QUEEN'S UNIVERSITY
DEPARTMENT OF ANESTHESIOLOGY AND PERIOPERATIVE MEDICINE

SUBJECT:	Guidelines for the management of antiplatelet medications prior to neuraxial procedures	**NUMBER**	
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PREAMBLE:

Antiplatelet medications are prescribed for the prophylaxis of cardiovascular and cerebrovascular atherosclerotic disease. Primary prophylaxis is defined as treatment for patients with risk factors in the absence of an established diagnosis of CVS disease. Secondary prophylaxis is treatment for overt disease (eg atrial fibrillation, angina, MI, CVA, PVS, cardiac stents etc).

Discontinuation of antiplatelet medications in patients with cardiac stents increases the risk of stent thrombosis which is associated with a 60% MI rate and 45% mortality rate. Patients with a bare metal stents (BMS) should have ASA and clopidigrel for at least 4-6 weeks and drug-eluting stents (DES) for 12 months after stent placement. Avoiding elective surgery during these vulnerable periods is the optimal way to mitigate this perioperative complication.

ASA and NSAIDs on their own do not appear to increase the risk of spinal hematoma in patients having neuraxial techniques.

GUIDELINES:

1. **Aspirin.** ASA has a central role in the prevention of thromboembolic complications from atherosclerotic disease and is the leading therapeutic drug for this purpose. The 2014 ACC/AHA guidelines recommend aspirin be continued for all patients with coronary stents. The POISE II trial showed aspirin use was associated with an increased risk of major bleeding. In patients with high-risk coronary artery or cerebrovascular disease, there is a need to weigh the potential risks of increased cardiovascular events versus the risks of increased bleeding. ASA alone has not been shown to increase the risk of spinal hematoma.

2. **Clopidogrel (Plavix™).** Clopidogrel is a thienopyridine which is marginally more effective for secondary prevention of vascular events than ASA. It is prodrug with significant inter-patient variability of platelet inhibition. It is an irreversible inhibitor of platelet function. The drug and active metabolites have a short half life (2-6 hours) but the effect on platelet function persists for the life of the platelet. It is used in combination with ASA after cardiac stenting and should be continued for at least 4-6 weeks after BMS and 12 months after DES. Elective surgery should be postponed if possible to avoid premature discontinuation of the drug. It should be discontinued for 7 days prior to neuraxial anesthesia.

3. **Prasugrel (Effient™).** Prasugrel is a thienopyridine that is similar to clopidogrel. It is an irreversible inhibitor of platelet function, and is a prodrug that is metabolized into an active metabolite. The half-life of its active metabolite is 2 to 15 hours, but platelet function is inhibited for the life of the platelet. It is indicated for co-administration with ASA after PCI for 12 months. If patient received cardiac stenting, the minimum duration of therapy is 1 month after BMS and 3 months after DES. Premature discontinuation of prasugrel should be avoided if possible.

4. **ASA/Dipyridamole (Aggrenox™).** Dipyridamole is a dipyridopyrimidine derivative with vasodilator and antiplatelet properties. It is used for the prevention of cerebral ischemic events that are noncardioembolic TIAs. It is an irreversible inhibitor of platelet function and should be discontinued 7 days before surgery after weighing the risks and benefits of bleeding.

5. **Ticlodipine (Ticlid™).** Ticlodipine is a thienopyridine that is not frequently used because clopidogrel has a better safety profile. It has a long half life with repeated dosing and should be discontinued for 14 days prior to neuraxial techniques.

6. **Ticagrelor (Brilinta™).** Ticagrelor is a reversible, direct inhibitor of platelet function. It has an equipotent metabolite. The half-life is 7 hours for ticagrelor and 9 hours for its active metabolite. It is indicated for co-administration with ASA for 12 months in patients with acute coronary syndromes managed with PCI, CABG, or medical therapy alone. If patient received cardiac stenting, the minimum duration of therapy is 1 month after BMS and 3 months after DES. Premature discontinuation of ticagrelor should be avoided if possible.

7. **Nonsteroidal anti-inflammatory medications.** These medications are reversible inhibitors of platelet function with significant variability in half life. NSAIDs on their own do not increase the risk of spinal hematoma and do not need to be discontinued for neuraxial techniques.

References:

1. ASRA Guidelines. Reg Anesth Pain Management 2010; 35: 64-101
2. Antiplatelet drugs: a review of their pharmacology and management in the perioperative period. Anesth Analg 2011; 112: 292-318
3. ACC / AHA Guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery. J Am Coll Card 2014; 64: e77-137.
4. https://www.asra.com/advisory-guidelines/article/1/anticoagulation-3rd-edition

Recommendations for antiplatelet medications

Generic Name	Trade Name	Half Life (h)	Recommended Time Interval before Neuraxial Block
Irreversible:			
ASA	Asprin™	0.5	May continue *
Clopidogrel	Plavix™	2-6	7 days
Prasugrel	Effient™	2 -15	7-10 days
ASA / Dipyridamole	Aggrenox™	13	7 days
Ticlodipine Single dose Repeated dose	Ticlid™	 12 4 to 5 days	14 days
Reversible:			
Ticagrelor active metabolite	Brilinta™	7 9	5 -7 days

* See guidelines for details – consider indication for ASA therapy and surgical bleeding risk

NSAIDs are reversible inhibitors of platelet function and do not seem to increase the risk of spinal hematoma. They do not need to be discontinued for neuraxial blocks. See below for suggested time intervals if NSAIDs are discontinued for other indications.

Generic Name	Trade Name	Half Life (h)	Time Interval to reverse NSAID effects
Celocoxib	Celebrex™	11	Minimal antiplatelet effect
Ibuprofen	Advil™	2	1 day
Ketoprofen	Apo-Keto™	2	1 day
Ketorolac	Toradol™	4-9	2 days
Mefenamic acid	Ponstan™	4	1 day
Meloxicam	Mobicox™	15-20	4 days
Naproxen	Naprosyn™ Aleve™	13	3 days
Prioxicam	Feldene™	50	10 days
Tiaprofenic acid	Surgam™	2	1 day