Perioperative Management of DOACs

AMERICAN COLLEGE of CARDIOLOGY

PROBLEM

- ✖ Each year approximately 250,000 patients on chronic anticoagulation in North America require an invasive or surgical procedure.
- ✖ For patients on warfarin, this requires an extended interruption for at least 5 days.
- ✖ For patients taking direct acting oral anticoagulants (DOACs) the interruption period is shorter. However, there is no commonly available lab test to assess for anticoagulant effect prior to surgery.

SOLUTION

- ✔ Use recent creatinine clearance (calculated using actual body weight) to determine timing of DOAC interruption per treatment table.
- ✔ Assess patient-specific and procedural bleeding risk*
  - Classification of common surgery/procedures into high and low bleeding risk can be found in the "2017 ACC Expert Consensus Decision Pathway for Periprocedural Management of Anticoagulation in Patients With Nonvalvular Atrial Fibrillation" supplement.
- ✔ Procedures with a very low bleeding risk may not require anticoagulation interruption.

TREATMENT TABLE FOR PERIOPERATIVE MANAGEMENT OF DOACS[1,6]

Drug	Clinical Factor	Discontinuation of Therapy*		Resumption of Therapy†	
	CrCl (mL/min)	Low Bleed-Risk Surgery	High Bleed-Risk Surgery	Low Bleed-Risk Surgery	High Bleed-Risk Surgery
Dabigatran *(direct thrombin inhibitor)*	≥80	24 hours	48 hours	24 hours postoperative	48-72 hours postoperative
	50-79	36 hours	72 hours		
	30-49	48 hours	96 hours		
	15-29	72 hours	120 hours		
	<15	No data, consider direct thrombin time and/or ≥96 hours	No data, consider direct thrombin time		
Apixaban **Edoxaban** **Rivaroxaban** *(anti-XA inhibitor)*	≥30	24 hours	48 hours		
	15-29	36 hours	72 hours		
	<15	No data, consider agent-specific anti-Xa level and/or ≥48 hours	No data, consider agent-specific anti-Xa level and/or ≥72 hours		

* All DOACs carry a black box warning about their use in neuraxial procedures. Refer to prescribing guide or the American Society of Regional Anesthesia and Pain Medicine for guidance on timing of discontinuation in relation to procedure. Situations with renal dysfunction or extenuating circumstances may warrant longer interruptions. Note: DOAC therapy has been continued uninterrupted during atrial fibrillation catheter ablation procedures in patients with high CHA2DS2-VASc scores. Additionally, DOAC therapy has been either minimally interrupted (discontinued 12-24 hours prior to the procedure) or continued among patients with CHA_2DS_2-VASc scores ≥2 requiring pacemaker or defibrillator surgery in whom the risk of thrombosis outweighs risk of bleeding.

† Ensure adequate hemostasis is achieved.

PREVENT POTENTIAL ERRORS

- ✔ If possible, delay elective procedures to address patient-related bleed risk factors that can be corrected.
- ✔ Given the short half-life of DOACs, bridging is generally not required.
- ✔ Postprocedural bleeding risk depends on: procedure performed, intraprocedural findings, procedural complications, timing of anticoagulant re-initiation, and the anticoagulant used (i.e. vitamin K antagonists have increased risk of bleeding compared to DOACs).
- ✔ Before restarting anticoagulation ensure procedural site hemostasis, consider bleeding consequences and patient-specific factors that may predispose the patient to bleeding complications.

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