ANTIPLATELET REGIMENS:

How Long, How Many?

John Carter Hemphill, M.D., F.A.C.C.
Chattanooga Heart Institute
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DISCLOSURES:

• I have no financial disclosures.
COMMON USES OF ANTIPLATELET THERAPY:

• For treatment of Acute Coronary Syndromes (ACS), including ST segment Elevation Myocardial Infarction (STEMI), Non-ST Segment Elevation Myocardial Infarction (NSTEMI), and Unstable Angina (UA)
• For prevention of coronary stent thrombosis after Percutaneous Coronary Intervention (PCI)
• For prevention of stent thrombosis and embolism after carotid artery stenting or peripheral artery stenting
• For prevention of ischemic events after acute stroke
• For prevention of embolic events after transcatheter valve replacement/repair
COMMON ANTIPLATELET AGENTS

• Aspirin - inhibits platelet cyclooxygenase, reducing prostaglandin and thromboxane A2 synthesis

• P2Y12 inhibitors:
  • Clopidogrel
  • Ticagrelor
  • Prasugrel
ASPIRIN - INDICATIONS:

• Treatment with aspirin 75 to 162 mg daily should be continued indefinitely in the absence of contraindications in patients with stable ischemic heart disease (SIHD) – 2012 ACC/AHA Guidelines for SIHD: Class I, level of evidence A.

• Aspirin should be given to all patients with Non-ST-Segment Elevation Acute Coronary Syndromes and continued indefinitely - 2014 ACC/AHA Guideline for NSTE-ACS: Class I, level of evidence A.

• Treatment with aspirin (81mg dose preferred) is recommended after ST-Segment Elevation Myocardial Infarction (STEMI), whether treated with primary PCI or Fibrinolysis. Aspirin should be continued indefinitely – 2013 ACC/AHA Guideline for Management of STEMI: Class I, level of evidence A.

• Aspirin 75 to 325mg is recommended for patients with symptomatic peripheral vascular disease to reduce the risk of MI, stroke or vascular death – 2011 ACC/AHA Guidelines for Management of Patients with Peripheral Arterial Disease: Class I, level of evidence B

• Antiplatelet therapy with aspirin alone (75-325 mg per day) or clopidogrel alone (75 mg per day) is recommended to reduce MI, stroke, and vascular death in patients with symptomatic PAD – 2016 AHA/ACC Lower Extremity PAD Guideline: Class I, level of evidence A.
ASPIRIN DOSING:

- Aspirin doses as low as 30-50mg/day have been shown to achieve equivalent platelet inhibition to doses >300mg/day.

- High dose aspirin (>300mg/day) may increase the risk of gastric ulcer disease and GI bleeding.

- High doses of aspirin (>300mg/day) may interfere with the effects of ticagrelor.

- Current guidelines recommend a daily aspirin dose of 81mg.
ASPIRIN FOR PRIMARY PREVENTION:

• ASPREE trial:
  • published in the NEJM, September, 2018
  • Higher all-cause mortality observed in otherwise healthy older adults who received aspirin 100mg enteric-coated daily.
  • Excluded patients with previously diagnosed coronary heart disease, CHF, or atrial fibrillation

• ARRIVE trial:
  • Published in The Lancet, August, 2018
  • Showed no benefit for primary prevention of cardiovascular or cerebrovascular events in men aged 55 and older or women aged 60 and older at average cardiovascular risk
  • Excluded patients with coronary heart disease, CHF, atrial fibrillation, or with a history of vascular intervention
ASPIRIN FOR PRIMARY PREVENTION:

• ASCEND Trial:
  • Published in the New England Journal of Medicine, October, 2018
  • A randomized, controlled trial of aspirin 100mg daily vs. placebo for prevention of cardiovascular disease, stroke or vascular death in adults with diabetes aged 40 or older
  • Showed a reduction in the risk of serious vascular events (8.5% vs. 9.6%) at the cost of increased major bleeding events (4.1% vs. 3.2%)
  • Excluded patients with history of previous MI, stroke or arterial revascularization procedure
Clopidogrel is a prodrug, and must be metabolized through a CYP450 enzyme pathway to produce the active metabolite that selectively inhibits the binding of ADP to the platelet P2Y12 receptor.

