DAPT Duration: Unsettled or Case Closed?

Duk-Woo Park, MD

Asan Medical Center, Ulsan University College of Medicine, Seoul, Korea

Disclosure

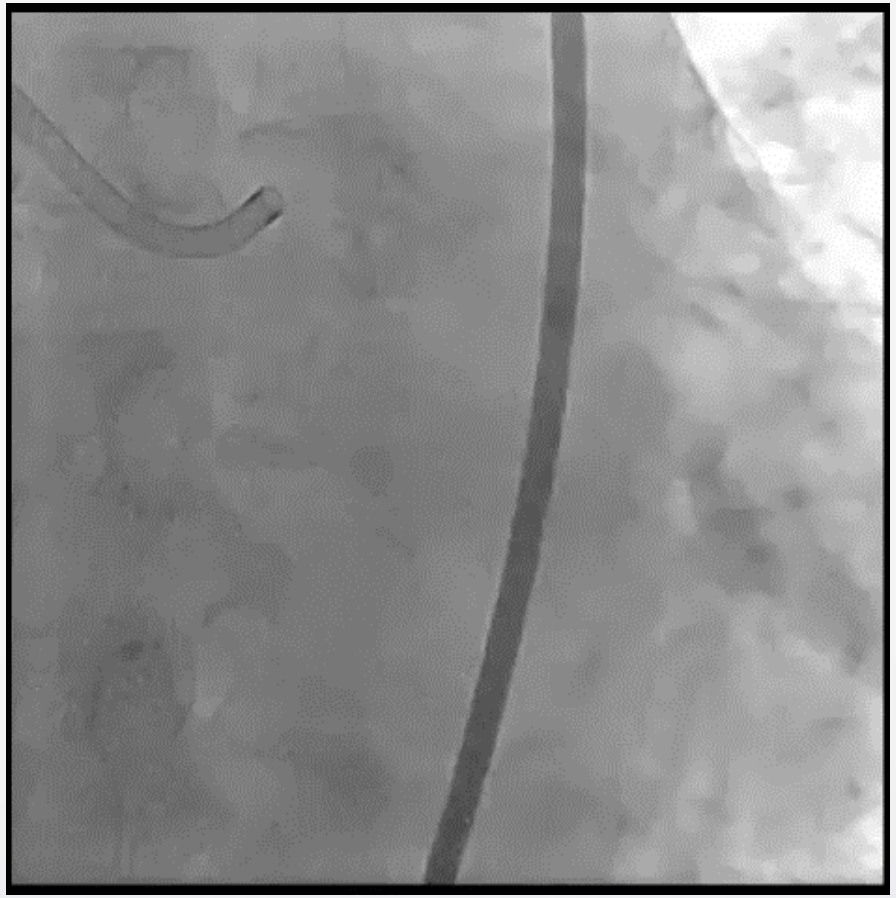
Within the prior 24 months, I have had a relevant financial relationship(s) with an ineligible company(ies) listed below.

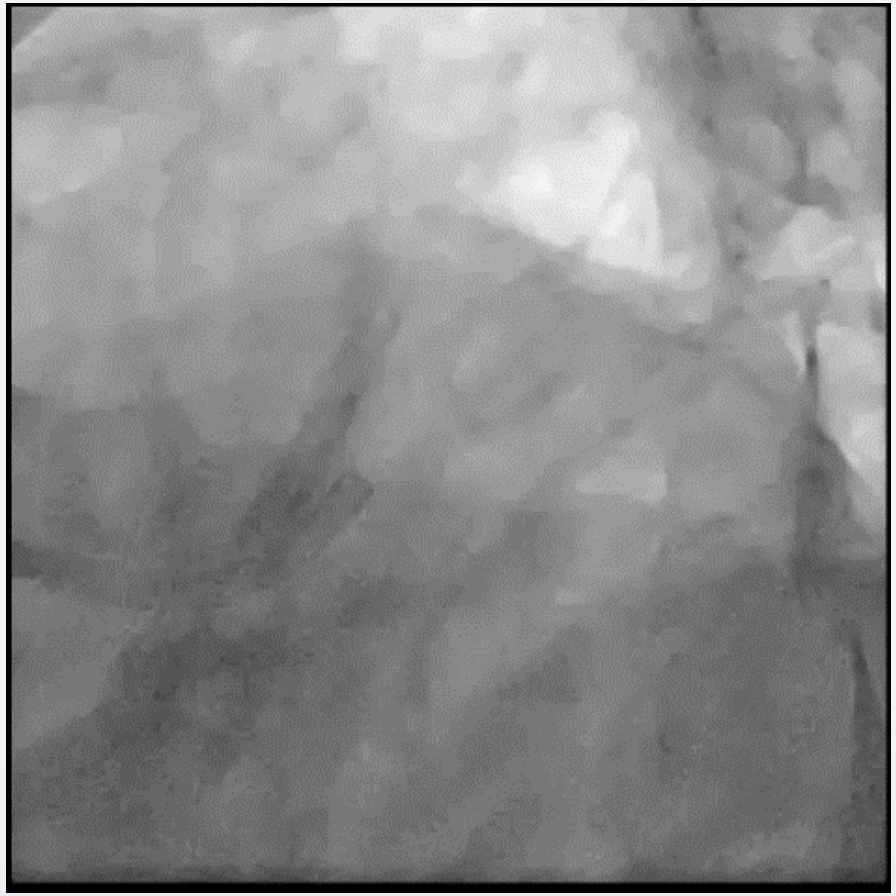
Nature of Financial Relationship	Ineligible Company
Grant/Research Support	Abbott
	Medtronic
	Boston Scientific
	Daiichi-Sankyo
	Edwards Lifescience
	Daewoong Pharm
	HK InnoN
	ChongKunDang Pharm

