Protocol for Management of Anticoagulation and Antithrombotic Agents in Devices - Summary Clinical Guideline

Reference No: CG-CLIN/4200/23

On investigation, it was found across UHDB that there was poor practice with regards to the prescribing of anticoagulants and antiplatelets for patients prior to the implantation of devices. This would lead to delays in patient care and cancellations of patient's procedures due to the high risk of patients bleeding. Complications such as haematomas may arise and therefore lead to potential infections and subsequently extraction of implanted devices.

To minimise the above risks and improve patients' care, the *'Protocol for Management of Anticoagulation and Antithrombotic Agents in Devices'* was proposed. This protocol is intended for patients who are on either antiplatelets or anticoagulants and who have been listed for a device procedure.

Devices include single chamber Permanent Pacemaker (PPM) or Implantable Cardioverter Defibrillator (ICD), Dual chamber PPM or ICD, and Biventricular pacemakers or ICDs (CRT-P or CRT-D). The device procedures include device implantation, subcutaneous ICD, box change, lead repositioning / reburial and conduction system pacing.

Patients on Warfarin and Antiplatelets

Table 1

Anticoagulation / Antiplatelet therapy	**Recommendation**
For patients on **WARFARIN**	
Atrial fibrillation • CHA_2DS_2VASc score 0 (on anticoagulation awaiting DCCV/Ablation) • CHA_2DS_2VASc score 1 to 4 • CHA_2DS_2VASc score ≥ 4 (High risk group see Table 3)	• Bridging is not required • Stop **48 to 72 hours** pre-procedure • Continue warfarin (aim INR 2.0 – 3.0)

Other indications • DVT/PE/Blood disorders • LV thrombus	• Continue warfarin (aim INR 2.0 – 3.0) • Discuss with Devices consultant
Mechanical valves • Aortic Valve Replacement (aim INR 2.5 – 3.0) • Mitral Valve Replacement (aim INR 2.5 – 3.0)	• **DO NOT STOP Warfarin. DO NOT bridge with Unfractionated heparin/LMWH**
For patients on **ANTI-PLATELETS**	
Dual antiplatelet (DAPT) • < 1 month • > 1 month	• Continue DAPT. No interruption required • Discuss with Interventionist/Devices Consultant
Triple therapy (DAPT + warfarin/NOAC)	• Discuss with Interventionist/Devices consultant

PLEASE NOTE:

- **OMIT LMWH DAY BEFORE PROCEDURE**
- **DO NOT GIVE THERAPEUTIC LMWH/UNFRACTIONATED HEPARIN AS BRIDGE TO PROCEDURE**
- **CHECK INR ON THE DAY OF PROCEDURE (AIM INR ≤ 3.0)**
- **RESTART NOAC AS PER TABLE 2**

Table 2

DOAC	Renal function as creatinine clearance ml/min	Preoperative suspension of DOAC		Postoperative resumption of DOAC	
		Low bleeding risk	Moderate to High bleeding risk	Low bleeding risk	Moderate to High bleeding risk
Dabigatran	>80	24 hours	48 hours	12-24 hours*	48-72 hours*
	50-79	24-48 hours	48-72 hours		
	30-49	72 hours	96 hours		
Apixaban	>50	24 hours	48 hours	12-24 hours*	48-72 hours*
	≤50	48 hours	72 hours		
Rivaroxaban	>30	24 hours	48 hours	12-24 hours*	48-72 hours*
	≤30	48 hours	72 hours		
Edoxaban	>30	24 hours	48 hours	12-24 hours*	48-72 hours*
	≤30	48 hours	72 hours		

Risk group stratification

Table 3

Risk Group	
High	Mechanical mitral and aortic valve CVA/TIA within 3 months $CHA_2DS_2VASc \geq 4$ Rheumatic heart disease Clotting disorders VTE/PE within 3 months Bicuspid aortic valve Severe thrombophilia (deficiency of protein C or S)
Moderate	$CHA_2DS_2VASc \geq 3$ VTE/PE within 6 – 12 months Active cancer
Low	$CHA_2DS_2VASc \leq 2$ VTE ≥ 12 months without prior risk factors

J Atr Fibrillation. 2016 Dec; 9(4): 1500. doi: 10.4022/jafib.1500

References:

1. Birnie DH, Healey JS, Essebag V. Management of Anticoagulation Around Pacemaker and Defibrillator Surgery. **Circulation. 2014; 129:2062–2065.** https://doi.org/10.1161/CIRCULATIONAHA.113.006027

2. SantAnna RT, Leirira TL, Lima GG. Management of Anticoagulation Around Cardiac Implantable Electronic Device Surgery. Anticoagulation therapy. 2016. Doi: 10.5772/64684

3. Ng AY., Ng P., Tam EY. *et al.* Cardiac implantable electronic device surgery with interruption of warfarin forgoing post-operative bridging therapy in patients with moderate or high thromboembolic risks. Thrombosis J 2021. https://doi.org/10.1186/s12959-021-00279-6

4. Birnie DH, Healey JS, Wells GA, et al. Pacemaker or Defibrillator Surgery without Interruption of Anticoagulation. N Engl J Med 2013; 368:2084-2093. Doi: 10.1056/NEJMoa1302946

5. AlTurki A, Proietti R, Birnie DH, et al. Management of antithrombotic therapy during cardiac implantable device surgery. J Arrhythm. 2016; 32(3): 163-169. doi: 10.1016/j.joa.2015.12.003

Documentation Controls

Reference Number CG-CLIN/4200/23	**Version:** 1		**Status**	Final
Version / Amendment History	Version	Date	Author	Reason
	1	25/07/2023	Sally Elshafie	
Intended Recipients: For doctors referring patients for implant / device procedures at Derby site only.				
Training and Dissemination: No training is required. Dissemination is through making the protocol available on the intranet and ward areas.				
Development of Guideline: Sally Elshafie **Job Title:** ST6 Cardiology Registrar				
Consultation with: Dr Nauman Ahmed, Consultant Cardiologist & Assistant Clinical Director (ACD) Cardiology				
Linked Documents:				
Keywords:				
Business Unit Sign Off	**Group:SMBU2** **Date: August 2023**			
Divisional Sign Off	**Group:Medicine Division** **Date:September 2023**			
Date of Upload	September 2023			
Review Date	September 2026			
Contact for Review	Cardiology consultant			