Some patients will have a genetically determined polymorphism of the relevant CYP450 enzymes that results in reduced metabolism of clopidogrel into the active metabolite, thereby reducing the antiplatelet activity of the drug.
PRASUGREL METABOLISM:

• Prasugrel is also a prodrug, however it is metabolized more reliably: first through esterases in the intestine and blood serum, then through a less genetically variable CYP450-mediated pathway into its active metabolite.

• Compared to clopidogrel, prasugrel acts more rapidly after a loading dose and is a more potent inhibitor of platelet aggregation.

• Prasugrel is contra-indicated in patients with history of stroke/transient ischemic attack (TIA), and is relatively contraindicated in patients 75 years of age and older due to increased risk of fatal and intracranial bleeding.
TICAGRELOR METABOLISM:

• Unlike clopidogrel and prasugrel, ticagrelor is not a prodrug (the drug itself is a potent antiplatelet agent). However, some of the metabolites of ticagrelor also have antiplatelet activity.

• Ticagrelor is contra-indicated in patients with a history of intracranial hemorrhage, but is not absolutely contra-indicated in patients 75 years old or older or with a history of ischemic stroke.

• Aspirin doses >100mg may reduce the effectiveness of ticagrelor.
2016 ACC/AHA Guideline
Focused Update on Duration of Dual Antiplatelet Therapy in Patients With Coronary Artery Disease

A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines


Developed in Collaboration With the American Association for Thoracic Surgery, American Society of Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Cardiovascular Anesthesiologists, and Society of Thoracic Surgeons

Endorsed by Preventive Cardiovascular Nurses Association and Society for Vascular Surgery

Focused Update Writing Group

Glen R. Behr, MD, FACC, FARA, Chair
Eric B. Bois, MD, FACC, FICA*
John A. Bhole, MD, FACC
Ralph G. Brindis, MD, MPH, MACE, FARA
Stephen B. Fine, MD, MPH
Lee A. Fleisher, MD, FACC, FABA
Christopher B. Granger, MB, FACC, FARA*
Richard A. Lagani, MD, MBA, FACC
Michael J. Mack, MD, FACC*
Lawrence Masiel, MD, MPH, FACC, FABA
Roxana Mehran, MD, FACC, FABA, FSCAI*
Debabrata Malhotra, MD, FACC, FASA
Patrick T. O’Gara, MD, FACC, FABA*
Marc S. Sabatine, MD, MPH, FACC, FABA*
Peter K. Smith, MD, FACC
Seymour C. Smith, Jr, MD, FACC, FABA

CRITICAL QUESTIONS ADDRESSED BY 2016 ACC/AHA GUIDELINE:

• Question 1:
In patients treated with newer (non-first) generation drug-eluting stents (DES) for (1) stable ischemic heart disease (SIHD) or (2) acute coronary syndromes (ACS), compared with 12 months of dual antiplatelet therapy (DAPT) is 3–6 months of DAPT as effective in preventing stent thrombosis, preventing MACE, and/or reducing bleeding complications?

• Question 2:
In patients treated with newer (non-first) generation DES, compared with 12 months of DAPT, does >12 (18–48) months of DAPT result in differences in mortality rate, decreased MACE, decreased stent thrombosis, and/or increased bleeding?

• Question 3:
In post-MI (NSTEMI or STEMI) patients who are clinically stable and >12months past their event, does continued DAPT, compared with aspirin monotherapy, result in differences in mortality rate, decreased nonfatal MI, decreased MACE, and/or increased bleeding?
QUESTION 1 – TRIAL EVIDENCE:

• In patients treated with newer (non-first) generation drug-eluting stents (DES) for (1) stable ischemic heart disease (SIHD) or (2) acute coronary syndromes (ACS), compared with 12 months of dual antiplatelet therapy (DAPT), is 3–6 months of DAPT as effective in preventing stent thrombosis, preventing MACE, and/or reducing bleeding complications?