63 / Male, Unstable Angina

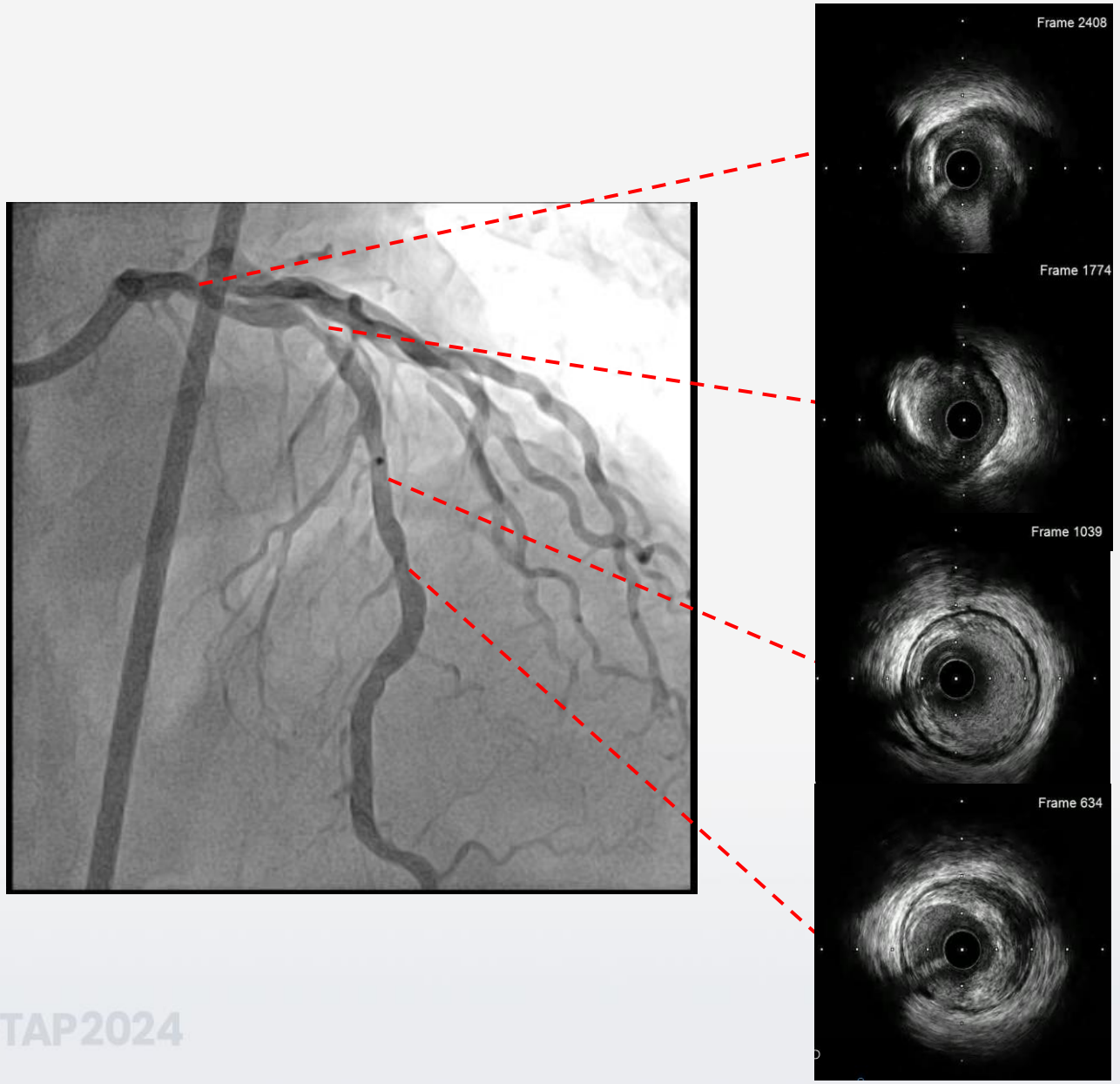
Multiple risk factors: DM/HTN/Hyperlipidemia/Smoking

