

Anti-coagulant, Thrombolytic, Anti-platelet Medicines and Spinal or Epidural Analgesia

Communication between the Anaesthetist, the Surgical Team and nursing staff is of paramount importance. This information is a guide based on current practice in Lothian, the Division antithrombotic guideline and a guideline produced by the Association of Anaesthetists (Links below).

Association of Anaesthetists of Great Britain and Ireland

<http://www.aagbi.org/site/default/files/RAPAC%20for%20consultation.pdf>

NHS Lothian UHD Antithrombotic Guide (Adults) version 3.2

<http://intranet.lothian.scot.nhs.uk/NHSLothian/Healthcare/A-Z/Haematology/policy/Documents/Antithrombotic%20Guideline.pdf>

1. Low dose subcutaneous unfractionated heparin ("minihep")

- A spinal or epidural block should not be performed within 6 hours after the administration of the heparin.
- At least 6 hours should elapse after the administration of "minihep" before an epidural catheter is removed.
- The next dose of heparin should not be given until at least 2 hours after the block or removal of the catheter.

2. Low dose subcutaneous low molecular weight heparin (LMWH) for venous thromboembolism prophylaxis eg dalteparin once daily

- A spinal or epidural block should not be performed within 12 hours of a dose of LMWH. For inpatients the routine administration of LMWH in the evening before surgery should be encouraged and avoids the difficulty in timing of central neural blockade for major surgery the following day.
- 12 hours should elapse after LMWH is given before an epidural catheter is removed.
- The next dose of LMWH should not be given until at least 4 hours after performing the block or removing the catheter.
- If there is a traumatic spinal or epidural procedure or one in which bleeding occurs LMWH should be delayed for at least 12 hours after the event.

3. Higher/therapeutic dose LMWH for anticoagulation

- central neural blockade should not be performed for at least 24 hours after a therapeutic dose of LMWH
- at least 24 hours should elapse after LMWH is given before an epidural catheter is removed
- LMWH should not be given until at least 4 hours after performing the block or removing the catheter.

4. Intravenous heparin infusion

- Anticoagulation should be discussed with the responsible anaesthetist and surgeon.
- APTT should be <1.3 times normal before spinal or epidural anaesthesia or removing an epidural catheter. In practice this usually means stopping the heparin infusion for at least 4 hours before giving a spinal or epidural block or removing an epidural catheter.
- No further heparin should be given for at least 4 hours after the spinal or epidural block or epidural catheter removal.
- If the patient has been on a heparin infusion for more than 4 days, a platelet count should be checked and should be $> 100 \times 10^9/l$ prior to spinal or epidural placement or epidural catheter removal

5. Warfarin

- Warfarin should be stopped several days before spinal or epidural block so that the INR (or PT ratio) is normal or close to normal (<1.4).
- If warfarin is to be (re)started in a patient with an epidural catheter, the catheter should be removed before the first dose of warfarin is given and in any case before the INR (PT ratio) has risen to 1.4 or higher.

6. Thrombolysis

Spinal and epidural analgesia are contraindicated in patients being given thrombolytic therapy.

- There is a **significant risk** of epidural haematoma if thrombolytic therapy is given before or after an epidural or spinal injection or removal of an epidural catheter.
- Epidural or spinal anaesthesia should not be used in a patient who has received thrombolytic therapy within the previous 24 hours, and should only be used in patients who have received thrombolysis within the previous few days if the plasma fibrinogen level is normal.
- Epidural or spinal anaesthesia should not be used in a patient who is likely to receive thrombolysis during or after surgery.
- If thrombolytic therapy is unexpectedly given to a patient who already has an epidural catheter, the catheter should not be removed until at least 24 hours after the thrombolysis and should only be removed if the plasma fibrinogen level is normal.

7. Anti-platelet drugs

- NSAIDs and aspirin do not increase the risks of epidural haematoma and do not need to be omitted.
- Clopidogrel has a somewhat more potent anti-platelet activity than aspirin. The risk of epidural haematoma in patients taking clopidogrel is uncertain* and the decision as to whether to use spinal or epidural anaesthesia will depend on the anaesthetist's assessment of the overall risks and benefits. As with aspirin, it takes 7 days after stopping clopidogrel for the anti-platelet effect to wear off. If an epidural catheter is to be removed in a patient taking clopidogrel, there is no need to remove the catheter at a particular time before or after the clopidogrel is given.

- The combination of both aspirin and clopidogrel is associated with a marked increase in bleeding complications compared to either agent alone. Spinal or epidural block or the removal of an epidural catheter is not recommended in a patient who has received both aspirin and clopidogrel within the previous 5 to 7 days.
- If clopidogrel treatment is being considered in a patient with an epidural catheter in situ, the epidural catheter should ideally be removed first, or commencement of clopidogrel delayed.

