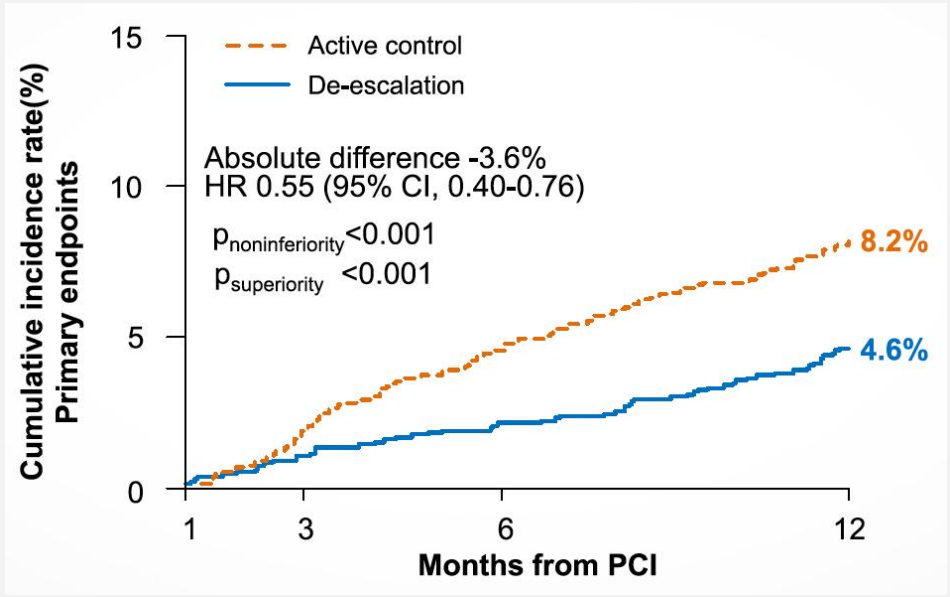
DAPT DE-ESCALATION

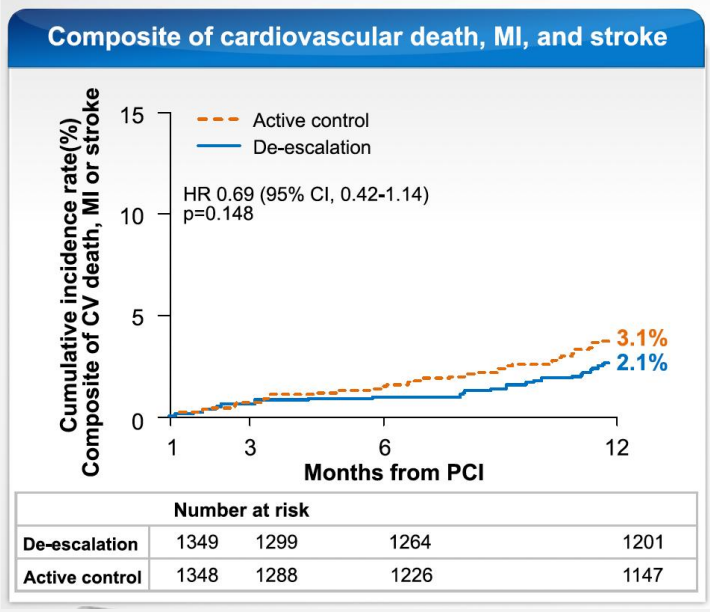
- Aspirin discontinuation
- Switching P2Y12 inhibitors
- P2Y12 inhibitor discontinuation

