Neuroradiology Fine Needle Spinal Procedures and Anticoagulation:

Fine needle spinal procedure: 20 gauge needle or smaller. Typically 20 or 22 gauge is used.

Medication	Recommendation
Aspirin & NSAIDS	-Does NOT need to be stopped.

Warfarin	-Stop **5 days** prior. -Check INR: INR ≤ **1.2** is normal. Proceed. *****INR of 1.3 or 1.4 requires 24 hrs of post procedure monitoring. INR of ≥1.5→ LP not done.
Thrombolytics (tPA)	Unsafe. Should not be used pre or post procedure. Time frame uncertain.

Heparin SQ (DVT prophylaxis) 5000 units SQ BID	-Check platelets if on heparin ≥5 days. -No contraindication or delay if standard dosing of 5000 units SQ BID. *-If given ≥ TID **or** > 5,000 units/dose or > 10,000 units /day:* ***follow heparin IV protocol.***
Heparin IV	-Wait **2-4 hours** after last dose of IV heparin. -Document normal PTT. -Check platelets if on heparin ≥5 days. -Wait at least 1 hr after procedure to restart heparin drip.
LMWH (Enoxaparin) prophylaxis 30 mg SQ BID or 40 mg SQ daily	-Wait **12 hrs** after last dose to perform procedure. -Wait **24 hrs** after LP to restart med.
LMHW (Enoxaparin) treatment 1-1.5 mg/kg/day	-Wait **24 hrs** after last dose to perform procedure. -Wait **24 hrs** to restart med.
Fondaparinux (Arixtra)	-Withhold based on Cr. Cr Cl >50 wait 2-3 days; Cr Cl < 50 wait 3-5 days

Clopidogrel (Plavix)	Stop 5 **days** prior.
Ticlopidine (Ticlid)	Stop **14 days** prior.
Abciximab (ReoPro) (IIb/IIIa)	Stop **2 days** prior.
Eptifibatide (Integrilin) (IIb/IIIa)	Stop **4-8 HOURS** prior.
Tirofiban (Aggrastat) (IIb/IIIa)	Stop **8 HOURS** prior.
Prasugrel (Effient)	Stop **7 days** prior.
Cilostazol (Pletal)	Stop **2 days** prior.
Persantine (Dipyridamole)	Stop **2 days** prior.

Desirudin (Revasc)	Do not do procedure. (Not enough info.)
Lepirudin (Refludan)	Do not do procedure. (Not enough info.)
Bivalirudin (Angiomax)	Do not do procedure. (Not enough info.)
Argatroban (Acova)	Do not do procedure. (Not enough info.)
Dabigatran	See Hospital Policy.
Rivaroxaban	See Hospital Policy.
Apixaban (Eliquis)	See Hospital Policy.

Additional points:

1: Formal recommendations concerning the safety of spinal procedures with patients on anticoagulation are not available in the radiologic literature. These recommendations are taken from:

-UIHC Rx formulary→ Pocket cards→ Guide to prevention and Tx of DVT in adults→Table 7
https://thepoint.healthcare.uiowa.edu/sites/Policies-UIHCPolicies/Medication%20Management/Anti-coagulation%20Management/2%20-%20Staff%20Education%20Resources/DVT%20Pocket%20Card.pdf

- Formal recommendations set forth by the American Society of Regional Anesthesia and Pain Medicine 2010, 3rd edition
- Layton et al. Recommendations for Anticoagulated Patients Undergoing Image-guided Spinal Procedures. AJNR. Vol 27 (3). Pg 468. March 2006.
- Formal recommendations set forth by the Society of Interventional Radiology

2: **The use of anticoagulation medications in combination (including aspirin/NSAIDS with other anticoagulation medication) has synergistic effects. More rigorous standards may be needed to prevent bleeding complications.**

3. Hospital resources include:

- Joan Murhammer (pharmacy)
- Anesthesia pain service (pager 3822)
- UIHC Rx formulary. (See above link.)

4. Platelets

- Platelet counts of ≥ **50,000/ml** are widely considered "safe" for an LP.
- Patients with platelets counts < 50,000/ml should be considered on a case-by-case basis.
  - Consider transfusion.
  - "Safe" LPs have been reported in **children** with ALL with platelet counts as low as 10,000/ml. Howard SC et al. JAMA, 2000:284;2222-2224.
    - *However, it is thought that LPs in children are less traumatic than in adults.*
- LP's in patients with elevated coags or low platelets should **ONLY** be done by an experienced radiologist with the goal of obtaining fluid on the first pass in mind.

OUR POLICY

- **Platelets ≥ 50,000/ml → Do the procedure**
- **Platelets 30,000- 50,000 /ml → do procedure as long as it is justified**
- **Platelets 10,000 - 30,000 /ml → Requires 1 of the following:**
  - **Transfusion to platelet level above 30,000/ ml.**
  - **Admit patient for 24 hrs after procedure for monitoring.**
  - **Staff to staff discussion.**
- **Platelets <10,000 /ml → Do not do the procedure.**

5. Normal coagulation values:

Parameter	Normal range
PT	9-12 secs
INR	0.8 -1.2
PTT	23-31 seconds
Platelets	150,000 – 400,000 per ml

6. Clotting labs are not required for procedures on otherwise healthy outpatients, but should be performed on the **following inpatients** prior to LP's.

- All patients on anticoagulation (Aspirin and NSAIDS do NOT require PT/INR check).
- Patients with liver disease.
- Patients with renal disease.

Patients who do not fall under these categories do not require coagulation labs prior to the procedure. Coagulation labs may be checked in other patients at the discretion of staff/fellow performing the procedure. It would be very helpful if the Fluoro team could ask the ordering provider if the patient falls into one of these categories; however, the responsibility for this screening ultimately falls to the fellow/staff performing the procedure

7. The standard use of chlorhexidine gluconate with v/v isopropyl alcohol for aseptic technique should be encouraged. The remote risk of association with neurologic complications was reported at 0.04% in a large patient series. This risk is likely exceeded by the benefit of more rapid onset of action, extended duration of effect, and effective antiseptic action. This recommendation is in agreement with the American Society of Anesthesiologists (Category A2 evidence).

- Practice Advisory for the Prevention, Diagnosis, and Management of Infectious Complications Associated with Neuraxial Techniques: A Report by the American Society of Anesthesiologists Task Force on Infectious Complications Associated with Neuraxial Techniques*. Anesthesiology 112(3): 530-545 510.1097/ALN.1090b1013e3181c1094c1097d1098.
- Sviggum HP, Jacob AK, Arendt KW, et al. Neurologic complications after chlorhexidine antisepsis for spinal anesthesia. Reg Anesth Pain Med 2012; 37:139–144.