

Guidelines for Neuraxial Anaesthesia and Anticoagulation

Identification of risk factors and establishment of guidelines will not completely eliminate the complications of spinal haematoma. Vigilance in monitoring is critical to allow early evaluation of neurological dysfunction and prompt intervention.

RECOMMENDED TIME INTERVALS BEFORE AND AFTER NEURAXIAL PUNCTURE OR CATHETER REMOVAL

Drug	Acceptable time to remove epidural catheter or to perform epidural/spinal	Administration of drug while spinal or epidural catheter in place	Acceptable time after block performance or catheter removal for next drug dose
Heparins			
UFH			
• Subcutaneous (SC) Prophylaxis, ($\leq$ 15000 units/day)	4 h or normal APTTR	Caution	1-2 h
• Intravenous Treatment ¹ (i.e. infusions)	4 h or normal APTTR	Caution	4 h
LMWH (Dalteparin)			
• SC Prophylaxis (depending upon body weight)	12 h	Caution	4 h
• SC Treatment	24 h	Not Recommended	4 h 24 h if block was traumatic
Apixaban	48 h	Not Recommended	6 h
Aspirin Caution with concomitant anticoagulants	At any time	No additional precautions	At any time
Clopidogrel	7 days	Not Recommended	6 h
Coumarins, i.e., warfarin	INR 1.4 or less	Not Recommended	After catheter removal
Dabigatran	CrCl > 80ml/min: 48 h CrCl 50-80 ml/min: 72 h CrCl 30-50 ml/min: 96 h	Not Recommended	6 h
Dipyridamole	At any time		6 h
Edoxaban	CrCl > 30: 24 h CrCl < 30: 48 h	Not Recommended	6 h
Eptifibatide	8 h	Not Recommended	6 h
Fondaparinux (Prophylaxis dose only, avoid in treatment dose)	36-42h (consider anti-Xa levels)	Not Recommended	6-12 h
NSAIDs	At any time	No additional precautions	At any time
Prasugrel	7 days	Not Recommended	6 h
Rivaroxaban	CrCl > 30 ml/min: 24 h CrCl < 30 ml/min: 48 h	Not Recommended	6 h 24 h if traumatic puncture
Rivaroxaban treatment dose (10 mg BD or more) or high bleeding risk	CrCl > 30ml/min: 48 h CrCl < 30ml/min: 72 h		
Ticagrelor	5 days	Not Recommended	6 h
Tirofiban	8 h	Not Recommended	6 h
Cilostazol	5 days	Not Recommended	6 h

If patient is on low dose aspirin and low molecular weight heparin: providing the low molecular weight heparin has been stopped for > 12 hours, the platelet count is > 75 and normal coagulation is confirmed neuraxial blocks can be categorised as increased risk only.

For an anticoagulation regimen/drug outside of this advice, hepatic or renal dysfunction: consider risk/benefits to patient of epidural/spinal anaesthesia and refer to SPC and or/haematologist. (General rule of thumb: Anticoagulant should be stopped for 3 half-lives prior to an invasive procedure; however, this may be prolonged in renal failure).

N.B. Creatinine clearance (CrCl) is an estimate of Glomerular Filtration Rate (GFR); however, CrCl is slightly higher than true GFR because creatinine is secreted by the proximal tubule (in addition to being filtered by the glomerulus). For all practical purposes eGFR can be used in place of CrCl.

Reference: www.Kidney.org

Appendix

1. Full intravenous heparinisation.

- Management of epidurals should take place in an area where there is a high level of vigilance i.e. should be appropriately staffed (trained) e.g., SADU, Level 1 or 2.
- Monitor
 - Carefully monitor and document sensory and motor nerve blockade. In event of **DENSE** block, STOP epidural infusion, seek **urgent** medical assistance (see appendix 7 of Continuous Epidural Analgesia (CEA) Guidelines)
 - Monitor TWICE daily APTT, maintain in therapeutic range i.e. twice normal range for APTT.
 - For removal of epidural catheter, STOP heparin infusion; check blood clotting 4-6 hours later, correct anticoagulation if necessary, and prior to removal of epidural catheter.

Relative risk related to Neuraxial blocks in obstetric patients with abnormalities				
Risk factor	Normal risk	Increased risk	High risk	Very high risk
LMWH –prophylactic dose	>12h	6-12h	<6h	<6h
LMWH-therapeutic dose	>24h	12-24h	6-12h	
UFH-infusion	Stopped>4h and APTTR <1.5			APTTR above normal range
UFH-prophylactic bolus dose	Last given >4h	Last given <4h		
NSAID + aspirin	Without LMWH	With LMWH dose 12-24h	With LMWH <12	
Warfarin	INR<1.5	INR 1.4-1.7	INR 1.7-2.0	INR>2.0
General anaesthesia	Starved, not in labour, antacids given		Full stomach or in labour	
Pre-eclampsia	Platelets >100 x 10 ⁹ .l ⁻¹ within 6h of block	Platelets 75-100x x 10 ⁹ .l ⁻¹ (stable) and normal coagulation tests	Platelets 75-100x x 10 ⁹ .l ⁻¹ (decreasing) and normal coagulation tests	Platelets < 75-100 x 10 ⁹ .l ⁻¹ or abnormal coagulation test with indices >1.4 or HELLP
Idiopathic thrombocytopenia	Platelets 75-100 x 10 ⁹ .l ⁻¹ within 24h of block	Platelets 50-75 x 10 ⁹ .l ⁻¹	Platelets 20-50 x 10 ⁹ .l ⁻¹	Platelets <20 x 10 ⁹ .l ⁻¹
Intra uterine fetal death	FBC and coagulation tests normal within 6h of block	No clinical problems but no investigation results available		With abruption or overt sepsis
Cholestasis	INR <1.5 within 24h	No clinical problems but no investigation results available		

References

- AAGBI (2013) Association of Anaesthetists of Great Britain and Ireland, Obstetric Anaesthetists' Association and Regional Anaesthesia UK. Regional anaesthesia and patients with abnormalities of coagulation. *Anaesthesia* 2013; **68**: pages 966-72. Available from: http://www.aagbi.org/sites/default/files/rapac_2013_web.pdf
- Baglin, Keeling, Kitchen (2012) Effects on routine coagulation screens and assessment of anticoagulant intensity in patients taking oral dabigatran or rivaroxaban: Guidance from the British Committee for Standards in Haematology. *Br J Haematol*; 159(4):427-9.