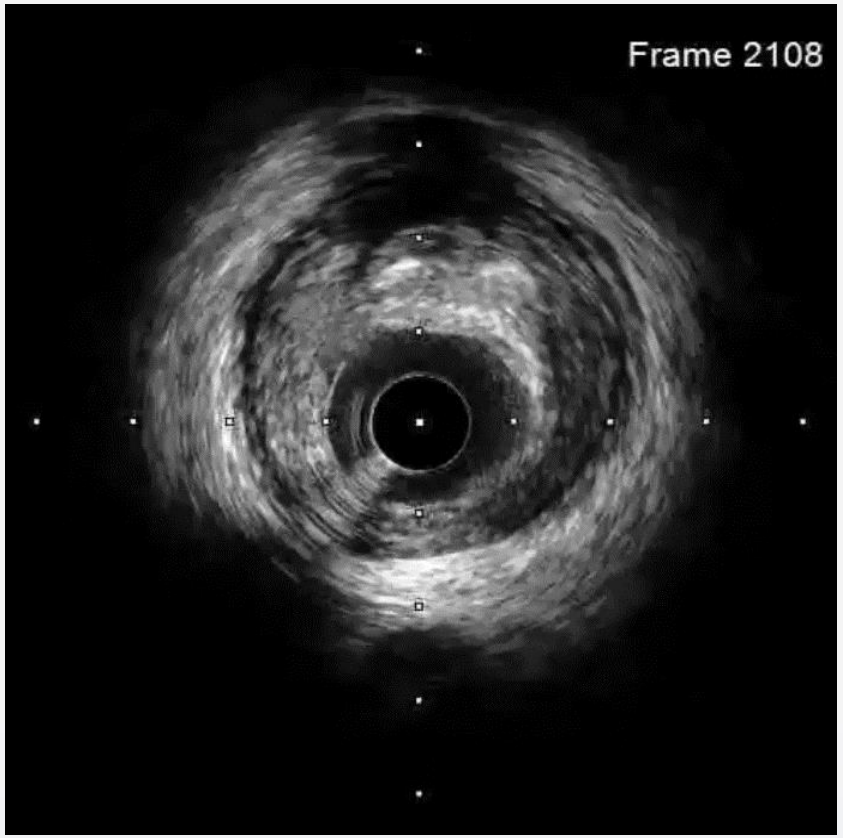
Left Main Bifurcation Disease





We Did Imaging-Guided Complex Left Main PCI



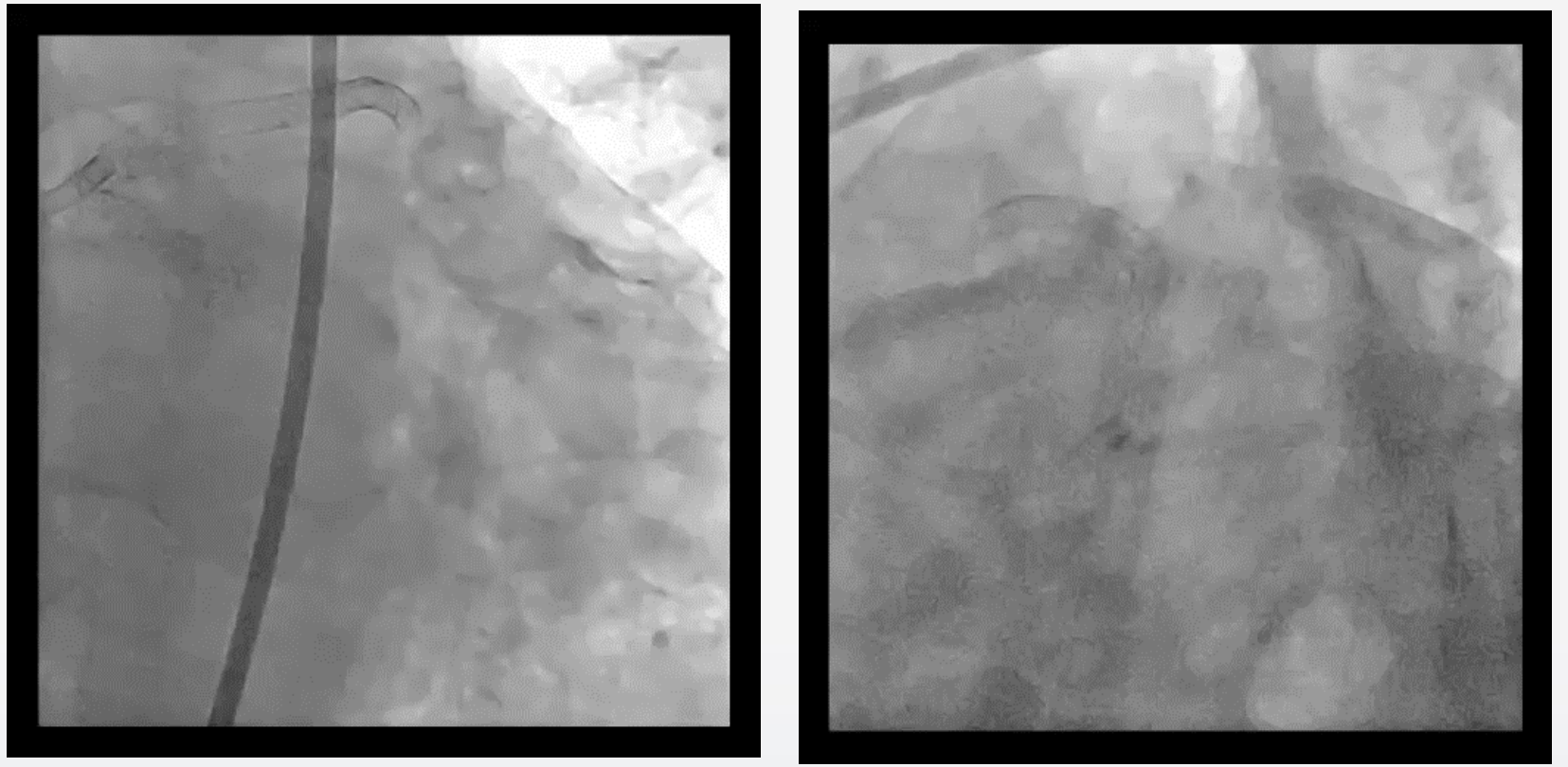


Left Main Shaft

Successful Left Main Bifurcation PCI

Optimal DAPT duration?

6Mo, 1Yr, 2Yr, or More



Double Crush stenting: LAD-DG, LM-LCX

5 DES at LM-LAD (2 stents), LCX (2 stents), DG (1 stent)

DAPT Duration US and EU Guidelines, mainly based on;

