NHS
Guy's and St Thomas'
NHS Foundation Trust

Clinical Guideline

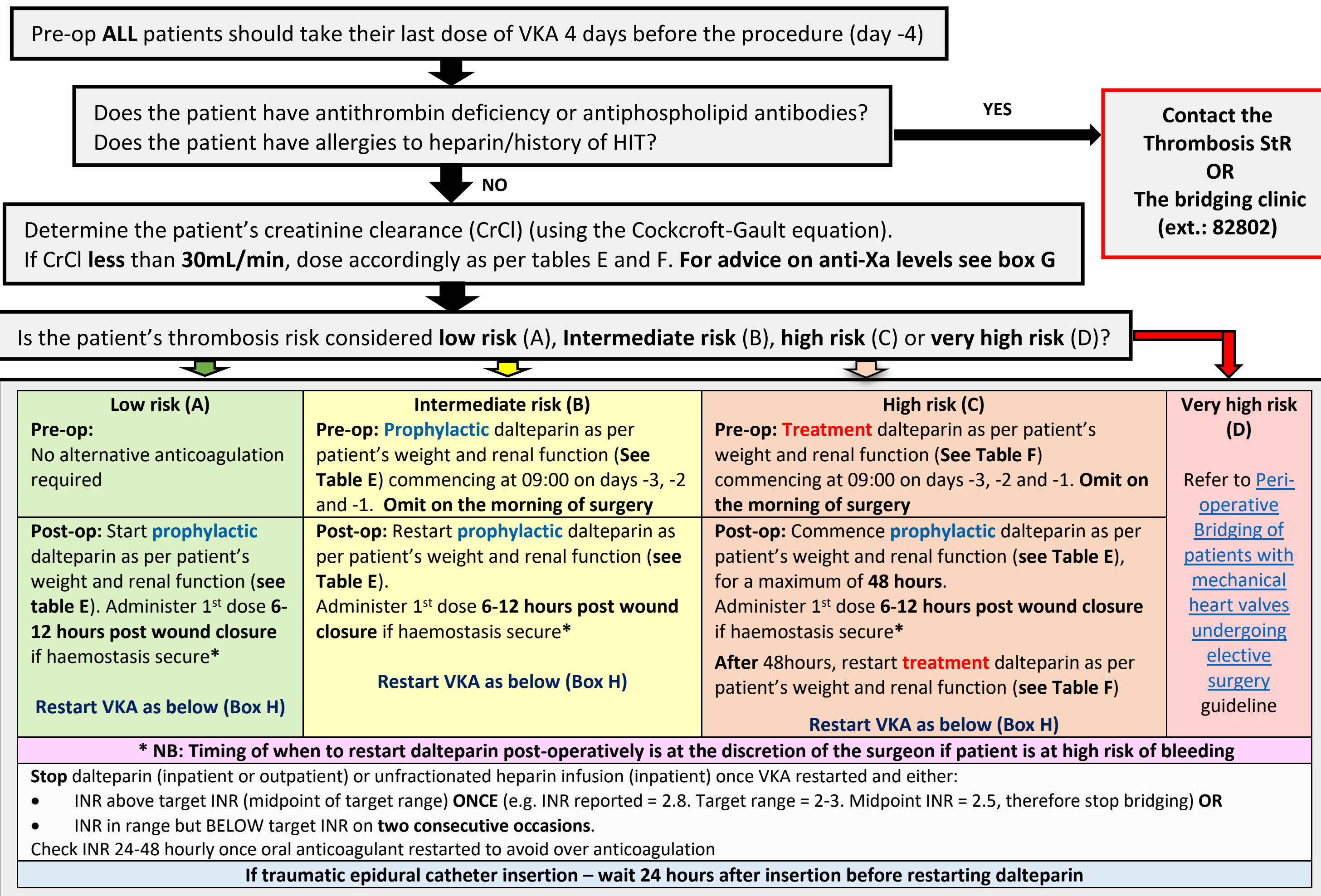
Perioperative bridging of warfarin in adult patients undergoing elective surgery

Document Detail	
Document Type	Guidelines
Document name	Perioperative bridging of warfarin in adult patients undergoing elective surgery
Document location	GTi Clinical Guidance Database
Version	7.1
Effective from	*06 December 2019*
Review date	*16 October 2022*
Owner	Oncology and Haematology and Surgical Oncology
Author	Mr Anthony Hackett, Senior Pharmacist - Anticoagulation Safety Professor Beverley Hunt, Co-Dir of Pathology - HoS Laboratory Haematology Ms Caroline Broadbent, Principal Pharmacist for Surgery - GI and Acute Pain Rebecca Chanda, Highly Specialist Pharmacist Cardiovascular – Thrombosis Dr Karen Breen, Consultant Haematologist
Approved by, date	Drug & Therapeutics Committee, *December 2019*
Superseded documents	7.0
Related documents	Adult guidelines for Unfractionated Heparin infusions for systemic anticoagulation for APTT 2 – 2.5
Keywords	Perioperative, bridging, preoperative, peri-operative, anticoagulation, elective, postoperative, dalteparin, warfarin, surgery
Relevant external law, regulation, standards	