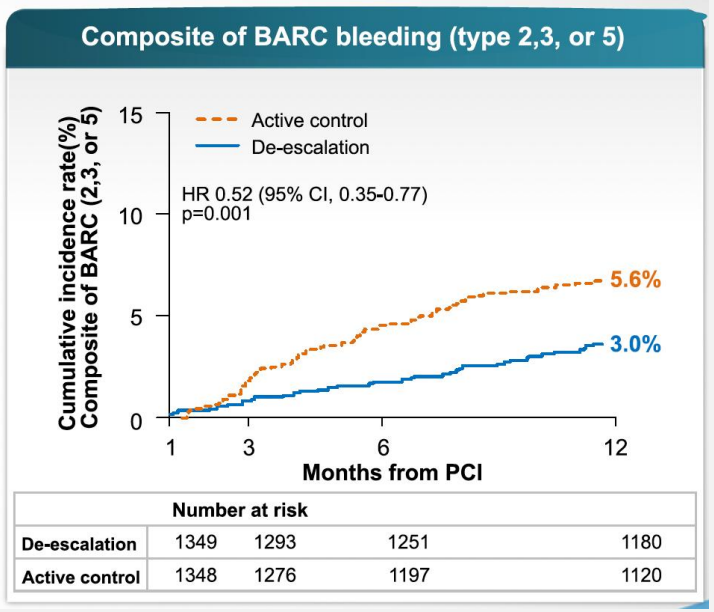
DEESCALATION

TALOS-MI









DAPT DE-ESCALATION

- Aspirin discontinuation
- Switching P2Y12 inhibitors
- P2Y12 inhibitor discontinuation

ASPIRIN MONOTHERAPY

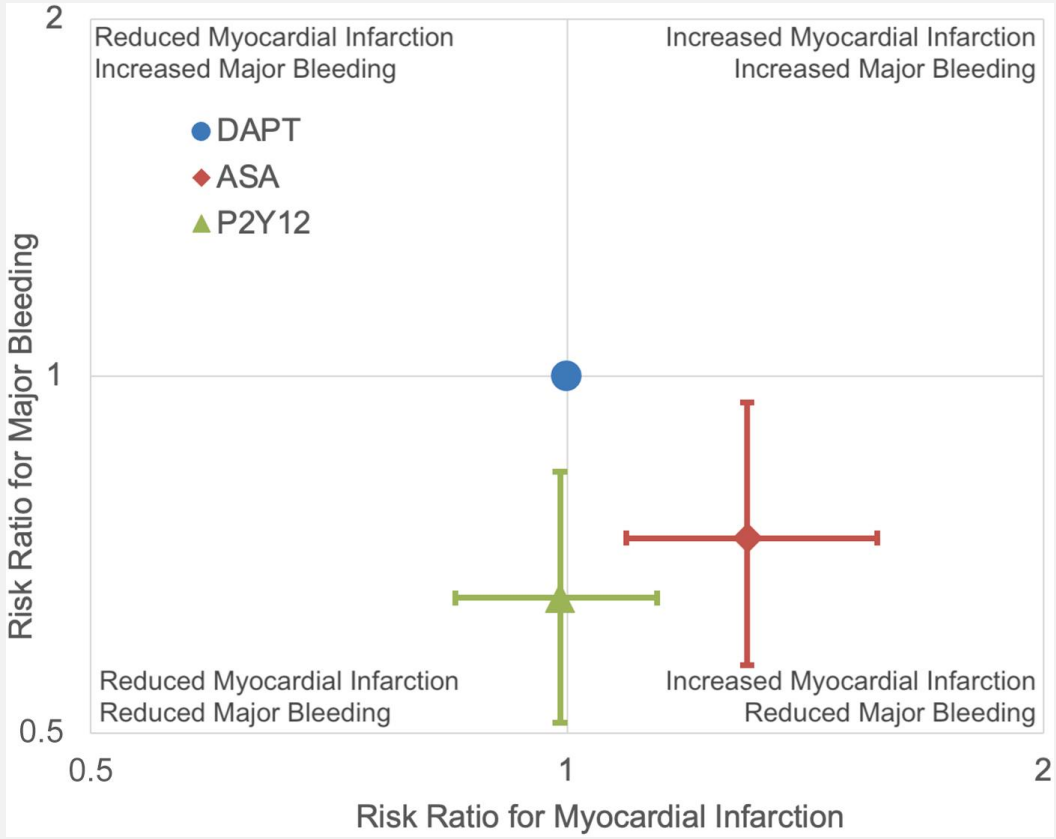
SMART-DATE

- Increased MI risk w/ 6 mo DAPT followed by ASA monotherapy vs 12 mo DAPT

- RCTs have found that after ACS w/ PCI, P2Y12i discontinuation followed by ASA alone after 3-6 months of DAPT resulted in excess thrombotic risk, albeit w/ less bleeding.

Network meta-analysis (Ando et al, JACC Interv 2022)

- 19 RCTs (73,126 pts) s/p PCI w/ 2nd-generation DES.
- Less major bleeding w/ P2Y12i or aspirin monotherapy vs prolonged DAPT.
- MI risk after DAPT cessation significantly higher for pts continuing with ASA vs P2Y12 inhibitor monotherapy.