• SECURITY Trial
• EXCELLENT Trial
• RESET Trial
• OPTIMIZE Trial
• ISAR-SAFE Trial
ANSWER TO QUESTION 1:

• In patients treated with newer-generation stents, for composite end-points consisting of ischemic events and stent thrombosis, shorter duration DAPT (3-6 months) is non-inferior to 12 months of treatment.

• Shorter duration of DAPT is associated with a lower risk of bleeding events.

• These trials enrolled primarily low-risk patients (those without acute coronary syndromes).
QUESTIONS 2 AND 3 – TRIAL EVIDENCE:

- In patients treated with newer (non-first) generation DES, compared with 12 months of DAPT, does >12 (18–48) months of DAPT result in differences in mortality rate, decreased MACE, decreased stent thrombosis, and/or increased bleeding?
- In post-MI (NSTEMI or STEMI) patients who are clinically stable and >12 months past their event, does continued DAPT, compared with aspirin monotherapy, result in differences in mortality rate, decreased nonfatal MI, decreased MACE, and/or increased bleeding?
  - The Dual Antiplatelet Therapy Study (DAPT Study)
  - CHARISMA Study
  - PEGASUS-TIMI 54 Study
  - OPTIDUAL Study
ANSWERS TO QUESTIONS 2 AND 3:

• Generally speaking, trials testing long duration DAPT (>12 months) show a reduction in ischemic events of between 1 and 3% at a cost of an increase major bleeding events of about 1%.

• No trial of prolonged DAPT has shown a mortality benefit.
  • Controversially, the DAPT trial showed a borderline-significant 0.5% absolute increase in mortality rate, due to non-cardiovascular causes.
  • This finding has not been demonstrated in other trials; most authorities consider it to be spurious.

• Trials of long-term DAPT have included a mix of patients with both SIHD and ACS.
• Benefits of long-term DAPT are probably greater in patients with a history of MI or acute coronary syndrome.
• The 2016 Guideline recommends at least 6-12 months of DAPT in patients with CAD following PCI or ACS (depending on the circumstances) with a Class I indication.
• Longer duration DAPT regimens are recommended with a Class IIb (“may be considered”) indication.
• The decision to treat with long-term DAPT should be tailored to the individual patient.
**LONG-TERM DUAL ANITPLATELET THERAPY:**

### TABLE 4

<table>
<thead>
<tr>
<th>Increased Ischemic Risk/Risk of Stent Thrombosis (may favor longer-duration DAPT)</th>
<th>Increased Bleeding Risk (may favor shorter-duration DAPT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased ischemic risk</td>
<td>History of prior bleeding</td>
</tr>
<tr>
<td>Advanced age</td>
<td>Oral anticoagulant therapy</td>
</tr>
<tr>
<td>ACS presentation</td>
<td>Female sex</td>
</tr>
<tr>
<td>Multiple prior MIs</td>
<td>Advanced age</td>
</tr>
<tr>
<td>Extensive CAD</td>
<td>Low body weight</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>CKD</td>
</tr>
<tr>
<td>CKD</td>
<td>Diabetes mellitus</td>
</tr>
<tr>
<td>Increased risk of stent thrombosis</td>
<td>Anemia</td>
</tr>
<tr>
<td>ACS presentation</td>
<td>Chronic steroid or NSAID therapy</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td></td>
</tr>
<tr>
<td>Left ventricular ejection fraction &lt;40%</td>
<td></td>
</tr>
<tr>
<td>First-generation drug-eluting stent</td>
<td></td>
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<tr>
<td>Stent undersizing</td>
<td></td>
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<tr>
<td>Stent underdeployment</td>
<td></td>
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<tr>
<td>Small stent diameter</td>
<td></td>
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<tr>
<td>Greater stent length</td>
<td></td>
</tr>
<tr>
<td>Bifurcation stents</td>
<td></td>
</tr>
<tr>
<td>In-stent restenosis</td>
<td></td>
</tr>
</tbody>
</table>

ACS indicates acute coronary syndrome; CAD, coronary artery disease; CKD, chronic kidney disease; DAPT, dual antiplatelet therapy; MI, myocardial infarction; and NSAID, nonsteroidal anti-inflammatory drug.

