Periprocedural Management (Warfarin)

Pt bleeding risk factors? • Mjr bleed or ICH < 3 months ago • Plt abnormality (including ASA use) • High INR • Prior bleed during prev. bridging or similar proc.	**Procedure Bleed Risk** (see bottom for examples)	**Low thrombo risk** **AF**: CHA_2DS_2-VASc ≤4 and no prior stroke/TIA/SE **VTE**: VTE >12 mos and no other risk factors **MHV**: Bileaflet AV prosth. w/o AF and no other stroke RFs	**Moderate thrombo risk** **AF**: CHA_2DS_2-VASc 5-6 or stroke/ SE ≥ 3 mos ago **VTE**: VTE past 3-12 mos, non-severe thrombophilia, recurrent VTE, active CA (within 6 mos) **MHV***: Bileaflet AV prosth. and one or more stroke RFs	**High thrombo risk** **AF**: CHA_2DS_2-VASc ≥ 7 or stroke/ SE < 3 mos ago **VTE**: VTE < 3 months, severe thrombophilia **MHV**: any MV prosthesis, caged-ball or tilting disc AV prosth, recent (within 6 mos) stroke or TIA
No	**Minimal/Low**			
	Inter./ high			
	Uncertain			
Yes	**All bleed risk categories**			
Do not interrupt.	Likely interrupt. Don't bridge.	Likely interrupt. Likely don't bridge. (unless recent stroke, TIA, or SE)	Likely interrupt. Likely bridge. (unless major bleed or ICH<3 months)	Interrupt and Bridge.

***Bridging in moderate risk MHV may be considered on an individualized basis after weighing bleed risk with risk of thromboembolism.**

AV=aortic valve; SE=systemic embolization; stroke RFs= AF, prior stroke/TIA, HTN, DM, CHF, age>75

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

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

Stopping warfarin

INR result (5-7 days before procedure)	Supratherapeutic	Therapeutic	Subtherapeutic
When to start holding warfarin	At least 5 days before	5 days before	3-4 days before

Bridging

Patient/ procedure factors	Bridging agent	Before Procedure		After Procedures	
		Start bridging agent	Stop bridging agent	Restart anticoagulants	Stop bridging agent
CrCl ≥30	LMWH	Start when INR < target or after 2-3 missed doses	24 hrs before procedure	Warfarin: within 24 hrs LMWH/UFH: within 24 hrs after low risk procedure; after 48-72 hrs in high bleed risk procedure	When INR in range
	UFH		At least 4 hrs before procedure and if aPTT is normal		
CrCl <30	UFH				
Pt with TE risk AND high bleed risk procedure	Individualized strategies to reduce bleed risk		If LMWH: 24 hrs before procedure If UFH: At least 4 hrs before procedure and if aPTT is normal		
Heparin allergy or recent HIT	Follow local protocol	Follow local protocol	Follow local protocol	Follow local protocol	Follow local protocol

Adapted from: 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; Douketis et al. Perioperative Management of Antithrombotic Therapy. Chest. 2012;141(2_suppl):e326S-e350S. doi:10.1378/chest.11-2298; and Nishimura, et al. 2017 AHA/ACC Focused Update on VHD. Circulation. 2017;000:e000–e000. DOI: 10.1161/CIR.0000000000000503.