ANTIPLATELET THERAPY BEYOND 1 YEAR

ANTIPLATELET THERAPY BEYOND 1 YEAR

- Beyond standard DAPT therapy (6-12 months), uncertainty remains as to the optimal antiplatelet regimen – include appropriate antiplatelet monotherapy and risk/benefits of extended DAPT.

Multiple studies have suggested that Clopidogrel may provide more benefit than Aspirin.

- CAPRIE trial
  - Clopidogrel monotherapy better than ASA to reduce risk of CV death, MI, or CVA
  - Bleeding rates were comparable between groups, but Clopidogrel w/ lower risk of GIB.

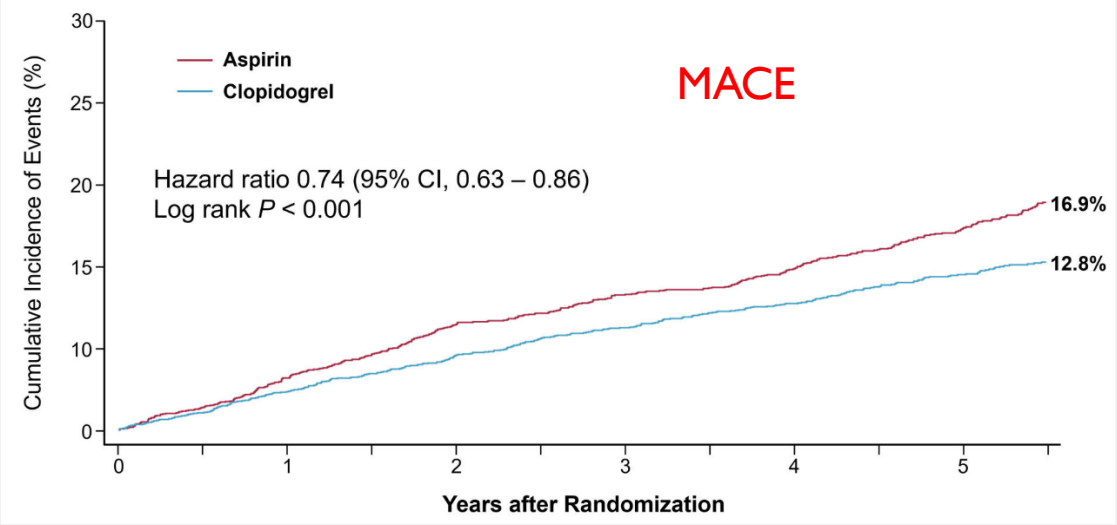
- Multiple studies have suggested that Clopidogrel may provide more benefit than Aspirin.