### TABLE 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age ≥75 y</td>
<td>-2</td>
</tr>
<tr>
<td>Age 65 to &lt;75 y</td>
<td>-1</td>
</tr>
<tr>
<td>Age &lt;65 y</td>
<td>0</td>
</tr>
<tr>
<td>Current cigarette smoker</td>
<td>1</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>MI at presentation</td>
<td>1</td>
</tr>
<tr>
<td>Prior PCI or prior MI</td>
<td>1</td>
</tr>
<tr>
<td>Stent diameter &lt;3 mm</td>
<td>1</td>
</tr>
<tr>
<td>Paclitaxel-eluting stent</td>
<td>1</td>
</tr>
<tr>
<td>CHF or LVEF &lt;30%</td>
<td>2</td>
</tr>
<tr>
<td>Saphenous vein graft PCI</td>
<td>2</td>
</tr>
</tbody>
</table>

A score of ≥2 is associated with a favorable benefit/risk ratio for prolonged DAPT while a score of <2 is associated with an unfavorable benefit/risk ratio. Adapted with permission from Yeh et al. (61).

CHF indicates congestive heart failure; DAPT, dual antiplatelet therapy; LVEF, left ventricular ejection fraction; MI, myocardial infarction; and PCI, percutaneous coronary intervention.
TREATMENT ALGORITHMS:
FIGURE 1 Master Treatment Algorithm for Duration of P2Y12 Inhibitor Therapy in Patients With CAD Treated With DAPT

Colors correspond to Class of Recommendation in Table 1. Clopidogrel is the only currently used P2Y12 inhibitor studied in patients with SIHD undergoing PCI. Aspirin therapy is almost always continued indefinitely in patients with CAD. Patients with a history of ACS >1 year prior who have since remained free of recurrent ACS are considered to have transitioned to SIHD. In patients treated with DAPT after DES implantation who develop a high risk of bleeding (e.g., treatment with oral anticoagulant therapy), are at high risk of severe bleeding complication (e.g., major intracranial surgery), or develop significant overt bleeding, discontinuation of P2Y12 inhibitor therapy after 3 months for SIHD or after 6 months for ACS may be reasonable. Arrows at the bottom of the figure denote that the optimal duration of prolonged DAPT is not established. ACS indicates acute coronary syndrome; BMS, bare metal stent; CABG, coronary artery bypass graft surgery; CAD, coronary artery disease; DAPT, dual antiplatelet therapy; DES, drug-eluting stent; Hx, history; lytic, fibrinolytic therapy; NSTE-ACS, non-ST-elevation acute coronary syndrome; PCI, percutaneous coronary intervention; SIHD, stable ischemic heart disease; S/P, status post; and STEMI, ST-elevation myocardial infarction.
STABLE ISCHEMIC HEART DISEASE (SIHD):

- Antiplatelet therapy with aspirin 81mg daily is recommended.

- In patients with SIHD without history of PCI or CABG within the last 12 months, treatment with a P2Y<sub>12</sub> inhibitor is contraindicated (Class III – Harm).

- Clopidogrel is the only P2Y<sub>12</sub> inhibitor which has been well-studied after PCI in patients with SIHD (although other P2Y<sub>12</sub> inhibitors are commonly used for this indication in clinical practice).

- In patients with PCI and bare metal stent (BMS) implantation, DAPT is recommended for at least one month with clopidogrel (Class I), and may be continued for longer periods in patients who are at low bleeding risk (Class IIb).

- In patients with PCI and DES implantation, DAPT is recommended for at least 6 months with clopidogrel (Class I) and may be continued for longer periods in patients who are a low bleeding risk (Class IIb).