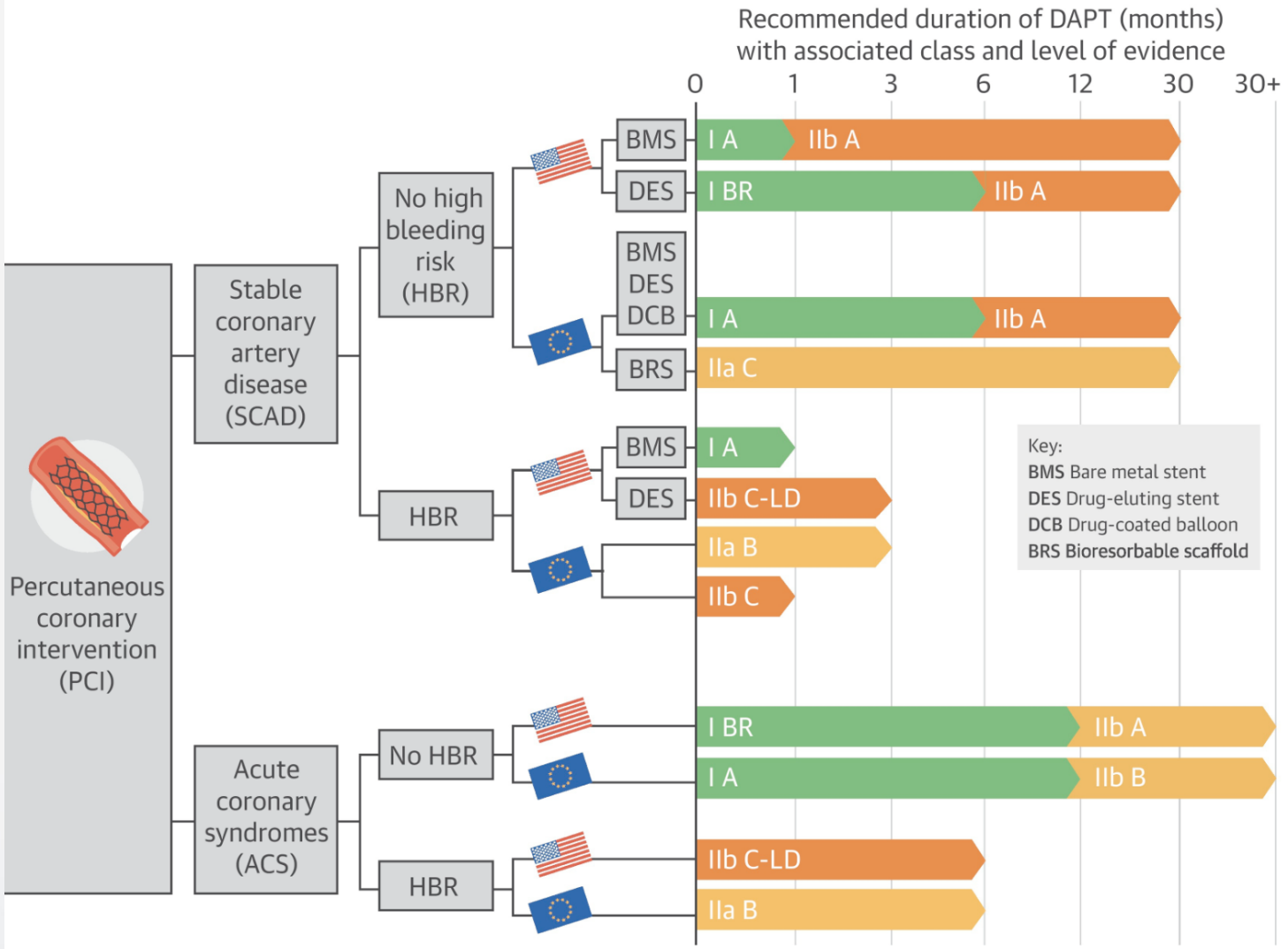
(1) ACS vs. Stable CAD,

(2) HBR Status

DAPT Duration

Roughly *Settled….*

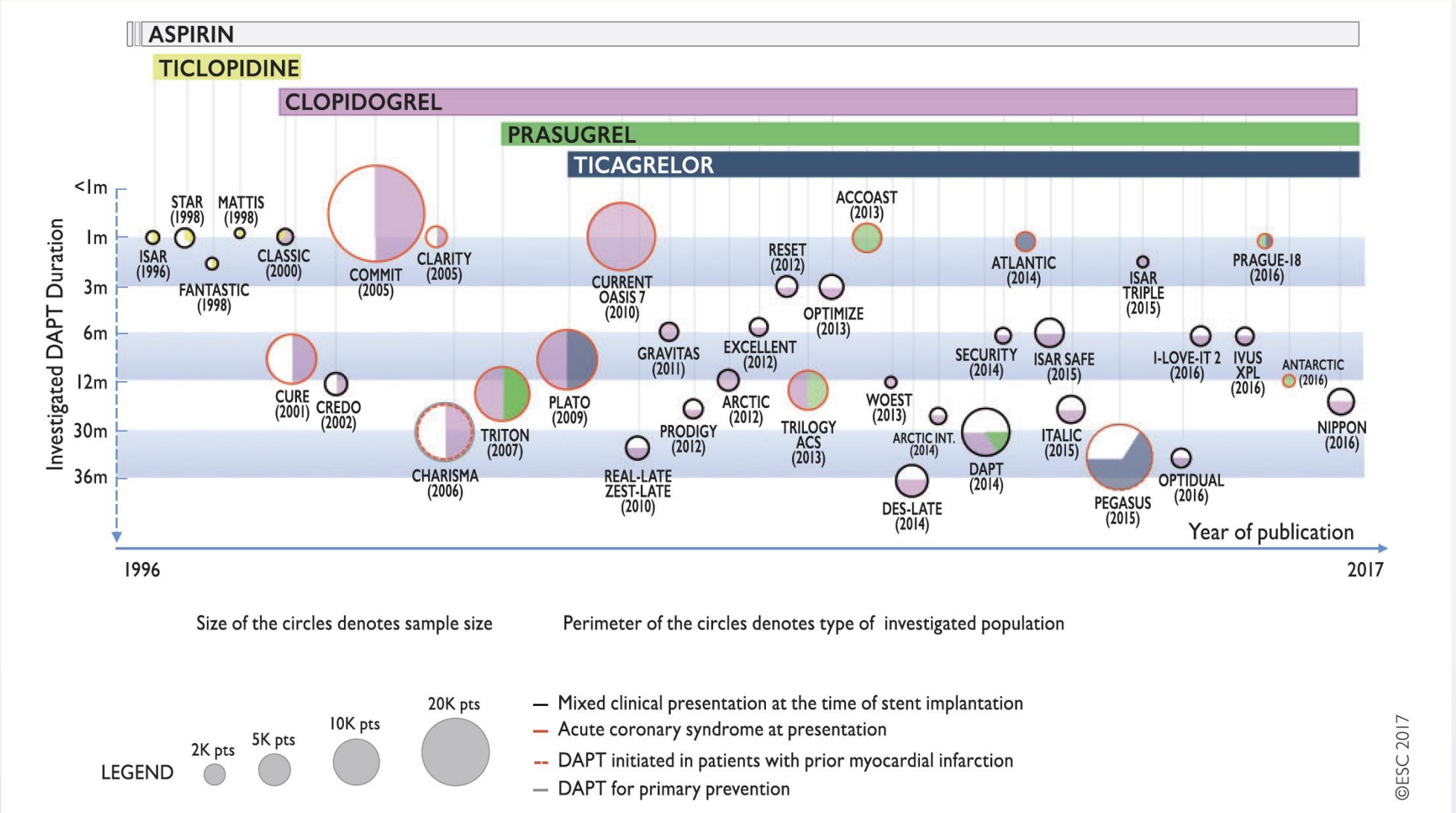
CENTRAL ILLUSTRATION: Recommendations for Dual Antiplatelet Therapy in Patients Undergoing Percutaneous Coronary Intervention



Capodanno, D. et al. J Am Coll Cardiol. 2018;72(23PA):2915-31.

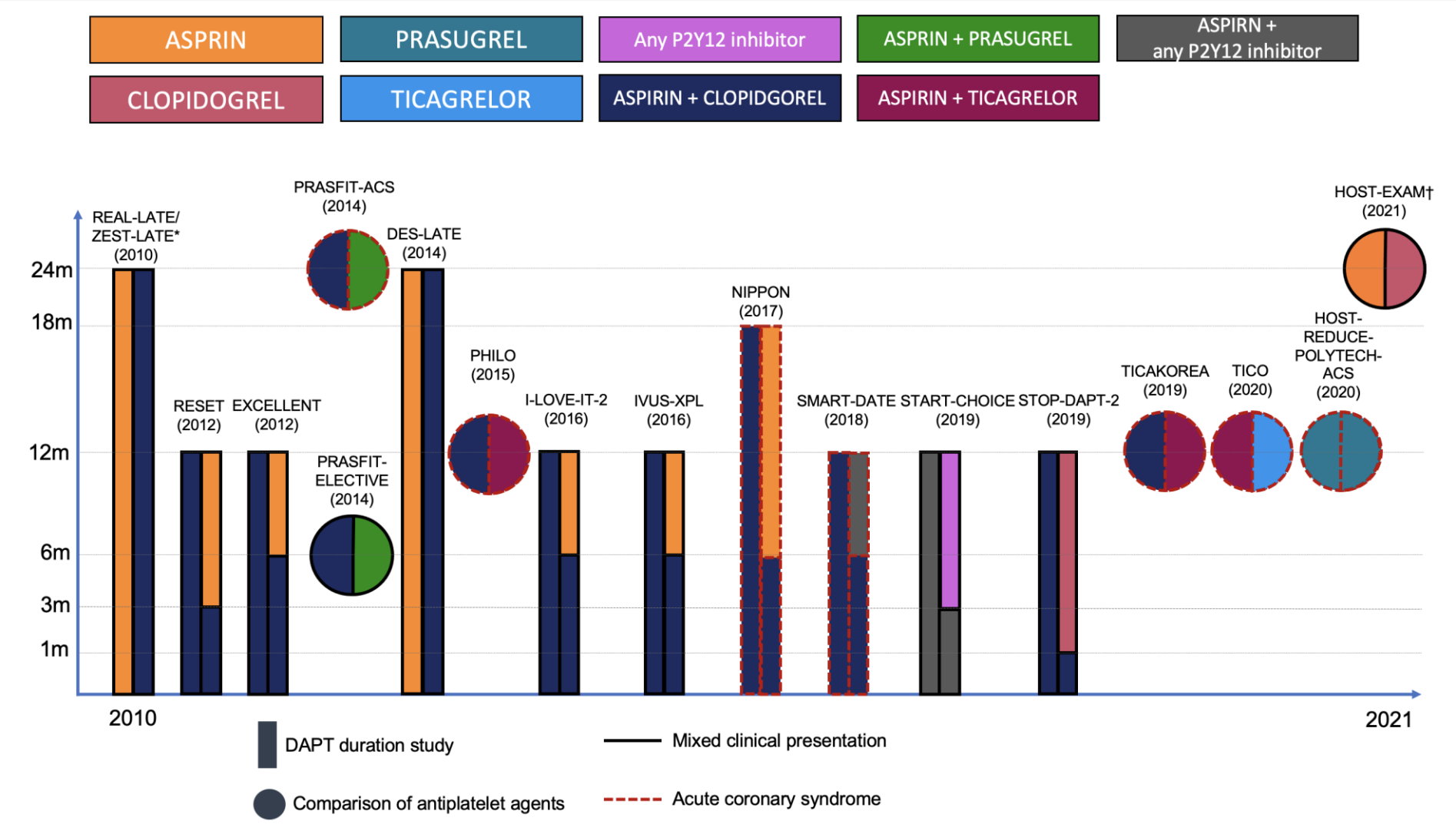
Several Key RCTs in the World

History of DAPT



Eur Heart J . 2018;39(3):213-260

Several Key RCTs in Asian Population



OS Kwon and DW Park. JACC: Asia 2022;2:1–18

Trend of Pragmatic Anti-thrombotic Strategy in High-Ischemic or Bleeding Risk PCI : Escalation and De-escalation

