British Society of Interventional Radiology

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IR PROCEDURE BLEEDING RISK GUIDANCE[a]

PRE-ASSESSMENT SCREENING

All patients, not on anti-thrombotic therapy, can be initially assessed using the HEMSTOP questionnaire below (each question scores 1 for yes):

- Have you ever consulted a doctor or received treatment for prolonged or unusual bleeding (such as nosebleeds, minor wounds)?
- Do you experience bruises/haematomas larger than 2 cm without trauma or severe bruising after minor trauma?
- After a tooth extraction, have you ever experienced prolonged bleeding requiring medical/dental consultation?
- Have you experienced excessive bleeding during or after surgery?
- Is there anyone in your family who suffers from a bleeding disorder (such as haemophilia or von Willebrand disease)?
- Have you ever consulted a doctor or received treatment for heavy or prolonged menstrual periods (contraceptive pill, iron etc.)?
- Did you experience prolonged or excessive bleeding after delivery?

If < 2 positive responses:	**LOW RISK PROCEDURES:** No coagulation screen or FBC required **MODERATE/HIGH RISK PROCEDURES:** No coagulation screening required; FBC only
If ≥ 2 positive responses:	Perform coagulation screen (FBC, PT, APTT, Clauss fibrinogen assay) and discuss with haematologist prior to procedure

BLEEDING RISK STRATIFICATION FOR COMMON IR PROCEDURES[b]

LOW RISK INTERVENTIONS	MODERATE RISK INTERVENTIONS	HIGH RISK INTERVENTIONS
Basic venous interventions (IVC filter insert/removal)	Arterial interventions (≤ 6F)	Arterial interventions (≥ 7F)
Superficial interventions/ biopsies (excluding liver/renal)	Embolisation (TACE/UAE/PAE)	Aortic stent grafting
GI tract stenting	Venous/dialysis access interventions	Tumour ablation
MSK interventions	Tunnel line insertions[c]	PCNL/renal biopsy/nephrostomy
US guided drainages		TIPSS/TJ liver biopsy
Catheter exchange/removal		Liver biopsy/biliary intervention

PRE-PROCEDURAL BLOOD PARAMETERS REQUIREMENTS

LOW RISK INTERVENTIONS	MODERATE RISK INTERVENTIONS	HIGH RISK INTERVENTIONS
No procedure specific laboratory tests	Hb: > 70 g/L	Hb: > 70 g/L
	Plts: > 50 x 10^9/L	Plts: > 50 x 10^9/L
	If on vit K antagonist INR: < 2.0	If on vit K antagonist INR: < 1.5

LIVER DISEASE[d]

Consider correction if: Fibrinogen: < 1.2 g/L Plts: < 50 x 10^9/L Haematocrit < 25%

PRE-PROCEDURAL ANTI-THROMBOTIC MEDICATION INSTRUCTIONS*

***CONSIDERATIONS**:
1. Cardiac stents and stroke or thrombosis within 3 months: consult appropriate clinical team
2. Patients on dual antiplatelet therapy, ticagrelor or prasugrel: follow local policy or consult appropriate specialist
3. Follow local Trust policy for referral to bridging clinic
4. Bleeding and thrombosis risks should be discussed as part of the consent process

HEPARINS: Low Risk Procedures

	Hold duration prior to procedure	Suggest restart time following procedure
Unfractionated Heparin	2-4 h	6 h
LMWH (prophylactic)	12 h	6-12 h
LMWH (therapeutic)	1 day	6-12 h

HEPARINS: Moderate/High Risk Procedures

	Hold duration prior to procedure	Suggest restart time following procedure
Unfractionated Heparin	4 h	12-48 h
LMWH (prophylactic)	12 h	1 day
LMWH (therapeutic)	1 day	1-3 days

Vitamin K Antagonists: Low Risk Procedures | INR < 2.0 on day of procedure

	Hold duration prior to procedure	Suggest restart time following procedure
Warfarin/Acenocoumarol	2-3 days	Evening

Vitamin K Antagonists: Moderate/High Risk Procedures | INR < 1.5 on day of procedure

	Hold duration prior to procedure	Suggest restart time following procedure
Warfarin/Acenocoumarol	5 days	12-24 h

Thrombin Inhibitors: Low Risk Procedures (as per PAUSE protocol)

	Hold duration prior to procedure	Suggest restart time following procedure
Dabigatran	1 day if eGFR > 50 2 days if eGFR < 50	1 day
Argatroban	2-4 h	6 h

Thrombin Inhibitors: Moderate/High Risk Procedures (as per PAUSE protocol)

	Hold duration prior to procedure	Suggest restart time following procedure
Dabigatran	2 days if eGFR > 50 4 days if eGFR<50	2-3 days
Argatroban	4 h	6 h

Factor Xa Inhibitors: Low Risk Procedures (as per PAUSE protocol)

	Hold duration prior to procedure	Suggest restart time following procedure
Apixaban/Rivaroxaban/Edoxaban	Omit 1 day prior	Restart after 1 day
Fondaparinux (prophylactic)	1 day	6 h
Fondaparinux (therapeutic)	2 days	6 h

Factor Xa Inhibitors: Moderate/High Risk Procedures (as per PAUSE protocol)

	Hold duration prior to procedure	Suggest restart time following procedure
Apixaban/Rivaroxaban/Edoxaban	Omit 2 days prior	Restart after 2-3 days
Fondaparinux (prophylactic)	1 day	12-24 h
Fondaparinux (therapeutic)	2 days	12-24 h

Aspirin & ADP Receptor Inhibitors: Low Risk Procedures

	Hold duration prior to procedure	Suggest restart time following procedure
Aspirin/ Clopidogrel/Ticagrelor/Prasugrel	Does not need to be stopped	N/A

Aspirin & ADP Receptor Inhibitors: Moderate/High Risk Procedures

	Hold duration prior to procedure	Suggest restart time following procedure
Aspirin (low dose monotherapy)	Does not need to be stopped	N/A
Clopidogrel	VASCULAR: Operators discretion NON-VASCULAR: 7 days	VASCULAR: Operators discretion NON-VASCULAR: 1 day
Ticagrelor/Prasugrel	7 days	1 day

Nucleoside transport inhibitor and PDE3 inhibitor: Low to High Risk Procedures

Dipyridamole	Omit on day of procedure	N/A

[a] This is summary guidance and complimentary to more detailed guidance: *British Journal of Haematology 2024; 204 (5): 1697-1713*
[b] This guidance is not meant to be exhaustive for every variance of every procedure, and local policies and operator judgement remain important when balancing risk of thrombosis versus bleeding - these discussions should ideally be part of the consent process
[c] Platelet count of >30 x 10^9/L is an acceptable target [d] Neither PT nor INR correlate well with bleeding risk in patients with liver disease

Authors: *Clare Bent and Raj Das on behalf of the BSIR Safety and Quality Committee, Keith Gomez and Will Lester on behalf of the BSH Haemostasis and Thrombosis Task Force.*
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