1.8 Perioperative thromboembolism risk stratification

Table 11 Level of thrombosis risk dependent on indication for warfarin therapy

Thrombosis risk	Indication for Warfarin Therapy		
	Mechanical valve	Atrial fibrillation	Venous thromboembolism
Low Bridging unlikely to be required	Present – discuss with cardiologist	• AF and no history of cardiac embolism • CHA_2DS_2-VASc score of 0-4	• One DVT or PE more than three months ago • Prior VTE and low risk thrombophilia (heterozygous Factor V Leiden or prothrombin gene mutation)
Moderate to High Consider bridging	Present – discuss with cardiologist	• Rheumatic AF (mitral valve disease stenosis / regurgitation) • AF with history of cardiac embolism or mechanical heart valve in any position • CHA_2DS_2-VASc score 5-9	• VTE within the past three months or very strong family history • High risk thrombophilia: Deficiency of protein C, protein S or antithrombin III; homozygous Factor V Leiden mutation; antiphospholipid antibody syndrome; more than one laboratory thrombophilic defect (compound heterozygotes) • Two or more arterial or idiopathic venous thromboembolic events

Source: adapted from Tran et al. 2013
*There is uncertainty with CHA_2DS_2-VASc scores 4-6 and an individual approach may be required.

1.9 Stopping warfarin for procedures

Due to the risk of bleeding, warfarin may need to be withheld prior to surgery (see Table 12). Simple dental or dermatological procedures may not require cessation of warfarin therapy. However, clinicians should be aware of potential drug interactions (see Section 1.9) if antibiotic cover is required.

Table 12 Warfarin management before and after procedures

Thrombosis risk	Before surgery	After surgery
Low (e.g. AF and no history of cardiac embolism)	• Withhold warfarin for five days before surgery • Night before surgery: If INR greater than 2, give 3 mg vitamin K[#] IV or oral • Day of surgery: – If INR less than or equal to 1.5, surgery can proceed – If INR greater than 1.5, defer surgery or, if urgent give Prothrombinex™-VF 15–30 units/kg depending of initial and target INR or, if Prothrombinex™-VF not available, give FFP 10–15 mL/kg – Employ pre-operative thromboprophylaxis as per hospital policy.	• Start warfarin on the day of surgery at the **previous** '**normal**' maintenance dose as long as there is no evidence of bleeding • Employ thromboprophylaxis as per hospital policy.
Moderate to High (e.g. VTE within past three months)	**Option 1: Planned surgery** • Withhold warfarin for five days before surgery • Two to three days before surgery: When INR is less than 2 commence treatment dose of LMWH* subcutaneously or unfractionated heparin (UFH) IV: – If using LMWH*, last dose should be given at least 24 hours before surgery – If using UFH IV, cease infusion 4 to 6 hours before surgery **Option 2: Planned surgery with stable INR in preceding weeks** • Night before surgery: If INR is stable at 2-3 in the two to four weeks preceding surgery, give 3 mg vitamin K IV or oral • Day of surgery: – If INR less than or equal to 1.5, surgery can proceed – If INR greater than 1.5, defer surgery or, if urgent give Prothrombinex™-VF 15-30 units/kg depending on initial and target INR or, if Prothrombinex™-VF not available, give FFP 10-15 mL/kg **Option 3: Urgent surgery** • For urgent surgery, check INR before surgery and give Prothrombinex™-VF 15-30 units/kg depending on initial and target INR • For procedures with low risk of bleeding, warfarin may not need to be ceased.	• Recommence warfarin as soon as possible at the **previous 'normal'** maintenance dose as long as there is no evidence of bleeding — DO NOT RE-LOAD. • Consider bleeding risk against thrombosis • Start LMWH or UFH 12 to 24 hours postoperatively: • If using LMWH begin with prophylactic dose • If using UFH IV, avoid bolus and aim to prolong APTT as recommended by your site • Consider delaying resumption of therapeutic LMWH for 48 to 72 hours after major surgery • Continue LMWH or UFH for minimum of five days and cease 48 hours after target INR is reached • In surgery with high risk of bleeding, consider using prophylactic dose LMWH or UFH IV only and cease 48 hours after target INR is reached.

Source: adapted from Tran et al. 2013
*Exercise caution in patients with impaired renal function (calculated creatinine clearance is less than 30 mL/min) where LMWH can accumulate and contribute to bleeding.