❖ Key Modulatory Parts

- *Duration of DAPT*
- *Potency of P2Y12 inhibitor*
- *Omission of Aspirin*

High-Ischemic Risk Categories : Need for Escalation

High-risk Patient Features

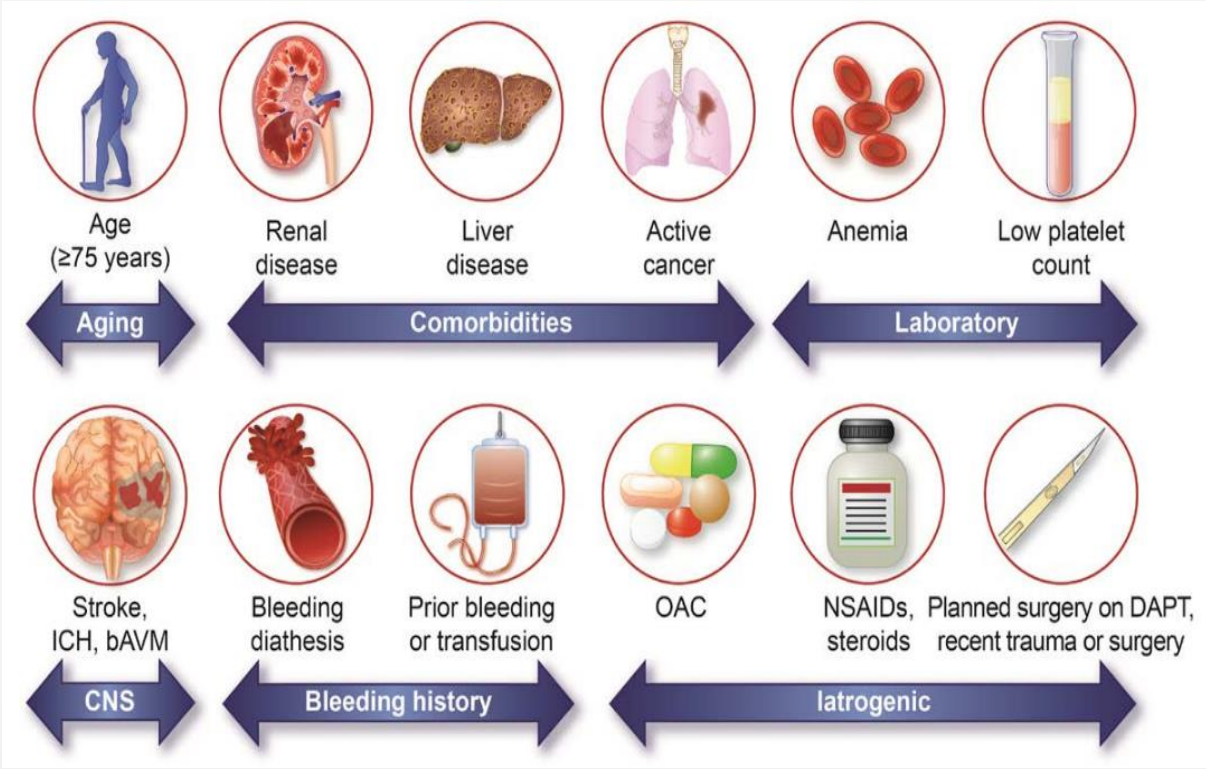
- Previous NSTEMI or STEMI
- Recurrent ischemic event on DAPT
- History of stent thrombosis
- Chronic inflammatory disease
- Diabetes
- Chronic renal dysfunction

High-risk Lesion or Procedure Features

- Complex PCI: Left main, CTO, complex bifurcation, multivessel PCI, severe calcification, diffuse long
- >3 Stents
- Total stent length >60 mm

Lancet 2017;390:810-20

High Bleeding Risk Categories : Need for De-Escalation



Philip Urban, et al. Circulation 2019;140:240–261

ESCALATION: More Potent or Longer Strategy (High-Ischemic Risk)

Trial	Study Population	Intervention	Control	Primary outcome	Follow-up duration	Result
PEGASUS-TIMI 54 (2015)	Prior MI (1~3 year) + High ischemic risk features	1) Ticagrelor 90mg bid + ASA 2) Ticagrelor 60mg bid + ASA	ASA mono	A composite of CV death, MI, or stroke	33 mo	Ticagrelor 90mg: 7.85% Ticagrelor 60mg: 7.77% ASA only: 9.04% 1) vs 3): HR 0.85 (0.75-0.96) 2) vs 3): HR 0.84 (0.74-0.95
				TIMI major bleeding		1) Ticagrelor 90mg: 2.60% 2) Ticagrelor 60mg: 2.30% 3) ASA only: 1.06% 1) vs 3) HR 2.69 (1.96-3.70) 2) vs 3) HR 2.32 (1.68-3.21)
THEMIS-PCI (2019)	Stable angina with diabetes Previous PCI	Ticagrelor (SD → LD) + ASA	Ticagrelor	A composite of CV death, MI, or stroke	3.3 years	Primary endpoint; 7.3% (intv) vs. 8.6% (cont) HR 0.85 (0.74-0.97) Major Bleeding; 2.0% (intv) vs. 1.1% (cont) HR 2.03 (1.48-2.76)
COMPASS-PCI (2020)	Stable angina Previous PCI Previous MI, MVD	2.5mg Rivaroxaban bid + ASA	ASA	A composite of CV death, MI, or stroke	3 years	Primary endpoint; 4.0% (int) vs. 5.5% (cont) HR 0.74 (0.61-0.88) Major Bleeding; 3.3% (intv) vs. 2.0% (cont) HR 1.72 (1.34-2.21)
HOST-EXAM (2021)	PCI after 6-18 months	Clopidogrel monotherapy	ASA mono	A composite of all-cause death, MI, stroke, ACS, BARC 3, or 5 bleeding	2 years	Primary endpoint; 5.7% (intv) vs. 7.7% (cont) HR 0.73 (0.59-0.90)

DE-ESCALATION: SHORT DAPT or P2Y12 Monotherapy (High-Risk Patients)

Trial	Study Population	Intervention	Control	Primary outcome	Follow-up duration	Result
GLOBAL LEADER (2018)	Stable CAD (53%) ACS (47%)	Ticagrelor monotherapy after 1 month	Clopidogrel (stable CAD) or ticagrelor (ACS) + ASA for 12 months	A composite of all-cause death, or MI	24 months	Intervention: 3.81% Control: 4.37% HR 0.78 (0.75-1.01)
SMART-DATE (2018)	ACS (100%)	6M DAPT, then 6M ASA monotherapy	≥ 12M DAPT	A composite of all-cause death, MI, or stroke	18 months	Intervention: 4.7% Control: 4.2% Non-inferiority P=0.03 MI risk; Intervention: 1.8% Vs. Control: 0.8% HR 2.41 (1.15-5.05)
SMART CHOICE (2019)	Stable CAD (42%) ACS (58%)	Any P2Y12i monotherapy after 3 months	Any P2Y12i + ASA	A composite of all-cause death, MI or stroke	12 months	Intervention: 2.9% Control: 2.5% Non-inferiority P 0.007
STOPDAPT-2 (2019)	Stable CAD(62%) ACS (38%)	Clopidogrel monotherapy after 1 month	Clopidogrel + ASA	A composite of cv death, MI, ST, stroke or TIMI major or minor bleeding	12 months	Intervention: 2.36% Control: 3.70% Non-inferiority P <0.001 Superiority P 0.04
TWILIGHT (2019)	Stable CAD (35%) ACS (65%)	Ticagrelor monotherapy after 3 months	Ticagrelor + ASA	BARC 2, 3, or 5 bleeding	15 months	Intervention: 4.0% Control: 7.1% HR 0.56 (0.45-0.68)
TICO (2020)	ACS (100%)	Ticagrelor monotherapy after 3 months	Ticagrelor + ASA	A composite of TIMI major bleeding, death, MI, ST, stroke, or TVR	12 months	Intervention: 3.9% Control: 5.9% HR 0.66 (0.48-0.92)
TALOS-AMI (2021)	AMI (100%)	Ticagrelor -> unguided clopidogrel	Ticagrelor + ASA	Net clinical outcome (CV death, MI, stroke, or	12 months	Intervention: 4.6% Control: 8.1%