- In patients with SIHD who have undergone CABG, DAPT with clopidogrel for 12 months, or longer in patients at low bleeding risk, may be considered to improve graft patency (Class IIb).
ACUTE CORONARY SYNDROMES (ACS):

- Dual antiplatelet therapy with aspirin and a P2Y12 inhibitor is recommended for at least one year after any acute coronary syndrome.
- The guidelines recommend clopidogrel or ticagrelor after ACS treated with medical therapy alone.
- Clopidogrel is the only P2Y12 inhibitor recommended to be used after STEMI treated with fibrinolytic therapy.
- Clopidogrel, prasugrel or ticagrelor may be used after ACS treated with PCI.
- DAPT with aspirin and prasugrel, ticagrelor or clopidogrel is recommended for one year after ACS treated with coronary artery bypass grafting (CABG).
Recent ACS (NSTE-ACS or STEMI)

- CABG
- Medical Therapy
- Lytic (STEMI)
- PCI (BMS or DES)

0 mo:
- Class I: After CABG, resume P2Y12 inhibitor to complete 1 y of DAPT (clopidogrel, prasugrel, ticagrelor)

6 mo:
- Class I: At least 12 mo (clopidogrel, ticagrelor)

12 mo:
- Class I: At least 14 d and up to 12 mo (clopidogrel)
- High bleeding risk* or significant overt bleeding
- Class IIb: Discontinuation after 6 mo may be reasonable

No high risk of bleeding and no significant overt bleeding on DAPT

Class IIb: >12 mo may be reasonable
TRIPLE THERAPY:

• Compared with DAPT alone, the combination of DAPT with an oral anticoagulant is associated with at least a 2-3 fold increase in the risk of bleeding complications.
• When warfarin is used, an INR target of 2.0-2.5 is recommended.
• Low dose aspirin (81mg) is recommended.
• Proton pump inhibitors are recommended for patients with a history of gastrointestinal bleeding.
TRIPLE THERAPY:

- What is the optimal strategy for antiplatelet therapy and anticoagulation in patients with atrial fibrillation, DVT/PE, or other indications for oral anticoagulation who require PCI or suffer ACS/MI?
  - WOEST Trial: dual therapy with clopidogrel and warfarin was superior in comparison to triple therapy for both bleeding and MACE.
  - PIONEER AF-PCI: Low dose (15 mg daily) rivaroxaban + a P2Y12 inhibitor or very low dose (2.5 mg daily) rivaroxaban + DAPT was associated with a lower risk of bleeding and no increase in MACE when compared to warfarin + DAPT
  - RE-DUAL PCI: Dual therapy with dabigatran and a P2Y12 inhibitor was associated with fewer bleeding events when compared with triple therapy with warfarin, ASA and clopidogrel or ticagrelor. Dual therapy with dabigatran was non-inferior for MACE when compared to triple therapy.
  - AUGUSTUS Trial: Dual therapy with a P2Y12 inhibitor with apixaban resulted in less bleeding and fewer hospitalizations with no difference in the rate of ischemic events when compared to triple therapy or dual therapy with warfarin and a P2Y12 inhibitor
  - New recommendations included in 2019 ACC/AHA Atrial Fibrillation Guidelines Focused Update.
CLINICAL PRACTICE GUIDELINE: FOCUSED UPDATE

2019 AHA/ACC/HRS Focused Update of the 2014 AHA/ACC/HRS Guideline for the Management of Patients With Atrial Fibrillation

A Report of the American College of Cardiology/American Heart Association
Task Force on Clinical Practice Guidelines and the Heart Rhythm Society