*The CAPRIE trial (Clopidogrel versus Aspirin in patients at Risk of Ischaemic Events) found no increased risk of bleeding complications with clopidogrel over aspirin. No randomised studies have demonstrated increased surgical bleeding with clopidogrel (alone) as opposed to aspirin (alone) and as of mid 2004 there had been no published case reports of epidural haematoma after spinal or epidural anaesthesia in patients on clopidogrel. However, there have been reports suggesting increased bleeding in surgical patients taking clopidogrel – particularly in combination with aspirin - and the American Society of Regional Anaesthesia (ASRA) and Pain Medicine has recommended stopping clopidogrel 7 days before neuraxial anaesthesia.

8. Rivaroxaban is an orally administered factor Xa inhibitor.

It is licensed for several indications:

1. *Prevention of VTE in patients undergoing elective hip and knee replacement (10mg twice daily)*
2. *Prevention of stroke or systemic embolism in non-valvular AF (20mg once daily)*
3. *Treatment of DVT or PE and prevention of recurrent VTE (15mg twice daily for three weeks, then 20mg once daily)*

At present neuraxial blockade cannot be recommended for patients receiving rivaroxaban for these indications as information about use in association with regional analgesia is very limited.

ASRA has made recommendations available at:

http://journals.lww.com/rapm/Fulltext/2010/01000/Regional_Anesthesia_in_the_Patient_Receiving.13.aspx

A variety of new agents to modify coagulation are becoming available for routine clinical use e.g.

- dabigatran (Praxada®) – oral thrombin inhibitor
- fondaparinux (Arixtra®) – subcutaneous factor Xa inhibitor
- apixaban (Eliquis®) – factor Xa inhibitor
- tirofiban (Aggrastat®) – GPIIb/IIIa receptor antagonist.

Information about their use in association with regional analgesia is very limited. At present neuraxial blockade cannot be recommended for patients receiving these agents.

Medicine	Acceptable time after dose before block institution or catheter insertion/removal	Acceptable time after block institution or catheter insertion/removal before next dose	Additional comments
Parenteral anticoagulants			
Low-molecular weight heparin (LMWH) eg dalteparin <i>prophylactic doses</i>	12 hours	4 hours If there is a traumatic spinal or epidural procedure or one in which bleeding occurs LMWH should be delayed for at least 12 hours after the event.	For inpatients the routine administration of LMWH in the evening before surgery should be encouraged and avoids the difficulty in timing of central neural blockade for major surgery the following day.
Low-molecular weight heparin (LMWH) eg dalteparin <i>treatment doses</i>	24 hours	4 hours If there is a traumatic spinal or epidural procedure or one in which bleeding occurs LMWH should be delayed for at least 12 hours after the event.	
Unfractionated heparin eg heparin sodium <i>prophylactic doses administered subcutaneously</i>	4 to 6 hours	2 to 4 hours	
Unfractionated heparin eg heparin sodium <i>treatment doses administered by intravenous infusion</i>	APTT<1.3 times normal. In practice this usually means stopping the heparin infusion for at least 4 hours before giving a spinal or epidural block or removing an epidural catheter. If the patient has been on a heparin infusion for more than 4 days: Platelet count should be confirmed to be $>100 \times 10^9/L$	4 hours	Anticoagulation should be discussed with the responsible anaesthetist and surgeon.

Anti-thrombotic, Thrombolytics, Anti-platelets & spinal and epidural analgesia
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Medicine	Acceptable time after dose before block institution or catheter insertion/removal	Acceptable time after block institution or catheter insertion/removal before next dose	Additional comments
Oral anticoagulants			
Vitamin K antagonists eg warfarin	INR \leq 1.4	After catheter removal	

Medicine	Acceptable time after dose before block institution or catheter insertion/removal	Acceptable time after block institution or catheter insertion/removal before next dose	Additional comments
Anti-platelet medicines			
Aspirin	No additional precautions		
Non-steroidal anti-inflammatory drugs (NSAIDs) eg ibuprofen, diclofenac, ketoprofen, naproxen	No additional precautions		
Clopidogrel	7 days	<p><u>If commencing clopidogrel</u> 6 hours after catheter removal Ideally epidural analgesia should be discontinued and the catheter removed prior to institution of clopidogrel treatment</p> <p><u>If clopidogrel has been given or continued there is no advantage in waiting to remove the catheter, but there is a risk of epidural haematoma and the patient should be closely observed for signs of this (link)</u> An epidural should not be sited if clopidogrel therapy is ongoing.</p>	