DE-ESCALATION: SHORT DAPT (HBR Patients)

Trial	Study Population	Intervention	Control	Primary outcome	Follow-up duration	Result
MASTER DAPT (2021)	High-Bleeding Risk Stable CAD (52%) ACS (48%)	No OAC: 1M DAPT OAC: 1M DAPT, then 5M SAPT	No OAC: 6M DAPT, 6M SAPT OAC: 3M DAPT, 9M SAPT	A composite of all-cause death, MI, stroke or major bleeding	12 months	Intervention: 7.5% Control 7.7% HR 0.97 (0.78-1.20) Non-inferiority P <0.001
SENIOR (2018)	Old age ≥ 75 y/o Stable CAD (55%) ACS (45%)	1M DAPT (Stable CAD) 6M DAPT (ACS) DES patients	1M DAPT (Stable CAD) 6M DAPT (ACS) BMS patients	A composite of all-cause death, MI, ID-TLR, or stroke	12 months	Intervention: 12% Control: 16% HR 0.71 (0.52-0.94)
ONYX ONE (2020)	High-Bleeding Risk Stable CAD (46%) ACS (54%)	1M DAPT DES patients (Resolute Onyx)	1M DAPT DCB patients	A composite of CV death, MI or ST	12 months	Intervention: 17.1% Control: 16.9% Non-inferiority P 0.01
BIOFLOW-DAPT (2023)	High-Bleeding Risk Stable CAD (71%) ACS (29%)	1M DAPT DES patients (Orsiro Mission)	1M DAPT DES patients (Resolute Onyx)	A composite of CV death, MI or ST	12 months	Intervention: 3.6% Control: 3.4% Non-inferiority P<0.0001

Duration of DAPT: Most Updated Guidelines

CLINICAL PRACTICE GUIDELINE

2023 AHA/ACC/ACCP/ASPC/NLA/PCNA Guideline for the Management of Patients With Chronic Coronary Disease

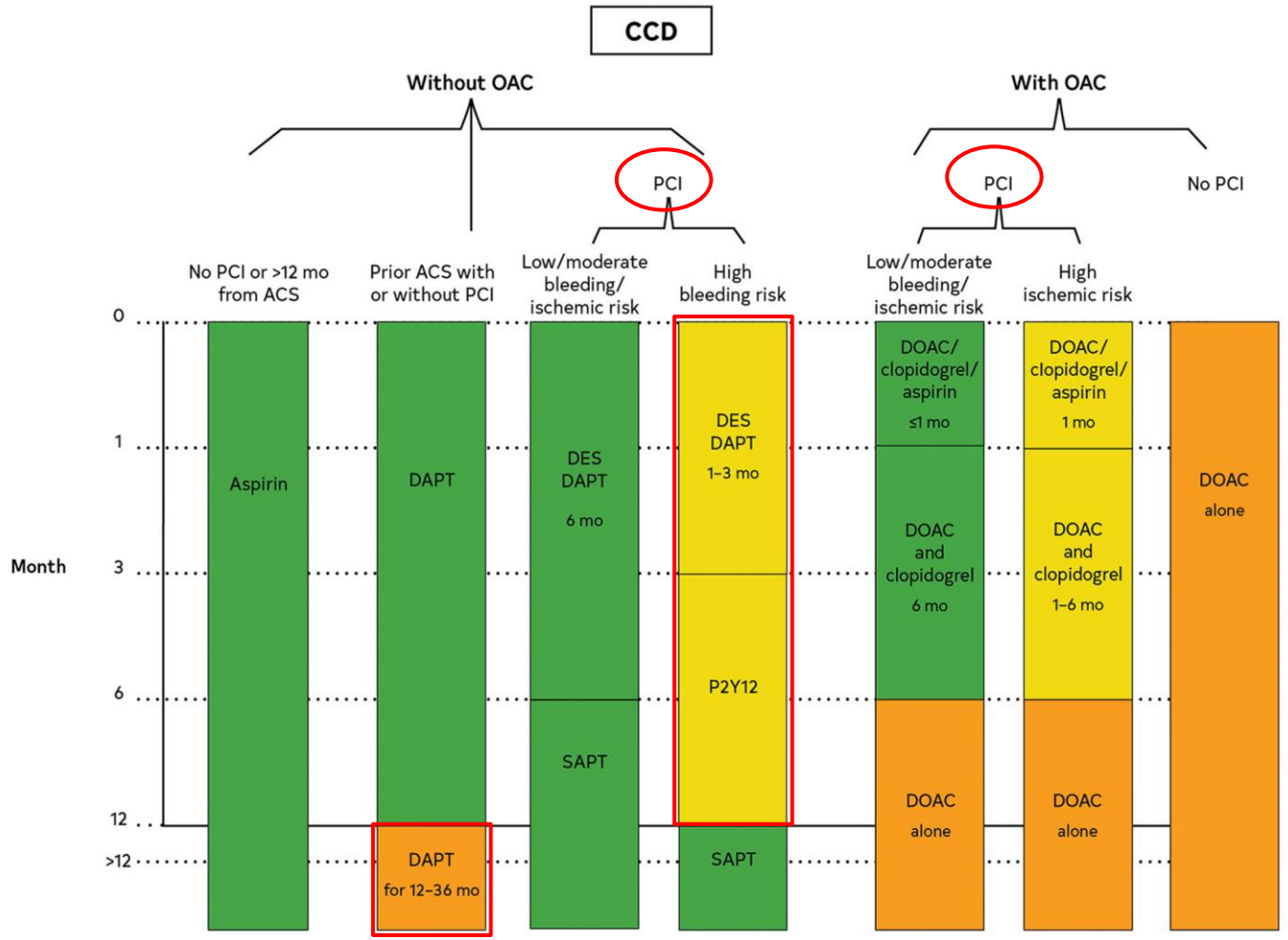
A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines

Developed in Collaboration With and Endorsed by the American College of Clinical Pharmacy, American Society for Preventive Cardiology, National Lipid Association, and Preventive Cardiovascular Nurses Association

Endorsed by the Society for Cardiovascular Angiography and Interventions

J Am Coll Cardiol. 2023 Aug 29;82(9):833-955.

FIGURE 9 Recommended Duration of Antiplatelet Therapy*†



ACS indicates acute coronary syndrome; ASA, aspirin; CCD, chronic coronary disease; DAPT, dual antiplatelet therapy; DES, drug-eluting stent; DOAC, direct oral anticoagulant; MI, myocardial infarction; OAC, oral anticoagulants; PCI, percutaneous coronary intervention; SAPT, single antiplatelet therapy. *Colors correspond to Class of Recommendation in Table 3. †This figure does not encompass all recommendations within this section.