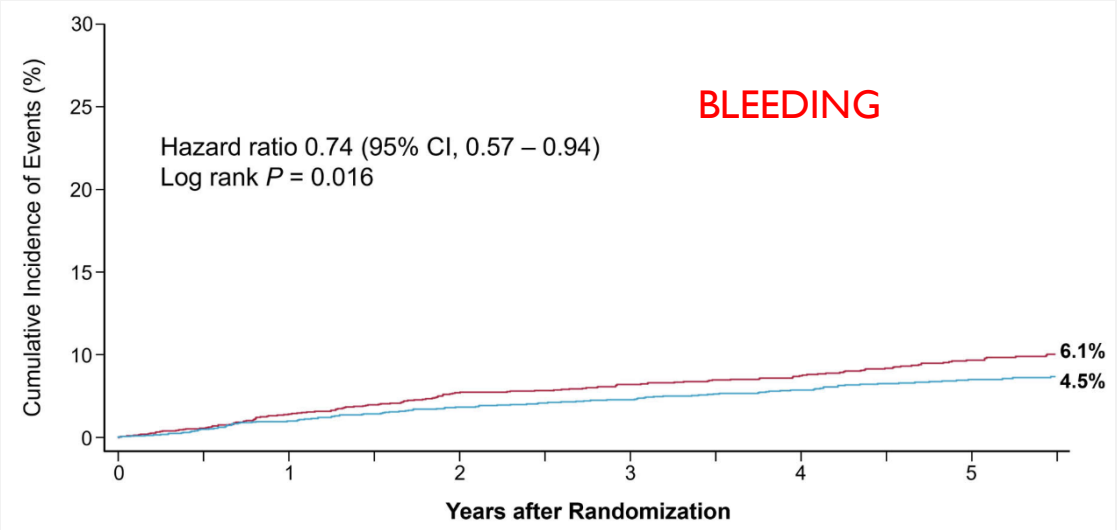
HOST-EXAM

HOST-EXAM

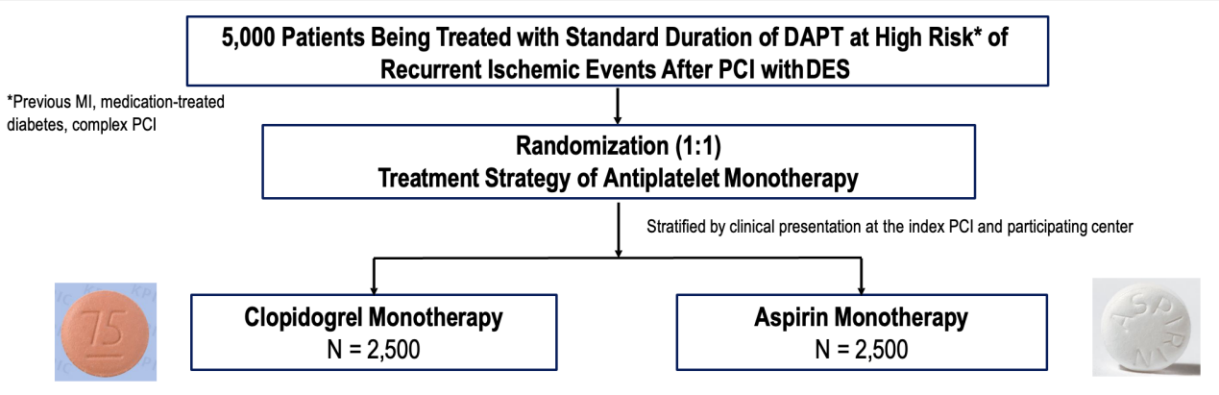
- 5,530 pts randomized to Clopidogrel vs ASA monotherapy 12-18 months post-PCI.
- 26% reduction in MACE at 5 yrs.
  - 39% risk reduction in MI.
- No difference in mortality.

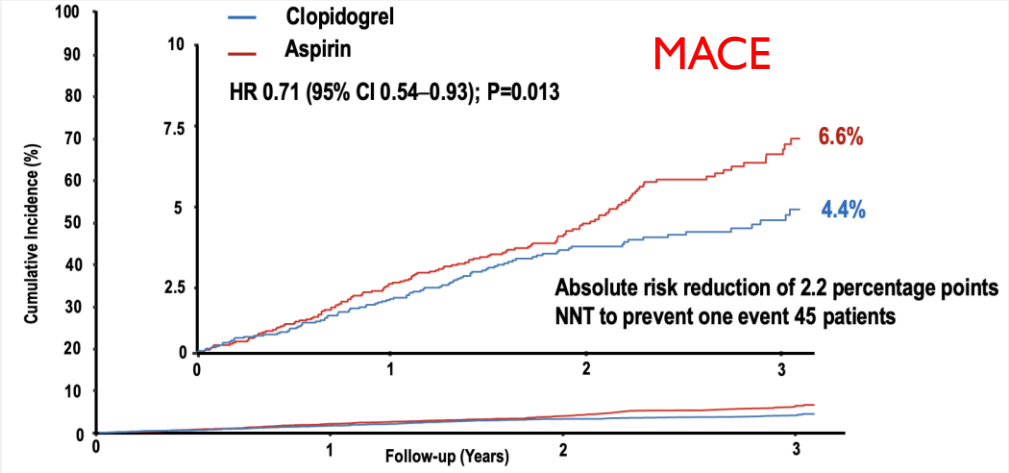
*ACS in 71.9%.