Change History		
Date	Change details, since approval	Approved by

Perioperative Bridging of Vitamin K Antagonists e.g. warfarin in Adult Patients Undergoing Elective Surgery

NHS
Guy's and St Thomas' NHS Foundation Trust



Key:
AF – Atrial Fibrillation
CVA – Cerebrovascular accident
CrCl- Creatinine clearance
DVT – Deep vein thrombosis
HIT – Heparin induced thrombocytopenia
IVC – Inferior vena cava
PE – Pulmonary embolism
TIA – Transient Ischaemic Attack
VKA – Vitamin K Antagonist e.g. warfarin/acenocoumarol/phenindione
VTE – Venous thromboembolism

(A) Low risk:
- Target INR 2.0-3.0 ***unless*** VTE with:
  - Active cancer (intermediate risk)
  - VTE within **last 3 months** (Intermediate risk)
  - VTE within **last 6 weeks** (High risk)
- Non-valvular AF: Target INR 2.0 – 3.0 ***unless***:
  - TIA/CVA within the last **3 months** (Ideally avoid surgery – Intermediate risk)

(B) Intermediate risk:
- DVT/PE target INR 2.0-3.0 but VTE within the last **6-12 weeks**
- Valvular AF ***regardless of target INR range***
- TIA/CVA within the previous **3 months** (ideally avoid surgery)

(C) High risk:
- VTE within the last 6 weeks - Ideally avoid surgery or consider using an IVC filter
- Any indication with a target INR range of 3.0 – 4.0 (***excludes mechanical heart valves = very high risk***)

(D) Very high risk:
Mechanical heart valves – Refer to Peri-operative Bridging of patients with mechanical heart valves undergoing elective surgery guideline

(E) PROPHYLACTIC dalteparin dosing

Weight	CrCl 30mL/min or more	CrCl less than 30mL/min (Renal impairment) see box G
≤ 49 kg	2,500 units **ONCE** daily	2,500 units **ONCE** daily
50-99 kg	5,000 units **ONCE** daily	2,500 units **ONCE** daily
100-139 kg	7,500 units **ONCE** daily	5,000 units **ONCE** daily
140-179 kg	5,000 units **TWICE** daily	5,000 units **ONCE** daily
≥ 180 kg	Seek advice from the Thrombosis StR	

(F) TREATMENT dalteparin dosing

Weight	CrCl 30mL/min or more (Treatment dose = 200units/kg)	CrCl less than 30mL/min (Renal impairment) see box G (Treatment dose = 140units/kg)
≤ 45 kg	7,500 units **ONCE** daily	5,000 units **ONCE** daily
46-56 kg	10,000 units **ONCE** daily	7,500 units **ONCE** daily
57-68 kg	12,500 units **ONCE** daily	10,000 units **ONCE** daily
69-82 kg	15,000 units **ONCE** daily	10,000 units **ONCE** daily
≥ 83kg	18,000 units **ONCE** daily (dose capped)	12,500 units **ONCE** daily

(G) Anti Xa levels – Prophylactic and Therapeutic

Anti-Xa level testing in reduced renal function and low body weight
Dalteparin can accumulate in patients with impaired renal function. There is little data on the accumulation of dalteparin in patients with low body weight
Consider peak and trough anti Xa level testing for patients with low body weight or in any patient with renal impairment if concerned about bleeding/bruising after receiving dalteparin for 7 days
Peak anti Xa levels: Take level **4 hours** after dalteparin administration
Trough anti Xa levels: Take level **prior** to dalteparin administration

	Therapeutic ONCE daily dosing target range	Prophylactic target range
Peak	0.7 – 1.2 IU/mL	≤ 0.3 IU/mL
Trough	≤ 0.2 IU/mL	≤ 0.2 IU/mL

If anti-Xa levels exceed the reference range, contact the Thrombosis StR for advice

(H) Re-starting Vitamin K Antagonists

If there is no excessive bleeding (and epidural catheter has been removed), ideally restart on the evening of surgery (obtain surgical consultant/StR approval first) once oral intake established
- **INR 1.5 or less**: Restart with a loading dose of **1.5 x patients usual dose for 3 days**, then continue on patients usual dose (e.g. a patient who usually takes 5mg daily should receive 7.5mg daily for 3 days, then continue on 5mg)
- **INR greater than 1.5:** Contact the ward pharmacist/Thrombosis StR for advice

Note: If any medications that interact with VKA's have been started/stopped during admission, contact the ward pharmacist for advice as the usual maintenance dose may need altering

Refer patient to their local anticoagulation clinic within:
- 3 days of discharge if only one INR in range pre discharge
- 5 days of discharge if two consecutive INRs in range pre discharge

Thrombosis StR contact details: Bleep 0122 (0294 out of hours)