CLASS (STRENGTH) OF RECOMMENDATION

CLASS 1 (STRONG) — Benefit >>> Risk

Suggested phrases for writing recommendations:
- Is recommended
- Is indicated/useful/effective/beneficial
- Should be performed/administered/other
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is recommended/indicated in preference to treatment B
  - Treatment A should be chosen over treatment B

CLASS 2a (MODERATE) — Benefit >> Risk

Suggested phrases for writing recommendations:
- Is reasonable
- Can be useful/effective/beneficial
- Comparative-Effectiveness Phrases†:
  - Treatment/strategy A is probably recommended/indicated in preference to treatment B
  - It is reasonable to choose treatment A over treatment B

CLASS 2b (WEAK) — Benefit ≥ Risk

Suggested phrases for writing recommendations:
- May/might be reasonable
- May/might be considered
- Usefulness/effectiveness is unknown/unclear/uncertain or not well-established

J Am Coll Cardiol. 2023 Aug 29;82(9):833-955.

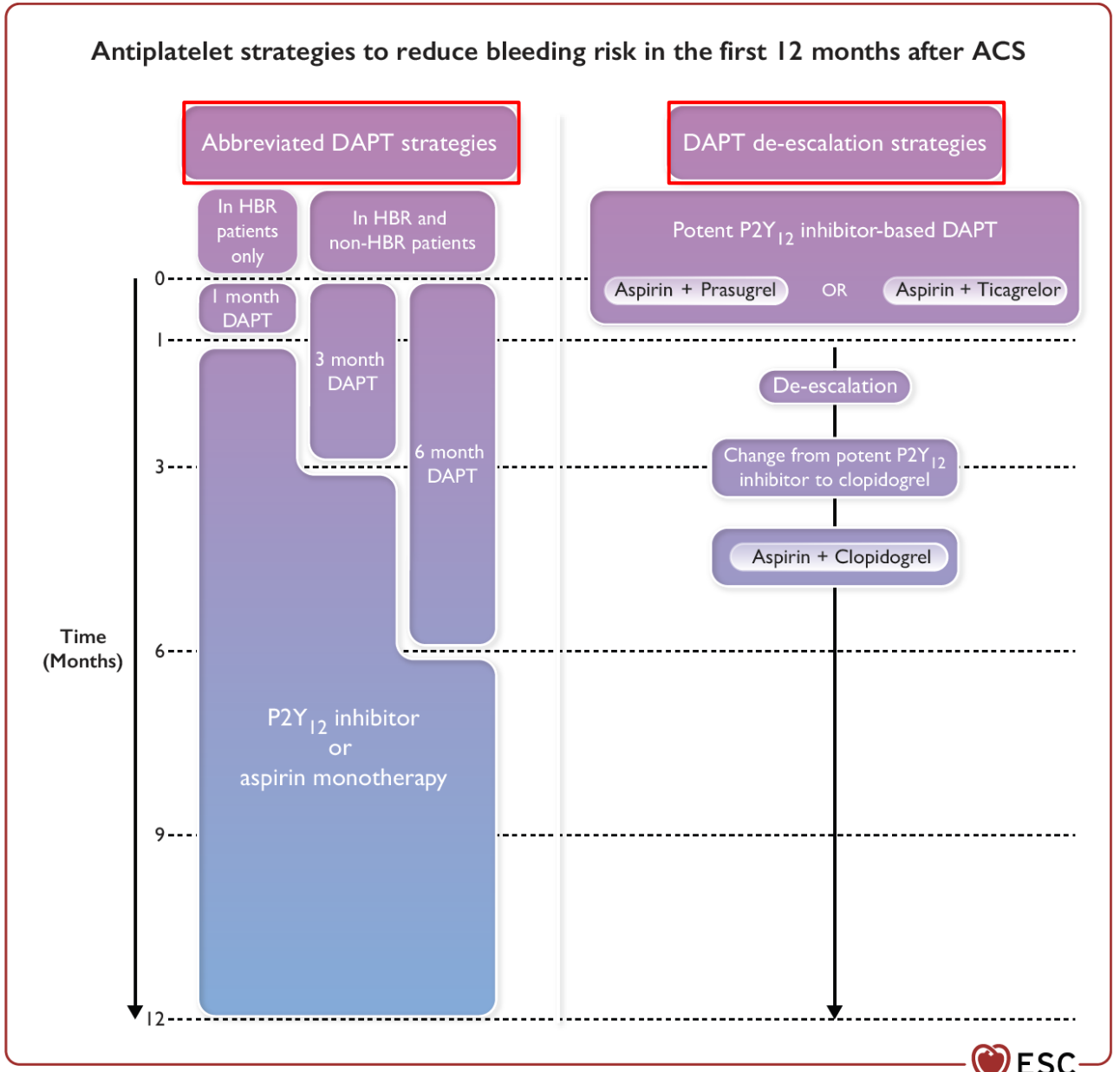
ESC European Society of Cardiology
European Heart Journal (2023) **44**, 3720–3826
https://doi.org/10.1093/eurheartj/ehad191

ESC GUIDELINES

2023 ESC Guidelines for the management of acute coronary syndromes

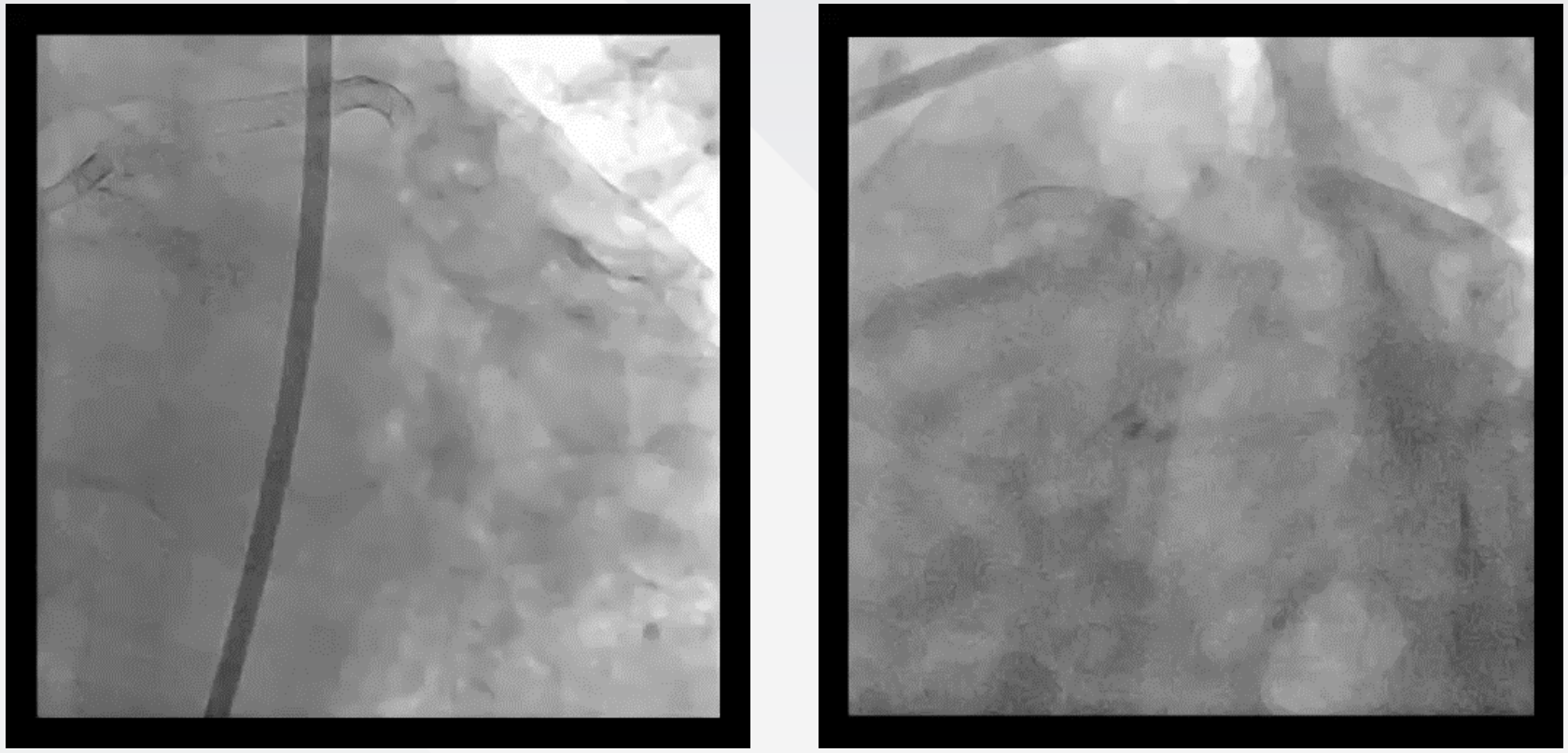
Developed by the task force on the management of acute coronary syndromes of the European Society of Cardiology (ESC)

