

**MANAGEMENT OF ANTITHROMBOTIC THERAPY
FOR NEURAXIAL AND PERIPHERAL NERVE PROCEDURES**

Guidelines to Prevent Neuraxial Hematoma after Epidural/Intrathecal/Spinal Injections and Perineural Hematoma following Peripheral Nerve procedures, excluding Chronic Pain Procedures ONLY

These guidelines are not intended to supersede clinical judgement.

Low Risk vs High Risk Peripheral Nerve Procedures are determined by the provider performing the block based on bleeding risks at the time the procedure is performed

Low Risk Peripheral Nerve Procedures			
MEDICATION	A. PRIOR TO PERIPHERAL NERVE PROCEDURE Minimum time between last dose of antithrombotic agent AND low risk nerve catheter placement	B. WHILE PERIPHERAL NERVE CATHETER IN PLACE Restrictions on use of antithrombotic agents while low risk nerve catheters are in place and prior to their removal	C. AFTER PERIPHERAL NERVE PROCEDURE Minimum time between low risk nerve catheter removal AND next dose of antithrombotic agent
ANTITHROMBOTICS FOR VTE PROPHYLAXIS/ FULL SYSTEMIC ANTICOAGULATION			
All Antithrombotic Medications	No time restriction Catheters to be placed at the discretion of the regional or acute pain service attending	No time restriction If antithrombotic therapy needs to be changed while a catheter is in place, please notify the acute pain service as soon as possible, however, do not delay initiation of antithrombotic therapy	No time restriction

Neuraxial*/High Risk Peripheral Nerve Procedures			
ATTENTION! WHEN CAN YOU SAFELY DO NEURAXIAL/High Risk PERIPHERAL NERVE PROCEDURES OR GIVE ANTITHROMBOTIC AGENTS? <i>NOTE: For concerns related to bleeding or traumatic procedures, contact Pain Service.</i>			
PRECAUTIONS: Do NOT give MULTIPLE anticoagulants, including antiplatelet agents, concurrently in patients undergoing Neuraxial/High Risk Nerve Procedures. Delay restarting anticoagulants for 24 hours after traumatic needle placement. *Neuraxial procedures include epidural/intrathecal/spinal injections and catheters			
MEDICATION	A. PRIOR TO NEURAXIAL/NERVE PROCEDURE Minimum time between last dose of antithrombotic agent AND neuraxial injection or neuraxial/high risk nerve catheter placement	B. WHILE NEURAXIAL/NERVE CATHETER IN PLACE Restrictions on use of antithrombotic agents while neuraxial/high risk nerve catheters are in place and prior to their removal	C. AFTER NEURAXIAL/NERVE PROCEDURE Minimum time between neuraxial injection or neuraxial/high risk nerve catheter removal AND next dose of antithrombotic agent
ANTICOAGULANTS FOR VTE PROPHYLAXIS			
heparin unfractionated 5000 units SQ Q8H or Q12H	May be given; no time restrictions for neuraxial injection or neuraxial/nerve catheter placement Does not require Pain Service approval		
heparin unfractionated 7500 units SQ Q8H	12 hours	CONTRAINDICATED while catheter in place. May NOT be given unless approve by Pain Service Attending	4 hours

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dalteparin (Fragmin) 5000 units SQ QDay	12 hours – CrCl ≥ 30 ml/min 24 hours – CrCl < 30 ml/min	May be given BUT: •Must wait 8 hours after catheter PLACEMENT before giving dose •Must wait 12 hours after last dose before REMOVING catheter	4 hours
enoxaparin (Lovenox) 40mg SQ QDay			
enoxaparin (Lovenox) 30mg SQ Q12H or 40mg SQ Q12H	12 hours – CrCl ≥ 30 ml/min 24 hours – CrCl < 30 ml/min	CONTRAINDICATED while catheter in place. May NOT be given unless approved by Pain Service Attending	4 hours
fondaparinux (Arixtra) 2.5mg SQ QDay	48 hours – CrCl ≥ 30 ml/min CrCl < 30 ml/min: Call Hematology		6 hours
apixaban (Eliquis) 2.5mg bid (<i>prophylaxis</i>)	48 hours – CrCl ≥ 50 ml/min 72 hours – CrCl 30-50 ml/min CrCl < 30 ml/min: Call Hematology		
rivaroxaban (Xarelto) 10mg QDay (<i>prophylaxis</i>)	48 hours – CrCl ≥ 50 ml/min 72 hours – CrCl 30-50 ml/min CrCl < 30 ml/min: Call Hematology	May be given BUT: •Must wait 8 hours after catheter PLACEMENT before giving dose •Must wait 12 hours after last dose before REMOVING catheter	6 hours
betrixaban (Bevyxxa) 80mg QDay (<i>prophylaxis</i>)	72 hours – CrCl ≥ 30 ml/min 96 hours – CrCl 15-30 ml/min CrCl < 15 ml/min: Call Hematology		
AGENTS USED FOR FULL SYSTEMIC ANTICOAGULATION			
apixaban (Eliquis) 2.5mg bid – 10mg bid	48 hours – CrCl ≥ 50 ml/min 72 hours – CrCl 30-50 ml/min CrCl < 30 ml/min: Call Hematology		
rivaroxaban (Xarelto) 15-20mg Qday or 15mg bid	48 hours – CrCl >50 ml/min CrCl < 50 ml/min: Call Hematology		
edoxaban (Savaysa) 30-60mg QDay	48 hours – CrCl ≥ 50 ml/min CrCl < 50 mL/min: Call Hematology	CONTRAINDICATED while catheter in place. May NOT be given unless approved by Pain Service Attending	6 hours
dabigatran (Pradaxa) 75mg bid – 150mg bid	72 hours – CrCl 50 ml/min 120 hours – CrCl 30-50 ml/min CrCl < 30 ml/min: Call Hematology		
fondaparinux (Arixtra) 5-10mg SQ QDay	72 hours – CrCl ≥ 30 ml/min CrCl < 30 ml/min: Call Hematology		
dalteparin (Fragmin) 200 Units/kg SQ QDay or 100 Units/kg SQ Q12H	24 hours – CrCl ≥ 30 ml/min 48 hours – CrCl < 30 ml/min	CONTRAINDICATED while catheter in place. May NOT be given unless approved by Pain Service Attending	4 hours

