Management Guidelines for *NON-URGENT* Invasive Procedures in Medical Imaging

HIGH RISK	LOW RISK

****CAUTION****

Patient at risk for THROMBOTIC EVENTS may require consultation for bridging anticoagulation therapy (eg. PROSTHETIC HEART VALVES, VENOUS THROMBOEMBOLISM, ATRIAL FIBRILLATION WITH PRIOR STROKE)

Premature discontinuation of anti-platelet drugs in patients with CORONARY STENTS may precipitate acute stent thrombosis

Do not stop anticoagulation in these patients without consultation

HIGH RISK PROCEDURES

HIGH RISK INR ≤ 1.8 or ≤ 2.5 with chronic liver disease Target INR for warfarin reversal: ≤ 1.5 Platelets > 50 x 10^9/L Testing within 2 weeks for outpatient	Anticoagulant / Antiplatelet MEDS	Discontinue Yes*/ No	Suggested Timing of LAST dose BEFORE procedure*	Timing of FIRST dose AFTER day of procedure*
VASCULAR ▪ TIPS ▪ Catheter-directed thrombolysis ▪ Arterial interventions >6Fr access **NON-VASCULAR** **Abdominal Procedures** ▪ Solid organ, lung and deep tissue biopsies ▪ Prostate biopsy ▪ Deep abscess drainage ▪ PCNL/Nephrostomy ▪ G and GJ-tube placement ▪ Biliary drainage (PTBD) ▪ Thermal ablations – liver, kidney, lung, MSK **High Risk Spine & Neurological Procedures** ▪ Vertebroplasty ▪ Kyphoplasty ▪ Cervical spine facet blocks ▪ Epidural injection (20 G or larger) NOTE: Specialized Neurovascular Procedures are excluded, including carotid stenting, and intra-cranial embolization	▪ aspirin (ASA), low dose (81 mg)	Yes	- 5 days	Day + 1
	▪ clopidogrel (Plavix®) ▪ aspirin, non-low dose ▪ ticagrelor (Brilinta®)	Yes	- 5 days†	Day + 1 or + 2
	▪ prasurgrel (Effient®)	Yes	- 7 days†	Day + 1 or + 2
	▪ warfarin (Coumadin®)	Yes	- 5 days, CHECK INR, TARGET ≤ 1.5 *consider bridging in high thrombosis risk cases	Day + 1
	▪ subcutaneous heparin (prophylactic)	Yes	- 8 hrs prior	Day 0 (evening)
	▪ low molecular weight heparin (LMWH)	Yes	prophylactic: > 12 hrs prior therapeutic: > 24 hrs prior	Day 0 (evening)
	▪ (IV) unfractionated heparin	Yes	infusion to stop 4 hrs prior	8 hrs after
	▪ dabigatran (Pradaxa®)	Yes	GFR >50: - 3 days GFR ≤50: - 5 days	Day + 2 or + 3
	▪ rivaroxaban (Xarelto®) ▪ apixaban (Eliquis®) ▪ edoxaban (Lixiana®)	Yes	Withhold 2 doses if GFR ≥ 50 Withhold 3 doses if GFR < 50	Day + 2 or + 3
	▪ fondaparinux (Arixtra®)	Yes	-3 days for GFR ≥ 50 -5 days for GFR < 50	Day + 1 Day + 2 or + 3

***Ordering Physician must give instructions to patient; † Consider minimum of 7 days if concomitant ASA**

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LOW RISK PROCEDURES				
LOW RISK No routine pre-procedural INR/CBC unless bleeding diathesis suspected; then consider INR ≤ 3.0 and Platelets > 20 x 10^9/L. For chronic liver disease, INR is not required.	**Anticoagulant / Antiplatelet MEDS**	**Discontinue Yes*/ No**	**Suggested Timing of LAST dose BEFORE procedure if discontinuing**	**Timing of FIRST dose AFTER day of procedure***
VASCULAR ▪ Dialysis access and venous interventions including varicocele embolization, venography ▪ IVC filter placement/removal ▪ PICC insertion ▪ Uncomplicated catheter/line exchange/removal ▪ Angiography/arterial intervention up to 6 Fr access (eg. UAE) ▪ Transjugular liver biopsy ▪ Tunneled CVC/Port/Hickman **NON-VASCULAR** ▪ Catheter exchange or removal (GU, biliary, abscess) ▪ Superficial abscess drainage ▪ Core biopsy – breast, extremity or other superficial location ▪ Joint injection or aspiration, including facet joint, nerve root /medial branch ▪ GI tract stenting (colon, esophagus) ▪ Hysterosalpingography, Fallopian Tube Recanalization ▪ Non-tunneled chest tube ▪ Lumbar puncture and Epidural injections (21 G or smaller) **Exception:**Thoracentesis or paracentesis can be carried out with any platelet count or INR **Superficial Aspiration / Biopsy (FNAB)** **Breast, Extremities, Lymph nodes, Thyroid** NOTE: Most LOW risk procedures do not require the discontinuation of anticoagulation/antiplatelet therapy.	▪ aspirin (ASA), any dose	No		
	▪ clopidogrel (Plavix®) ▪ ticagrelor (Brilinta®)	Possible to continue	Do not withhold	
	▪ prasurgrel (Effient®)	Possible to continue	Do not withhold	
	▪ warfarin (Coumadin®)	Possible to continue	- 5 days, TARGET INR ≤ 3.0, *consider bridging in high thrombosis risk cases	Day 0 (evening)
	▪ subcutaneous heparin ▪ low molecular weight heparin (LMWH) – prophylactic	No		
	▪ low molecular weight heparin (LMWH) – therapeutic	Possible to continue	Do not withhold	
	▪ (IV) unfractionated heparin	Possible to continue	Do not withhold	
	▪ dabigatran (Pradaxa®)	Possible to continue	Do not withhold	
	▪ rivaroxaban (Xarelto®) ▪ apixaban (Eliquis®) ▪ edoxaban (Lixiana®)	Possible to continue	Do not withhold	
	▪ fondaparinux (Arixtra®)	Possible to continue	Do not withhold	

