FLOWCHART FOR MANAGEMENT OF WARFARIN AND PLANNED PROCEDURES

Perioperative clinic assessment should occur > 7 days preoperatively

Lower bleeding risk surgery

Perioperative anticoagulation MAY be continued in consultation with surgeon (check RFA)

Cataract surgery

Endoscopy without biopsy

Simple dental extractions

Skin and cutaneous procedures

Pacemaker and defibrillator insertion

Check INR on day of surgery (form in notes – completed by Day Stay on admission)

Higher Bleeding Risk Surgery

Perioperative anticoagulation must be ceased at time of surgery. Actions required:

1. Assess perioperative thromboembolism risk
(see table – Assessment of Perioperative Thromboembolism risk)

- **Low risk – perioperative bridging not likely required**
- **Medium risk – perioperative bridging treatment MAY be required**
- **High risk – perioperative bridging treatment recommended**

2. Recommend perioperative anticoagulation management based on risk assessment
(see Perioperative Anticoagulation Recommendations)

3. Provide patient with the following materials

- **Calendar with warfarin cessation date (Day -6 – i.e. withhold 5 doses of warfarin) and dose and time for Enoxaparin (Clexane).**
- **Prescription for Enoxaparin if required for perioperative anticoagulation (pre-filled syringes – 20mg, 40mg, 60mg, 80mg, 100mg, 120mg and 150mg)**
- **Referral for community nurse administration of Enoxaparin if required. This will also require a medication chart with Enoxaparin charted on the days required.**

4. Check INR on day of surgery (form in notes – completed by Day Stay on admission)

ASSESSMENT OF PERIOPERATIVE THROMBOEMBOLISM RISK

	Low risk (<5%)	**Medium risk** (5-10%)	**High Risk** (>10%)
ATRIAL FIBRILLATION	$CHADS_2$ score of 0 to 2 **AND** No prior stroke or TIA	$CHADS_2$ score of 3 or 4 **AND/OR** Previous stroke or TIA	$CHADS_2$ score of 5 or 6 **AND/OR** Recent (**within 3 months**) stroke or TIA. Consider postponing surgery until 3 months post stroke/TIA Rheumatic valvular heart disease and AF
MECHANICAL HEART VALVES	Bileaflet aortic valve prosthesis **without** AF and **no** other risk factors for stroke	**Bileaflet** aortic valve prosthesis **AND one or more** of the following risk factors: AF, hypertension, diabetes, congestive heart failure, age >75 y	**Any** mitral valve prosthesis Any **caged-ball or tilting disc** aortic valve prosthesis Mechanical heart valve and stroke or transient ischemic attack
VENOUS THROMBO-EMBOLISM	VTE > 12 months previous and no other risk factors	VTE within the past **3-12 months** Non-severe thrombophilia (eg, heterozygous factor V Leiden or prothrombin gene mutation) Recurrent VTE Active cancer (treated within 6 months or palliative)	Recent (**within 3 months**) VTE. Consider deferring surgery until at least 3 months post VTE **Severe thrombophilia** (eg, deficiency of protein C, protein S, or antithrombin III; antiphospholipid antibodies; multiple abnormalities)
OTHER		Vascular surgical prosthetic grafts	Fresh atrial or ventricular mural thrombus on echocardiography

(% risk refers to risk of thromboembolism per year without anticoagulation)

The following factors may also increase patient's perioperative risk for thromboembolism and should be considered in risk assessment:

- Previous thromboembolism on interruption of warfarin
- Obesity
- Disseminated malignancy
- Peri-procedural immobility – i.e bedbound
- Familial thrombophilia
- Impaired cardiac function (moderate to severe on echocardiogram)

Risk Factor	Score	$CHADS_2$ Score	Adjusted Stroke Rate (%/year)
Congestive heart failure	1	0	1.9
Hypertension	1	1	2.8
Age ≥75 years	1	2	4.0
Diabetes mellitus	1	3	5.9
Stroke/TIA/thromboembolic event	2	4	8.5
		5	12.5
		6	18.2

PERIOPERATIVE ANTICOAGULATION RECOMMENDATIONS

Preoperative Plan

Low Risk Patient

- Withhold 5 doses of warfarin preoperatively (Last dose Day -6)
- Check INR on day of surgery. Consult Anaesthetist/ surgeon if INR > 1.5

Moderate Risk Patient

- Withhold 5 doses of warfarin preoperatively (Last dose Day -6)
- Bridging anticoagulation **MAY** be indicated after risk assessment
  (Note: no bridging shown to be non-inferior to bridging treatment in patients with non-valvular AF in recent RCT):
    - Enoxaparin (Clexane): 1.5mg/kg subcutaneously daily. Commence 24-48 hours post last warfarin (Day -4 or -3). Last dose 24 hours preoperatively (0800hr Day -1)*
    - Unfractionated Heparin (IV): Commence when INR <2.0 as per local guideline. Cease 6 hours preoperatively and check APTT prior to surgery. Patient will require hospital admission.
- Check INR on day of surgery. Consult Anaesthetist if INR > 1.5.

High Risk Patient

- Consider consulting Haematology
- Consider deferring surgery until 3 months post VTE or CVA/TIA.
- If surgery urgent consider IVC filter in past history of DVT/PE.
- Withhold 5 doses of warfarin preoperatively (Last dose Day -6)
- Bridging anticoagulation is recommended:
    - Enoxaparin (Clexane): 1.5mg/kg subcutaneously daily. Commence 24-48 hours post last warfarin (Day -4 or -3). Last dose 24 hours preoperatively (0800hr Day -1)*
    - Unfractionated Heparin (IV): Commence when INR <2.0 as per guideline. Cease 6 hours preoperatively and check APTT prior to surgery. Patient will require hospital admission.
- Check INR on day of surgery. Consult Anaesthetist/ surgeon if INR > 1.5.

*Avoid LMWH in patients with CrCl <30mL/min, severe liver disease, previous history of Heparin Induced Thrombocytopenia (HITS), bleeding disorder, intracranial haemorrhage, GIT bleeding, recent trauma or surgery or obese patients with BMI > 35.

Postoperative Plan

Low bleeding risk surgery

- Consider restarting therapeutic anticoagulation 12-24 hours post-operatively in consultation with the surgical team
- Consider restarting warfarin when eating and drinking

Higher bleeding risk surgery

- Consider restarting therapeutic anticoagulation 48-72 hours post-operatively in consultation with the surgical team
- Consider use of prophylactic dose heparin or LMWH until resumption of therapeutic anticoagulation
- Consider restarting warfarin when eating and drinking. Aim to continue perioperative heparin/LMWH until INR in therapeutic range