Developed in Collaboration With the Society of Thoracic Surgeons

Writing Group

Craig T. January, MD, PhD, FACC, Chair
L. Samuel Wann, MD, MACC, FAHA, Vice Chair
Hugh Calkins, MD, FACC, FAHA, FHRS*†
Lin Y. Chen, MD, MS, FACC, FAHA, FHRS
Joaquin E. Cigarroa, MD, FACC
Joseph C. Cleveland Jr, MD, FACC*†
Patrick T. Ellinor, MD, PhD*†
Michael D. Ezekowitz, MD(c), DPhil, FACC, FAHA*†
Michael E. Field, MD, FACC, FAHA, FHRS
Karen L. Furie, MD, MPH, FAHA
Paul A. Heldenreich, MD, FACC, FAHA

Katherine T. Murray, MD, FACC, FAHA, FHRS
Julie B. Shea, MS, RNCS, FHRS*†
Cynthia M. Tracy, MD, FAHA
Clyde W. Yancy, MD, MACC, FAHA

*Writing group members are required to recuse themselves from voting on sections to which their specific relationships with industry may apply. See Appendix I for detailed information. |ACC/AHA Task Force on Clinical Practice Guidelines Liaison. |ACC/AHA Representative. |HRS Representative. |STS Representative. |ACC/AHA Task Force on Performance Measures Representative.

ACC/AHA Task Force Members

Glenn N. Levine, MD, FACC, FAHA, Chair
Patrick T. O’Gara, MD, MACC, FAHA, Chair-Elect
Jonathan L. Halperin, MD, FACC, FAHA, Immediate Past Chair
Sana M. Al-Khatib, MD, MHS, FACC, FAHA
Joshua A. Beckman, MD, MS, FAHA

Kim K. Birtcher, PharmD, MS, AACC
Biykem Bozkurt, MD, PhD, FACC, FAHA
Ralph G. Brindis, MD, MPH, MACC
Joaquin E. Cigarroa, MD, FACC
Lesley H. Curtis, PhD, FAHA
Anita Deswal, MD, MPH, FACC, FAHA
Lee A. Fleisher, MD, FACC, FAHA
2019 ATRIAL FIBRILLATION AND ACS GUIDELINE SUMMARY AS IT PERTAINS TO ANTIPLATELET THERAPY:

- Oral anticoagulation is recommended for patients with ACS and atrial fibrillation who are at increased risk of systemic thromboembolism.
- If triple therapy is used, clopidogrel is the preferred P2Y12 inhibitor.
- Dual therapy is a reasonable strategy to reduce bleeding (IIa recommendation):
  - Warfarin + clopidogrel or ticagrelor
  - Rivaroxiban 15 mg daily + clopidogrel
  - Dabigatran 150 mg BID + clopidogrel
- AUGUSTUS trial was published after 2019 Atrial Fibrillation Guideline Update: There is no formal guideline recommendation for dual therapy with apixaban.
<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>B-R</td>
<td>1. For patients with ACS and AF at increased risk of systemic thromboembolism (based on CHA(_2)DS(_2)-VASc risk score of 2 or greater), antiocoagulation is recommended unless the bleeding risk exceeds the expected benefit (57.4.1-57.4.3). MODIFIED: New published data are available. LOE was updated from C in the 2014 AF Guideline to B-R. Anticoagulation options are described in supportive text.</td>
</tr>
<tr>
<td>I</td>
<td>C</td>
<td>2. Urgent direct-current cardioversion of new-onset AF in the setting of ACS is recommended for patients with hemodynamic compromise, ongoing ischemia, or inadequate rate control.</td>
</tr>
<tr>
<td>I</td>
<td>C</td>
<td>3. Intravenous beta blockers are recommended to slow a rapid ventricular response to AF in patients with ACS who do not display HF, hemodynamic instability, or bronchospasm.</td>
</tr>
<tr>
<td>Ia</td>
<td>B-NR</td>
<td>4. If triple therapy (oral anticoagulant, aspirin, and P2Y(_{12}) inhibitor) is prescribed for patients with AF at increased risk of stroke (based on CHA(_2)DS(_2)-VASc risk score of 2 or greater) who have undergone percutaneous coronary intervention (PCI) with stenting for ACS, it is reasonable to choose clopidogrel in preference to prasugrel (57.4.4-57.4.5). NEW: New published data are available.</td>
</tr>
<tr>
<td>Ia</td>
<td>B-R</td>
<td>5. In patients with AF at increased risk of stroke (based on CHA(_2)DS(<em>2)-VASc risk score of 2 or greater) who have undergone PCI with stenting for ACS, double therapy with a P2Y(</em>{12}) inhibitor (clopidogrel or ticagrelor) and dose-adjusted vitamin K antagonist is reasonable to reduce the risk of bleeding as compared with triple therapy (57.4.3-3, 57.4.6-57.4.8). NEW: New RCT data and data from 2 registries and a retrospective cohort study are available.</td>
</tr>
<tr>
<td>Ia</td>
<td>B-R</td>
<td>6. In patients with AF at increased risk of stroke (based on CHA(_2)DS(<em>2)-VASc risk score of 2 or greater) who have undergone PCI with stenting for ACS, double therapy with P2Y(</em>{12}) inhibitors (clopidogrel) and low-dose rivaroxaban 13 mg daily is reasonable to reduce the risk of bleeding as compared with triple therapy (57.4.2). NEW: New published data are available.</td>
</tr>
<tr>
<td>Ia</td>
<td>B-R</td>
<td>7. In patients with AF at increased risk of stroke (based on CHA(_2)DS(<em>2)-VASc risk score of 2 or greater) who have undergone PCI with stenting for ACS, double therapy with a P2Y(</em>{12}) inhibitor (clopidogrel) and dabigatran 150 mg twice daily is reasonable to reduce the risk of bleeding as compared with triple therapy (57.4.1-1). NEW: New published data are available.</td>
</tr>
<tr>
<td>Ia</td>
<td>B-R</td>
<td>8. If triple therapy (oral anticoagulant, aspirin, and P2Y(_{12}) inhibitor) is prescribed for patients with AF who are at increased risk of stroke (based on CHA(_2)DS(<em>2)-VASc risk score of 2 or greater) and who have undergone PCI with stenting (drug eluting or bare metal) for ACS, a transition to double therapy (oral anticoagulant and P2Y(</em>{12}) inhibitor) at 4 to 6 weeks may be considered (57.4.9-57.4.10). NEW: New published data are available.</td>
</tr>
<tr>
<td>Ib</td>
<td>B-R</td>
<td>9. Administration of amiodarone or digoxin may be considered to slow a rapid ventricular response in patients with ACS and AF associated with severe LV dysfunction and HF or hemodynamic instability.</td>
</tr>
<tr>
<td>Ib</td>
<td>C</td>
<td>10. Administration of nondihydropyridine calcium antagonists may be considered to slow a rapid ventricular response in patients with ACS and AF only in the absence of significant HF or hemodynamic instability.</td>
</tr>
</tbody>
</table>
PERIOPERATIVE MANAGEMENT OF DAPT IN PATIENTS REQUIRING NON-CARDIAC SURGERY:

- Historical data shows that early discontinuation of DAPT is one of the strongest predictors of stent thrombosis after PCI.

- Surgery is associated with proinflammatory and prothrombotic effects which may also increase the risk of stent thrombosis or coronary artery thrombosis.

- For these reasons, previous guidelines have recommended that elective non-cardiac surgery be delayed by one year.
PERIOPERATIVE MANAGEMENT OF DAPT IN PATIENTS REQUIRING NON-CARDIAC SURGERY:

• Compared with older drug-eluting stents (DES), newer DES are associated with a lower risk of stent thrombosis and appear to require a shorter minimum duration of DAPT.

• Several studies of DAPT duration in patients treated with newer generation DES have shown no significant difference in the risk of stent thrombosis between patients treated with 3 to 6 months of DAPT and patients treated with longer durations of DAPT.

• Because of this data, the previous Class I recommendation that elective noncardiac surgery be delayed for one year after DES implantation has been changed to “optimally at least 6 months”.

• The previous Class IIb recommendation that noncardiac surgery may be considered after 180 days has been changed to “after 3 months”.