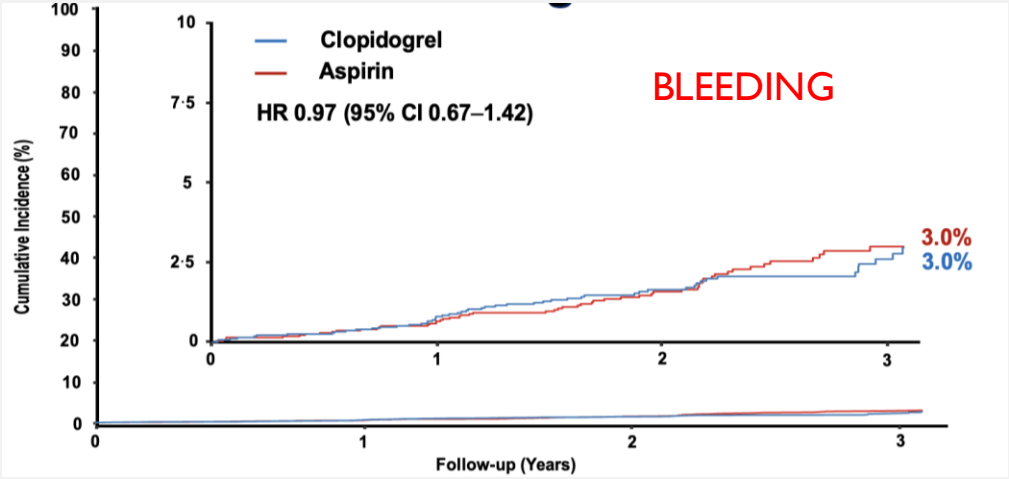


SMART-CHOICE 3

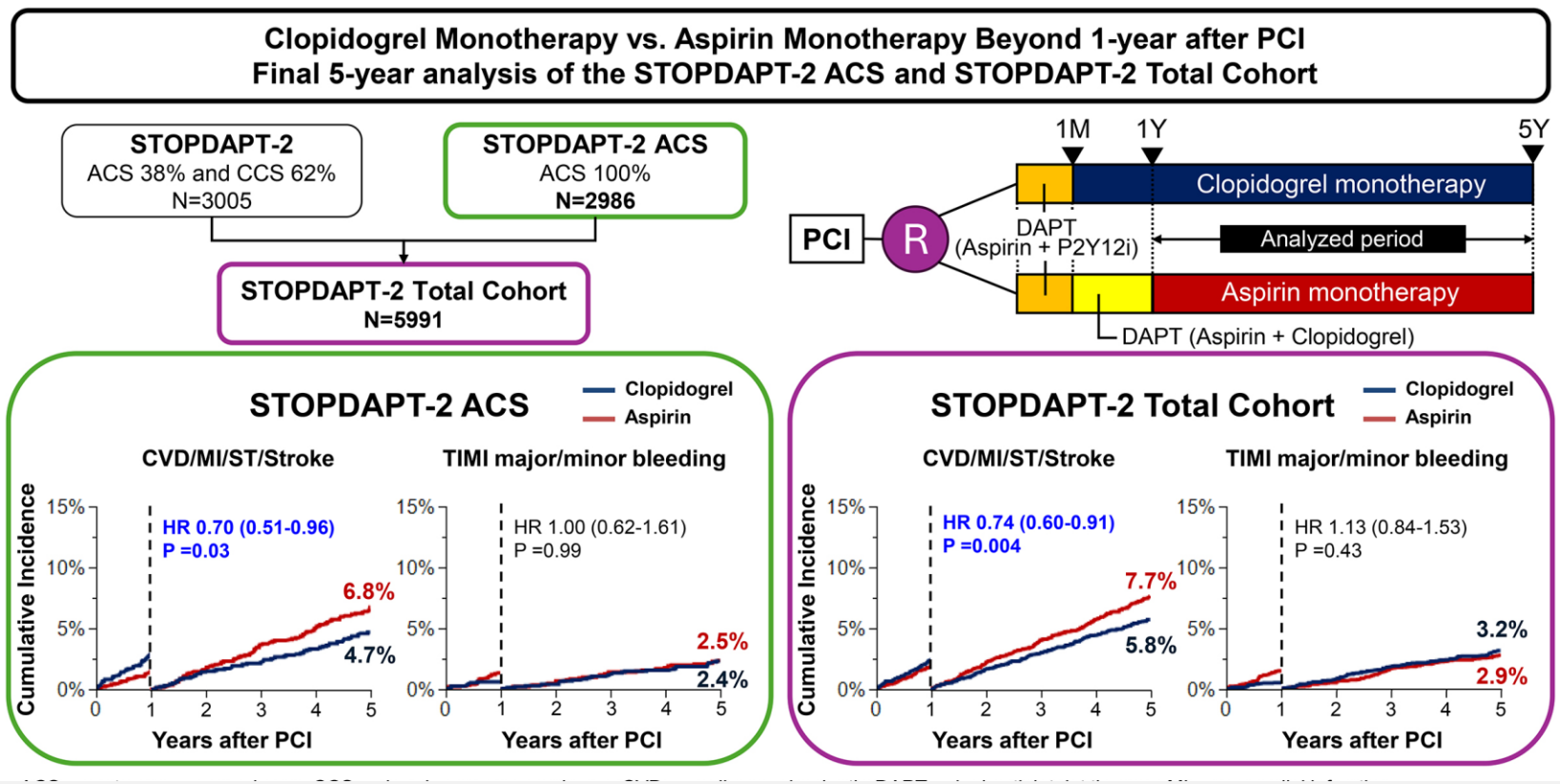




- After >2 yrs follow-up, Clopidogrel monotherapy led to 29% lower risk for primary composite endpoint (all-cause death, MI, or CVA).
- Primarily due to significant reduction in MI.
- No significant difference in rate of major bleeding between groups.



STOPDAPT-2 / ACS – 5 YEAR ANALYSIS



Clopidogrel monotherapy significantly superior to ASA beyond 1 year:

- 23% lower risk of major CV outcomes at 5 yrs.
- 2/2 significant reduction in MI.

SCAI LATE-BREAKING

- Recent late-breaking trial at SCAI 2026:
  - 5,664 high-risk pts (HBR and ischemic) 1 year post-PCI after DAPT.
  - Clopidogrel vs ASA monotherapy was associated w/ lower rates of thrombotic and bleeding events regardless of HBR and/or PCI complexity.
  - Magnitude of net clinical benefit by Clopidogrel monotherapy was more pronounced in pts at highest risk – pts at HBR who underwent complex PCI.

OPT-BIRISK

JAMA Cardiology

