

Anticoagulation Guidelines for Regional Anesthesia and Analgesia

Wake Forest University RAAPM recommendations to avoid increasing the risk of neuraxial hematoma following neuraxial analgesic/anesthetic procedures.*

Anticoagulant (half-life)	Anticoagulant Type	MINIMUM delay between last dose of anticoagulant and performance of neuraxial technique	MINIMUM delay between neuraxial technique or catheter removal and next anticoagulant dose	Other precautions
Heparin (Unfractionated)*** Intravenous (1.5h)	Pro-antithrombin III (anti II.X)	2-4h, and aPTT WNL**	≥1 hour ¹	†
Heparin (Unfractionated)*** (1.5h) SQ BID ≤10,000u/day	Pro-antithrombin III (anti II.X)	No restriction ¹ , caution during peak 1-4h post dose.**	No restriction ¹	†
Heparin (Unfractionated)*** (1.5h) SQ TID ≥10,000u/day	Pro-antithrombin III (anti II.X)	Insufficient data and caution advised. ¹ ≥6 hours**	≥1 hour ¹ (Unless first dose then no restriction.)**	†
Enoxaparin (Lovenox) (3-6h) prophylaxis 40mg QD or 30mg BID	LMWH Anti-Xa	12 hours ¹	Initiate ≥4 hours post removal. ¹ (BID use not recommended with indwelling catheter) ^{1,3}	†
Enoxaparin (Lovenox) (3-6h) therapeutic 1mg/kg BID or 1.5mg/kg QD	LMWH Anti-Xa	24 hours ¹	Not recommended with catheter ¹ Initiate ≥4h post removal.** ³	†
Fondaparinux (Arixtra) (17-21h)	Pentasaccharide Anti-Xa	4.5 days and/or heparin assay.**	Contraindicated with catheter ¹ Initiate ≥2h post removal.**	†
Rivaroxaban (Xarelto) (5-13h)	Anti-Xa	48-72h** For catheter removal 22-26h ²	6h, or 24h if traumatic insertion (package insert) ²	†, ††
Warfarin (Coumadin) (60 h)	Vit K-dependent Factor Inhibition	4-5 days & INR WNL (≤ 1.2) ¹ For removal INR ≤ 1.5. ¹	Guided by INR ¹	†
Aspirin/NSAIDS (>72h)	Anti-Platelet	No restrictions ¹	No Restrictions ¹	
Clopidogrel (Plavix) (6-8 h)	Irreversible platelet aggregation inhibitor	7 days ¹	Not recommended with catheter ¹ Initiate ≥2h post removal.**	
Ticlopidine (Ticlid) (4-5 days with repeated doses)	Irreversible platelet aggregation inhibitor	14 days ¹	Not recommended with catheter ¹ Initiate ≥2h post removal.**	
Prasugrel (Effient) (7 h)	Irreversible platelet aggregation inhibitor	7-10 days ²	Not recommended with catheter ² Initiate ≥2h post removal.**	
Ticagrelor (Brilinta) (7-12h)	ADP reversible receptor blocker	5 days ²	Not recommended with catheter ² Initiate ≥2h post removal.**	††
Abciximab (Reopro) (30 minutes)	Glycoprotein IIb/IIIa inhibitor	48 hours ¹	Not recommended with catheter ¹ Initiate ≥2h post removal.**	
Eptifibatide (Integrilin) (2.5h)	Glycoprotein IIb/IIIa inhibitor	8 hours ¹	Not recommended with catheter ¹ Initiate ≥2h post removal.**	
Tirofiban (Aggrastat) (2h)	Glycoprotein IIb/IIIa inhibitor	8 hours ¹	Not recommended with catheter ¹ Initiate ≥2h post removal.**	
Bivalirudin (Angiomax) Desirudin (Iprivask) Argatroban (Acova)	Thrombin (II) Inhibitor (IV)	Insufficient data. ¹ Neuraxial techniques not recommended.**	Insufficient data. ¹	
Dabigatran (Pradaxa) (17 h) (prolonged with CRI)	Thrombin (II) Inhibitor (oral)	5 days**	Not recommended with catheter ¹ Initiate ≥6h post removal. ²	†
Apixaban (Eliquis) (12-15h)	Oral Factor Xa Inhibitor	4 days**	≥6 h ²	††

Note: Recommendations are based on single drug use, combinations increase risk. Caution if traumatic neuraxial technique.

* Recommendation compliance does not eliminate the risk for neuraxial hematoma.

** Our current practice, no current published guidelines.

***Patients receiving unfractionated heparin should have platelet count checked after 4 days to monitor for possible heparin induced thrombocytopenia (HIT).

† Caution with CRI, low weight, elderly.

†† T ½ doubled with strong CYP3A4 inhibitors (anti-fungals, antiretrovirals).

References: ¹ ASRAPM Evidence-Based Guidelines 2010: "Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy". ² Regional anesthesia and Antithrombotic agents: recommendations of the European Society of Anesthesiology. ³ ASRA Safety Announcement: Updated recommendations to decrease risk of spinal column bleeding and paralysis in patients on low molecular weight heparins, 11/6/13.