DAPT Strategy for ACS (Class IIa): Still Unsettled, Still Dynamic



European Heart Journal (2023) 44, 3720–3826

DAPT Strategy (Intensity or Duration) for High-Risk Complex (CHIP)
: Still Unsettled

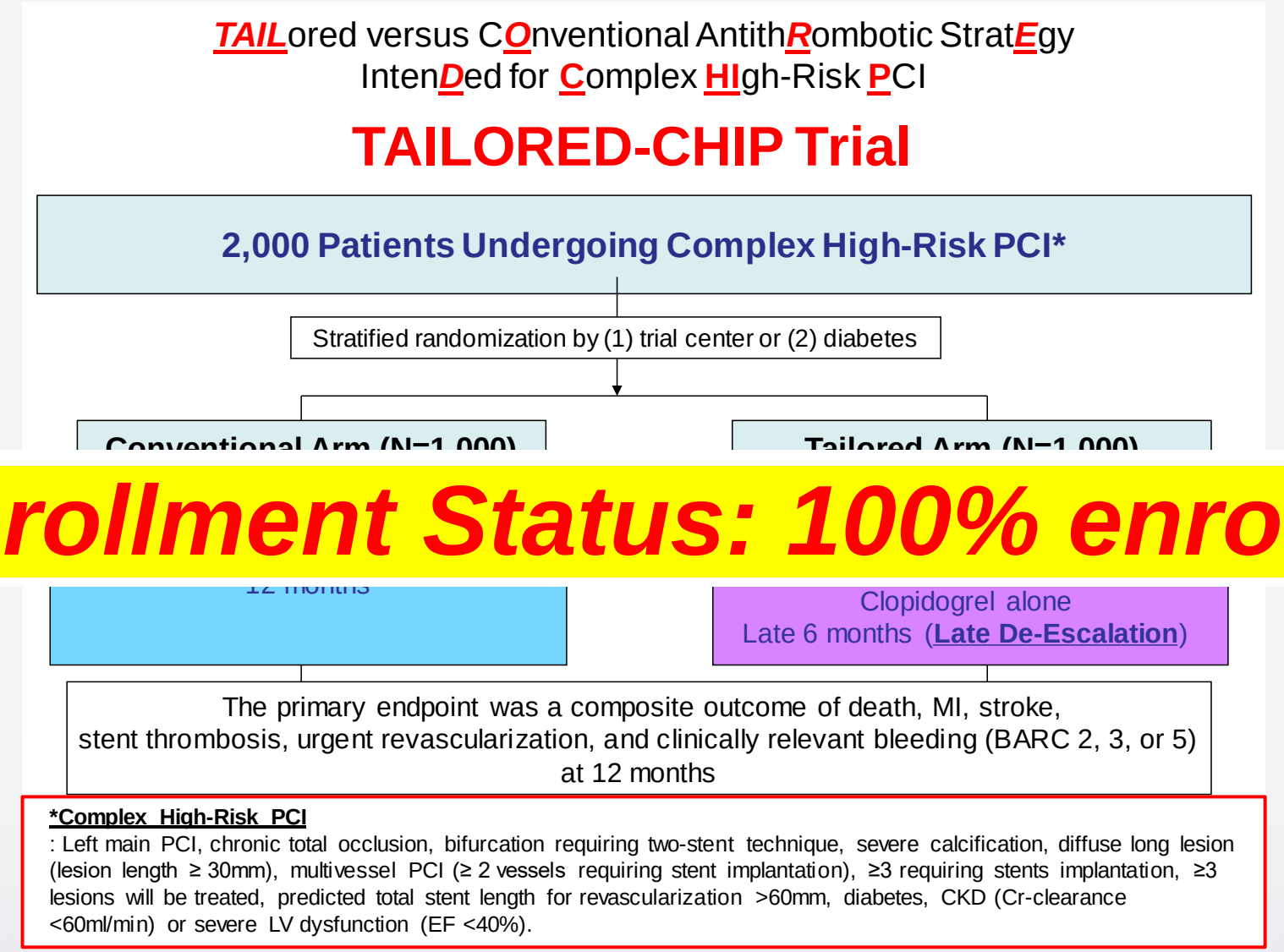


Double Crush stenting: LAD-DG, LM-LCX
5 DES at LM-LAD (2), LCX (2), DG (1)

High-Ischemic Risk and Complex PCI Patients

TAILored versus C***O***nventional Antith***R***ombotic Strat***E***gy
Inten***D***ed for **C**omplex **HI**gh-Risk **P**CI

TAILORED-CHIP Trial



Enrollment Status: 100% enrolled

Complex High-Risk PCI
: Left main PCI, chronic total occlusion, bifurcation requiring two-stent technique, severe calcification, diffuse long lesion (lesion length ≥ 30mm), multivessel PCI (≥ 2 vessels requiring stent implantation), ≥3 requiring stents implantation, ≥3 lesions will be treated, predicted total stent length for revascularization >60mm, diabetes, CKD (Cr-clearance <60ml/min) or severe LV dysfunction (EF <40%).

Trial P.I.: DW Park and SJ Park

Summary

- Optimal DAPT strategies are a cornerstone of the management of ACS or PCI and have constantly evolved to balance ischemia and bleeding risk.
- A one-size-fits-all approach would be not suited to optimal DAPT strategy (duration or intensity) for patients following ACS or PCI.
- A careful assessment of thrombotic risk vs. bleeding risk is thus required via a tailored, potentially dynamic strategy as well as a treatment plan based on individual risk.
- ***DAPT Strategy: Still Unsettled or Not Yet Case Closed, Especially for CHIP-PCI Patients?***