RCT: Extended Clopidogrel Monotherapy vs DAPT in Patients With Acute Coronary Syndromes at High Ischemic and Bleeding Risk

POPULATION

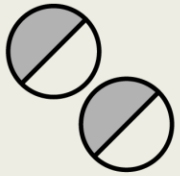
4575 Males, 3183 Females

Patients at high ischemic/bleeding risk who completed 9-12 mo of DAPT after drug-eluting stent for ACS

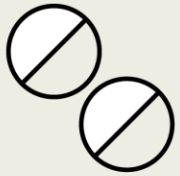
Mean age, 64.8 y

INTERVENTION

7758 Patients randomized



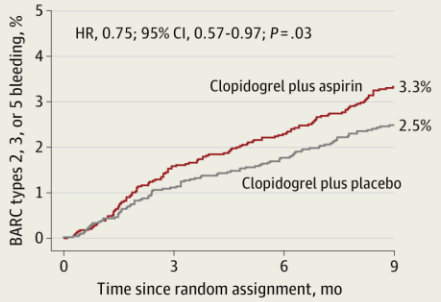
3873 Clopidogrel plus placebo
Extended antiplatelet with clopidogrel plus placebo for 9 mo



3885 Clopidogrel plus aspirin (DAPT)
Extended DAPT with clopidogrel plus aspirin for 9 mo

FINDINGS

Extended 9-mo clopidogrel monotherapy was superior to continuing clopidogrel plus aspirin in reducing clinically relevant bleeding (2.5% vs 3.3%; *P* = .03) without increasing ischemic events



Rate of bleeding in clopidogrel plus placebo group:
2.5% (95 of 3873 patients)
Rate of bleeding in clopidogrel plus aspirin group:
3.3% (127 of 3885 patients)
Difference, −0.8%; 95% CI, −1.6% to −0.1%, *P* = .03

