Periprocedural Management (DOAC)

Bleed Risk Evaluation		
Patient bleeding risk factors? Any one of these: • major bleeding or ICH < 3 months ago • platelet abnormality (including ASA use) • prior bleed during previous bridging or similar procedure	**Procedure bleed risk (see below for examples)**	**Whether or not to interrupt**
No	Minimal, No clinically important risk	-Do Not interrupt DOAC (time procedure at DOAC trough level)
	Low	-Interrupt DOAC -Do not bridge
	Intermediate, high, uncertain	
Yes	Any bleed risk category	

Procedure Bleed Risk*

Min. bleed risk		Low bleed risk	Intermediate/High/Uncertain bleed risk			
• Minor dental • Cataract/ glaucoma • Superficial incisions/ excisions	• Diagnostic GI endoscopy w/ wo biopsy • Central catheter removal	• Pacemaker/defib implantation • AF ablation(trans v) • Cervical/Prostate/ Breast bx • D&C • Cath/PCI(transradial)	• Complex dental (eg. extract > 3 teeth) • Cath/PCI (transfemoral) • Lung bx • Hysterectomy	• Arterial revascularization • Left atrial appendage occlusion • Lumbar puncture	• Highly vascularized organs (kidney, liver spleen) • Cardiac, intracranial, or spinal • Pericardiocentesis	• Extensive tissue injury (CA surgery,arthroplasty) • Most major surgeries >45 min. • Esophageal bx

* For full list of procedures, see online appendix to the 2017 ACC Expert Consensus Decision Pathway for Periprocedural Management

DOAC Interruption and Restart

<table>
<tr><th>DOAC</th><th>Procedure Bleed Risk</th><th>When to stop*</th><th>When to restart</th></tr>
<tr><td rowspan="2">Dabigatran</td><td>Low</td><td>
<table>
<tr><th>CrCl**</th><th>Discontinue</th><th>CrCl**</th><th>Discontinue</th></tr>
<tr><td><15</td><td>No data (consider dTT[1] and/or ≥96hrs)</td><td>50-79</td><td>≥ 36 hrs</td></tr>
<tr><td>15-29</td><td>≥72 hrs</td><td>≥80</td><td>≥24 hrs</td></tr>
<tr><td>30-49</td><td>≥48 hrs</td><td colspan="2">[1]diluted Thrombin Time</td></tr>
</table>
</td><td>Day following procedure (full dose‡)</td></tr>
<tr><td>Intermediate, high, uncer-tain</td><td>
<table>
<tr><th>CrCl**</th><th>Discontinue</th><th>CrCl**</th><th>Discontinue</th></tr>
<tr><td><15</td><td>No data (consider dTT[1])</td><td>50-79</td><td>≥ 72 hrs</td></tr>
<tr><td>15-29</td><td>≥120 hrs</td><td>≥80</td><td>≥48 hrs</td></tr>
<tr><td>30-49</td><td>≥96 hrs</td><td colspan="2">[1]diluted Thrombin Time</td></tr>
</table>
-If interventional pain procedure, hold for 5 days unless high thrombotic risk †
</td><td>48 to 72 hours after procedure (full dose‡)</td></tr>
<tr><td rowspan="2">Rivaroxaban, apixaban, edoxaban</td><td>Low</td><td>
<table>
<tr><th>CrCl**</th><th>Discontinue</th><th>CrCl**</th><th>Discontinue</th></tr>
<tr><td><15</td><td>No data (consider agent-specific anti Xa level and/or ≥48hrs)</td><td>≥30</td><td>≥24 hrs</td></tr>
<tr><td>15-29</td><td>≥36 hrs</td><td></td><td></td></tr>
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<tr><th>CrCl**</th><th>Discontinue</th></tr>
<tr><td><30</td><td>No data (consider agent-specific anti Xa level and/or ≥72hrs)</td></tr>
<tr><td>≥30</td><td>≥48 hrs</td></tr>
</table>
-If interventional pain procedure, hold for 3-5 days unless high thrombotic risk †
</td><td>48 to 72 hours after procedure (full dose‡)</td></tr>
</table>

Footnotes: *If pt is high bleed risk, use clinical judgement-Interrupt at least as long as directed by CrCl. Also consider prolonging interruption if pt on a CYP3A4 or P-gp inhibitor. **CrCl calculated using Cockroft-Gault and actual body weight; †Based on the Society of Regional Anesthesia and Pain Management guidelines. However, if elevated thrombotic risk, consider a drug-free interval of 2-3 half-lives, ‡Dosing should reflect postprocedural renal function

-Doherty et al. 2017 ACC Expert Consensus Decision Pathway for Periprocedural Management of Anticoagulation in Patients With Nonvalvular Atrial Fibrillation. DOI: 10.1016/j.jacc.2016.11.024
-Burnett et al. Guidance for the practical management of direct oral anticoagulants in VTE treatment. J Thromb Thrombolysis. 2016; 41: 206–232.doi: 10.1007/s11239-015-1310-7
-Spyropoulos et al. Periprocedural management of patients receiving a vitamin k antagonist or a direct oral anticoagulant requiring an elective procedure or surgery. J Thromb Haemost. 2016 May;14(5):875-885. doi: 10.1111/jth.1330522016