***Ordering Physician must give instructions to patient; † Consider minimum of 7 days if concomitant ASA**

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Booking Clerk Script:

- "You are booked for a: _____ procedure in Medical Imaging.
  If you are on any blood thinner medication, you must ask your Ordering Physician for instructions on discontinuing and resuming your medications".
- We ask that you contact your doctor for more details on this, as we have faxed this info to them.
- If you don't discuss this with your doctor, your procedure may be cancelled.

Please Note:

- Patients on anti-inflammatory medications (NSAIDs) such as the following: (Advil® [ibuprofen], Voltaren®, Celebrex®) may **continue** taking them.
- Please inform your Ordering Physician if you are taking supplements as these may affect blood test results.

References

1. SIR Journal of Vascular Radiology 2019; 30:P1168-1184.E1 – Society of Interventional Radiology Consensus Guidelines for the Periprocedural Management of Thrombotic and Bleeding Risk in Patients Undergoing Percutaneous Image-Guided Interventions—Part II: Recommendations. Retrieved from https://www.jvir.org/article/S1051-0443(19)30407-5/fulltext
2. Canadian Journal of Cardiology 2011; 27:S1-S59 – The Use of Antiplatelet Therapy in the Outpatient Setting: Canadian Cardiovascular Society Guidelines. Retrieved from https://www.onlinecjc.ca/article/S0828-282X(17)31221-7/fulltext
3. Department of Hematology, VCHA, 27 Jan 2015 – Recommendations for the Interruption of Anticoagulation or Anti-platelet Therapy for Elective Invasive Procedures or Surgery. Retrieved from http://shop.healthcarebc.ca/MedicalImaging/ABCD-21-07-90001.pdf

External links to online version
VCH, PHC & VCH SHOP: http://shop.healthcarebc.ca/MedicalImaging/ABCD-21-07-90001.pdf
This above link is used to access the guidelines on the external websites for FH & VCH.

Intranet links to online version
VCH, PHC & VCH SHOP: http://shop.healthcarebc.ca/MedicalImaging/ABCD-21-07-90001.pdf
FH Pulse: https://pulse/clinical/medical-imaging/Pages/Medical-imaging-nuclear-medicine-regional-guidelines.aspx

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Revision History:

Version	Date	Description/Key Changes	Revised By
10.3	08-MAY-2018		Dr. Stephen Ho, IR MPL
10.4	07-JUN-2018		Dr. Stephen Ho, IR MPL
12.1	10-AUG-2019	Refer to memo	Dr. Stephen Ho, IR MPL
12.2	05-SEP-2019	Refer to memo	Dr. Stephen Ho, IR MPL
13.0	21-APR-2022	• Title Change from "Elective" to "Non-Urgent" • Removal of "Standard Risk". Only high and low risk remain for risk for thrombotic events. • All venous interventions remain in low risk. • Caudal epidural moved to low risk • Prostate biopsy and lung biopsy itemized. • "Complex" removed from thermal ablations	Dr. Stephen Ho, IR MPL
14.0	25-MAY-2022	• REMOVE NSAIDs completely from HIGH RISK TABLE • Change wording HIGH RISK - Epidural injection (lumbar/thoracic/cervical) to Epidural injections (20 G or larger) • Change wording LOW RISK – Joint injection or aspiration, including facet joint, nerve root/medial branch • Change wording LOW RISK – Lumbar puncture and Epidural injections (21 G or smaller) • Change reference from CrCl to GFR (much easier to understand for non MDs)	Dr. Stephen Ho, IR MPL
15.0	15-JUN-22	• REMOVE discontinuation of NSAIDs for High Risk procedures statement from *Please Note* section	Dr. Stephen Ho, IR MPL