SETTINGS / LOCATIONS

101 Hospitals in China

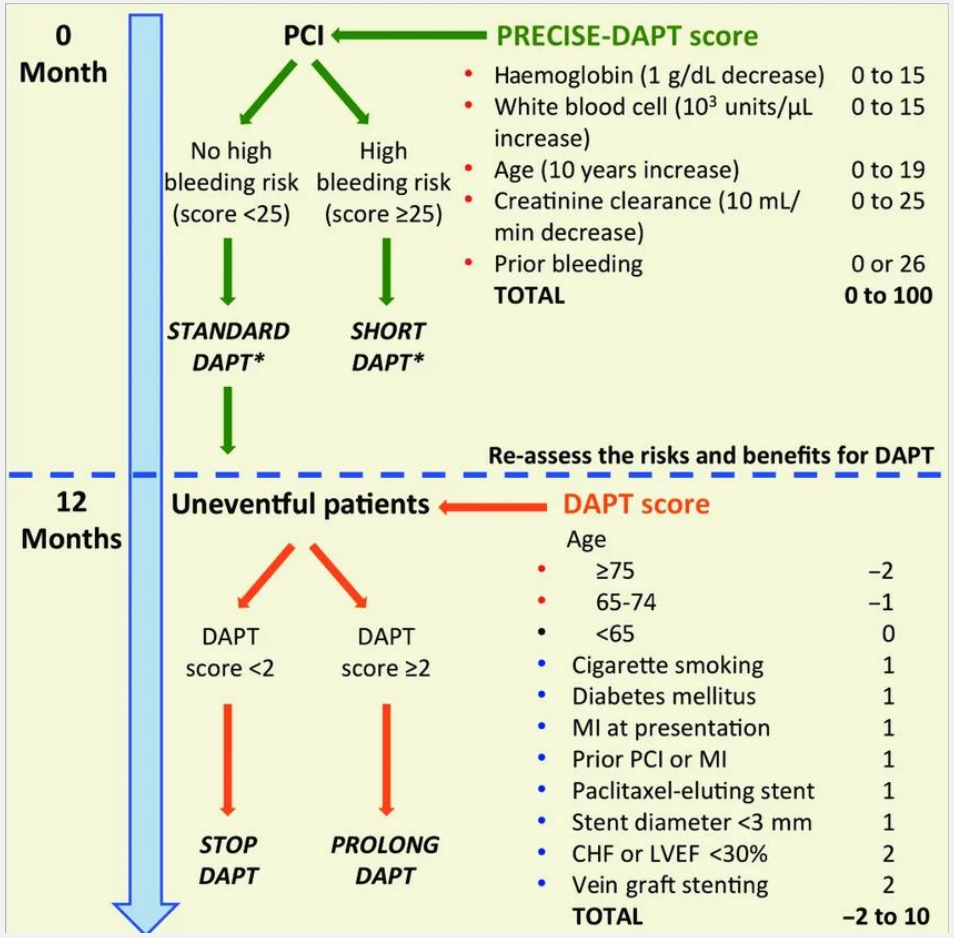
PRIMARY OUTCOME

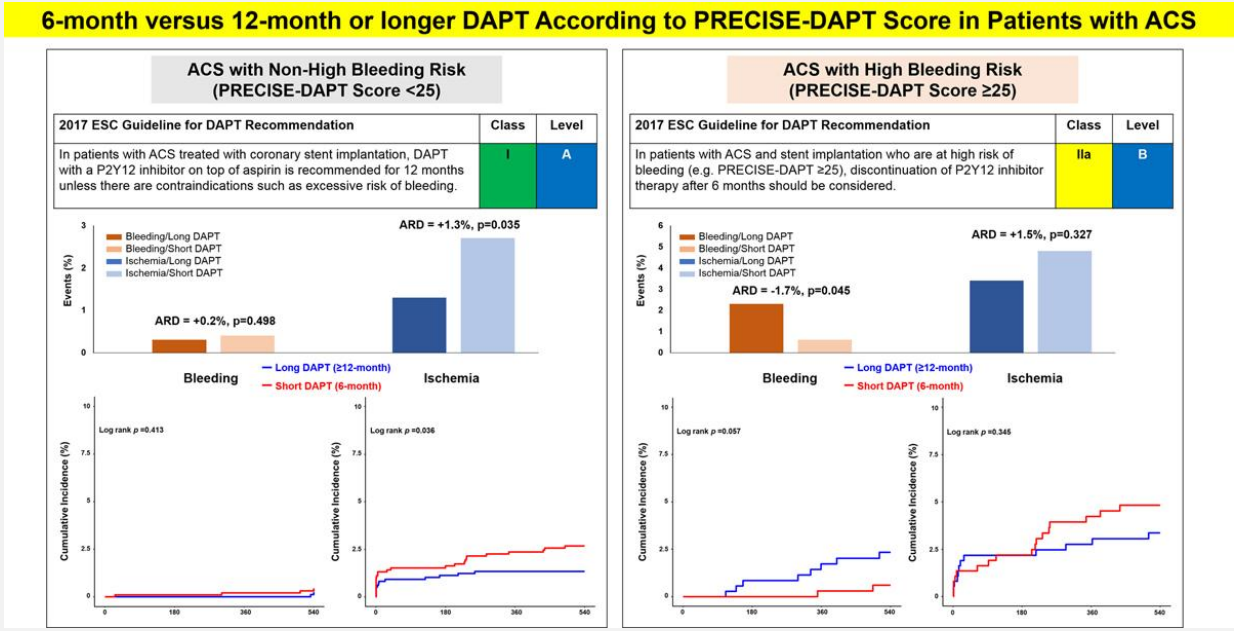
Clinically relevant bleeding at 9 mo defined as Bleeding Academic Research Consortium (BARC) types 2, 3, or 5, including bleeding that is overt and actionable (type 2), requires clinician response (type 3), or is fatal (type 5)