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enoxaparin (Lovenox) 1 - 1.5mg/kg SQ QDay or 1mg/kg SQ Q12H	24 hours – CrCl ≥ 30 ml/min 48 hours – CrCl < 30 ml/min		
heparin unfractionated IV infusion	when aPTT normal or anti-Xa activity undetectable		
heparin unfractionated full dose SQ	when aPTT normal or anti-Xa activity undetectable		
warfarin (Coumadin)	when INR ≤ 1.4		
DIRECT THROMBIN INHIBITORS, INJECTABLE			
argatroban IV continuous infusion	when DTI assay normal or aPTT normal	CONTRAINDICATED while catheter in place. May NOT be given unless approved by Pain Service Attending	4 hours
bivalirudin (Angiomax) IV continuous infusion	when DTI assay normal or aPTT normal		
ANTIPLATELET AGENTS			
aspirin or NSAIDS	May be given; no time restrictions for neuraxial injection or neuraxial/nerve catheter placement Does not require Pain Service approval		
abciximab (Reopro) IV continuous infusion	48 hours	CONTRAINDICATED while catheter in place. May NOT be given unless approved by Pain Service Attending	6 hours
aspirin/dipyridamole (Aggrenox)	24 hours		
cangrelor (Kengreal) IV continuous infusion	3 hours		
clopidogrel (Plavix)			
prasugrel (Effient)	7 days		
ticagrelor (Brilinta)			
tirofiban (Aggrastat) IV continuous infusion	8 hours– CrCl > 50 ml/min CrCl < 50 Call Hematology		

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eptifibatide (Integrelin) IV continuous infusion			
THROMBOLYTIC AGENTS			
alteplase (TPA) 1mg dose for catheter clearance	May be given; no time restrictions for neuraxial injection or neuraxial/nerve catheter placement Does not require Pain Service approval (Maximum dose 4mg/24 hours)		
alteplase (TPA) full dose for stroke, MI, etc	48 hours	CONTRAINDICATED while catheter in place. May NOT be given unless approved by Pain Service Attending	10 days

References

Horlocker TT et al. Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic therapy: American Society of Regional Anesthesia and Pain Medicine Evidence Based Guidelines (4th ed). Reg Anesth Pain Med 2018; 43(3):263-309.

Burnett AE, et al. Guidance for the practical management of the direct oral anticoagulants (DOACs) in VTE treatment. J Thromb Thrombolysis (2016) 41:206–232. DOI 10.1007/s11239-015-1310-7.

Each recommendation was reviewed by members of anesthesiology, hematology and pharmacy to determine the class (strength of recommendation) and level (quality of the evidence) using the 2018 American Society of Regional Anesthesia and Pain Medicine (ASRA) Guidelines. These recommendations were approved by the UW Medicine Thrombosis and Anticoagulation Safety Committee. In any case of discrepancy from the ASRA 2018 Regional and Antithrombotic Guidelines, a final decision was reached after consideration of medication pharmacokinetics, procedure and thrombosis risk and clinical experience. These guidelines are not intended to set out a legal standard of care and do not replace medical care or the judgment of the responsible medical professional considering all the circumstances presented by an individual patient. This consensus statement is not intended to ensure a successful patient outcome in every situation and is not a guarantee of any specific outcome.