• Dual antiplatelet therapy should be re-started as soon as possible after surgery and continued for the duration appropriate to the clinical situation.
FIGURE 6 Treatment Algorithm for the Timing of Elective Noncardiac Surgery in Patients With Coronary Stents

Colors correspond to Class of Recommendation in Table 1. BMS indicates bare metal stent; DAPT, dual antiplatelet therapy; DES, drug-eluting stent; and PCI, percutaneous coronary intervention.
SHOULD WE CONTINUE TO USE BARE METAL STENTS?

• SENIOR Trial (2017):
  • Patients aged 75 or older received either bare metal stents (BMS) or drug-eluting stents with a modern platform (abulminal, bioabsorbable polymer, everolimus eluting) in a 1:1 randomized fashion.
  • Patients with stable angina received one month of DAPT.
  • Patients with ACS received 6 months of DAPT.
  • The primary outcome was a composite of all-cause mortality, MI, stroke, and ischemia-driven target lesion revascularization (TLR).
  • The primary outcome occurred in 11.6% of the DES group and 16.4% of the BMS group (P = 0.016)
  • MI was comparable in the two groups (3.6% vs. 3.7%), and TLR was substantially lower in the DES group (1.7% vs. 5.9%).
SHOULD WE CONTINUE TO USE BARE METAL STENTS?

- LEADERS FREE Trial (2015)
  - Double-blind RCT comparing polymer-free DES with BMS in patients at high bleeding risk
  - All patients were treated with one month of DAPT.
  - The primary safety end point was a composite of cardiac death, MI or stent thrombosis.
  - The primary efficacy end point was clinically driven target-lesion revascularization.
  - The primary safety endpoint occurred in 9.4% of the DES group and 12.9% of the BMS group (P<0.001).
  - The primary efficacy end point occurred in 5.1% of the DES group and 9.8% of the BMS group (P<0.001).
Ticagrelor or Prasugrel in Patients with Acute Coronary Syndromes

Figure 2. Cumulative Incidence of the Primary End Point at 1 Year.

The Kaplan–Meier curves show the cumulative incidence of the primary end point, which was a composite of death, myocardial infarction, or stroke at 1 year. The inset shows the same data on an enlarged y axis.
ISAR-REACT 5:

• Excluded patients with history of TIA or stroke
• Patients aged greater than or equal to 75 years or who had a body weight <60 kg received a daily dose of prasugrel of 5mg.
• Trial also excluded patients with end-stage renal disease or moderate to severe hepatic dysfunction
• The package insert for prasugrel carries a warning against using the drug in patients 75 years or age or older or in those who have had a history of TIA or stroke.
SUMMARY AND RECOMMENDATIONS:

- Indefinite treatment with low dose (81mg daily) aspirin is recommended for all patients with a history of clinically significant coronary artery disease, stroke or TIA, or peripheral vascular disease.
- Aspirin is not recommended for primary prevention of cardiovascular disease.
- All patients who present with an acute coronary syndrome should be treated with DAPT for at least one year, if DAPT is well tolerated (including those treated with CABG).
- Patients with stable coronary artery disease who undergo PCI should be treated with DAPT for at least 6 months.
- Patients who require urgent surgery may temporarily discontinue DAPT 3 months after PCI. DAPT should be re-started as soon as possible after surgery.
- Patients who are status post PCI with a late generation drug-eluting coronary stent are at relatively low risk of MI or stent thrombosis if DAPT must be discontinued for reasons of emergency in less than 3 months.
- Dual therapy with an oral anticoagulant + a P2Y12 inhibitor is the preferred strategy for patients with atrial fibrillation and an acute coronary syndrome.
- There is no evidence to suggest that clopidogrel is inferior to other P2Y12 inhibitors when used in conjunction with an oral anticoagulant in patients with ACS or coronary heart disease. Clopidogrel may be the safer option. Clopidogrel is recommended over other P2Y12 inhibitors if triple therapy is used.
Thank you for your time and attention.
REFERENCES:


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