Li Y, Li J, Wang B, et al; OPT-BIRISK Investigators. Extended clopidogrel monotherapy vs DAPT in patients with acute coronary syndromes at high ischemic and bleeding risk: the OPT-BIRISK randomized clinical trial. *JAMA Cardiol*. Published online April 17, 2024. doi:10.1001/jamacardio.2024.0534

- Noninferiority for MACCE was met with Clopidogrel over DAPT:
  - 26% relative risk reduction.

INDIVIDUALIZED TREATMENT





- Longer DAPT associated w/ lower risk of ischemic events w/o significant increase in major bleeding risk vs w/ shorter DAPT in pts w/ non-HBR (PRECISE-DAPT <25). Shorter DAPT associated w/ lower risk major bleeding w/o significant increase of ischemic risk vs longer DAPT in pts w/ HBR (PRECISE-DAPT ≥25).

HOW TO SUMMARIZE IT ALL?

- Short (1-3 mo) DAPT followed by antiplatelet monotherapy (ASA or P2Y12i) best for high bleeding risk.
- P2Y12i (vs ASA) monotherapy following DAPT associated w/ better net clinical benefit (lower bleeding and ischemic events).
- DAPT deescalation is best prescribed to pts at greatest ischemic risk.
- Short DAPT may be best strategy for reducing major bleeding and all-cause death.
  - Both short DAPT and DAPT deescalation reduce major bleeding w/o increasing ischemic events vs standard DAPT regardless of clinical presentation or procedural complexity.

- Early (1-2 months) use of more potent P2Y12i agents (Ticagrelor, Prasugrel) appears better.
- Short (1-3 months) DAPT followed by P2Y12i monotherapy likely represents the optimal DAPT strategy for most, regardless of presentation or complexity.
- Longer DAPT with more potent/consistent P2Y12i (ticagrelor or clopidogrel) is best for high ischemic risk.
- P2Y12i monotherapy (clopidogrel or ticagrelor) provides greater long-term safety and effectiveness than ASA monotherapy.
- Unguided de-escalation 1 month after PCI reduces bleeding w/o incurring ischemic risk asvs longer term prasugrel- or ticagrelor-based DAPT.

KEY TAKEAWAYS

- After ACS, Ticagrelor or Prasugrel > Clopidogrel.
- Few patients benefit from extended DAPT. Use risk scores.
- 3-6 months DAPT likely sufficient in many pts and should be default in patients at HBR (PRECISE DAPT ≥25). Stop ASA and continue P2Y12.
- For post-ACS pts who have tolerated DAPT w/ Ticagrelor, transition to Ticagrelor monotherapy is recommended ≥1 month after PCI.

- Clopidogrel is acceptable 6-18 months after ACS and w/ CCS.
- DAPT de-escalation to Clopidogrel (+Aspirin), reduces bleeding risk w/ similar incidence of ischemic events vs standard DAPT. *
- Consider Clopidogrel over Aspirin for chronic antiplatelet monotherapy.
- For pts requiring dual therapy with long-term AC, discontinue ASA 1-4 weeks post PCI and continue P2Y12i (preferably Clopidogrel). Discontinue P2Y12 at 6 or 12 months and continue AC monotherapy.

END

Aspirin investors: