easternhealth

Guideline

Title

Perioperative Medication Management for Elective Surgery

1. Sponsorship

Executive Sponsor (Title)	Executive Director SWMMS
Director Sponsor (Title)	Program Director Surgery
Coordinating Authors (Name and Title)	Jeremy Szmerling (Senior Theatre and Perioperative Medicines Pharmacist) Candy Edwards (MBBS, FANZA)

2. Commissioning

2.1 Commissioning *(completed by Author in consultation with Sponsors listed above*)		
2.1.1 Is this guideline, procedure or protocol new?	Yes ☒ Go to 2.1.4 No ☐ Objectify no: 129____ Go to 2.1.2	
2.1.2 Will this guideline, procedure or protocol help EH achieve a desired outcome / is it still required?	Yes ☐ go to 2.1.3 No ☐ Detail reason for proposed decommissioning:	
2.1.3 Summarise reason for review and changes made:		
2.1.4 Purpose of guideline, procedure or protocol	To provide a guideline for the management of medications in the perioperative period in order to ensure consistency of practice and patient safety. The only current policy document in this area is policy 1969 specific to the management of diabetes medication in the perioperative period whereas this proposed guidelines will cover all aspects of perioperative medication management.	
2.1.5 Scope	EH-Wide ☒ Program-specific ☐ Directorate specific ☐	Corporate Procedure ☐
2.1.6 Are there existing policy documents relevant to this topic? (If yes, consider if can be incorporated into existing document)	Yes ☒ Title and number: Policy 1969 No ☐	
2.1.7 With which EH Standard would this guideline, procedure or protocol align?	Medication Management Standard (Policy 2325)	
2.1.8 Who will be consulted (stakeholders)?	Surgery Anaesthetics Pharmacy	
2.1.9 Which committees are required to endorse this guideline, procedure or protocol?	Medication Management CRGC Perioperative Q & S	
2.1.10 Which committee will approve this guideline, procedure or protocol?	CPC	
2.2 Commissioning committee approval to develop/review guideline/procedure/protocol *(completed by committee Secretary or delegate)*		
Approval to proceed with development/review **or** to decommission (delete one) Yes ☒ No ☐ Reason (if no): Date Commissioned: 11 August 2020		

Name of committee that approved/disapproved commissioning: Clinical Practice Committee

Title

Perioperative Medication Management for Elective Surgery

1. Context

To ensure an optimal and consistent assessment and evidence based management of medications in the peri-operative period.

2. Definition of terms

Minor Surgery – day-only procedures of short duration

Major Surgery – any surgical procedure that requires an overnight admission to hospital and following which the patient does not resume a normal diet for more than 4 hours

3. Name of Standard to which Guideline, Procedure or Protocol relates

Medication Management Standard (Policy 2325)

4. Processes

A thorough medication history should be taken prior to surgery to ensure appropriate decisions are made regarding medications. This should include both prescription and non-prescription medication (over-the counter medicines, vitamins and supplements, creams etc).

Fasting patients should be given their usual oral medication with a small sip of water unless these have been specifically withheld by a medical practitioner.

Please note: The following table is a general evidence based guideline only and does not take into account individual patient factors which may impact perioperative medication management. Clinical discretion should be applied when withholding and/or restarting medications in the perioperative period. For emergency surgery, medication management decisions will need to be individualised and the POMILs team can be contacted for advice.

Contents:

4.1 Anticoagulants and antiplatelets

Class	Medication	Withholding Recommendation	Restarting Recommendation	Comments
Antiplatelets	**Aspirin**	Continue if history of IHD. Consult local unit policy	Low Bleeding Risk Procedure: ASAP after procedure (e.g. night of procedure) High Bleeding Risk Procedure: 24-48 hours following the procedure Overall decision needs to be individualised. Suggest consulting with surgeon ± POMILS team	➢ ***Low dose aspirin is usually continued (consult local unit policy)** ➢ **It is important to know the indication for antiplatelets (IHD, MI, Stent, CVA, PVD)** ➢ Cessation of antiplatelet therapy should only be made after consideration of the patient's risk of thrombosis and the relative risk of surgical bleeding.
	Aspirin + dipyridamole)	Withhold for 7 days and consider swapping to aspirin		
	Clopidogrel	Withhold for 7 days		
	Prasugrel	Withhold for 10 days		
	Ticagrelor	Withhold for 10 days		

				➢ Cessation of all antiplatelet therapy after cardiac stent insertion (especially if drug eluting) is associated with increased risk of stent thrombosis. Risk if heightened if insertion is recent (< 6 months) ➢ Check with appropriate unit before stopping if patient has recent IHD, DES or CVA ➢ In general, for DAPT (e.g. aspirin + clopidogrel) and it has been > 12 months withhold the second agent and continue the aspirin. If patient is on a single agent other than aspirin and it has been > 12 months withhold the other agent and commence aspirin during the pre-op period. ➢ Strongly suggest contacting POMILS team (or relevant sub-specialty team) if: o Recent MI (<6-12 months) o Recent stent insertion (<6-12 months) o Recent stroke (<3-6 months)
Oral Anticoagulants	**Warfarin**	Consult Warfarin Guideline (Objectify Policy 4453)		➢ Decision for perioperative bridging using LMWH depends on thromboembolic and bleeding risk, and needs to be individualised. If advice is required please contact HATH team. Please also consider referral to HITH if needed post discharge. ➢ Patients who present with moderate or severe bleeding, please liase with HATH.
	Dabigatran **Rivaroxaban** **Apixaban**	Consult Guidelines for the use of the direct acting oral anticoagulants (DOACs) in adults (Objectify Policy 3336) – Section 4.8.1 Endoscopy – Consult Guideline for the Management of Anticoagulant and Antiplatelet Therapy in patients undergoing endoscopy procedures (Objectify Policy 3136)	Consult Guidelines for the use of the direct acting oral anticoagulants (DOACs) in adults (Objectify Policy 3336) – Section 4.8.2	
Injectable Anticoagulants	**Prophylactic subcut heparin**	Last dose ≥ 12 hours pre-op	Recommence LMWH < 24 hours after the procedure.	
	Therapeutic IV heparin	Stop infusion 4 hours pre-op		
	Prophylactic dose LMWH	Last dose ≥ 12 hours pre-op		
	Therapeutic dose LMWH	Last dose ≥ 24 hours pre-op		

NOTES:

- Bleeding risk – See Appendix A

4.2 Cardiac Medications

Class	Medication	Withholding Recommendation	Restarting Recommendation	Comments
Cardiovascular	**ACE/ARB**	Continue Exception: Major surgery/fluid shift or blood loss expected. *Bowel prep or poor renal function: Consider withholding for 1-2 days taking into account BP (if on multiple treatments and still high, discuss with treating physician)	Restart D2 post-op (or within 48 hours) if BP and eGFR return to baseline	➢ Continuing ACE inhibitors until time of surgery can increase risk of perioperative hypotension, but can reduce risk of postoperative hypertension. ➢ Consideration should be given to the indication, for example in heart failure or poorly controlled hypertension the risk may outweigh the benefit of withholding and decision may need to be individualised.
	Beta Blockers	Continue		
	Alpha 2 agonists (e.g. clonidine, moxonidine)	Continue		
	Calcium Channel Blockers (e.g. amlodipine, diltiazem)	Continue		
	Diuretics	Withhold morning of major surgery only *Bowel prep: Consider withholding for 1-2 days (avoid excess dehydration, risk of worsening heart failure or renal damage)	Restart post-op	➢ Consideration should be given to the indication, for example in poorly controlled heart failure or severe renal failure the risk may outweigh the benefit of withholding. ➢ If diuretics are withheld on the morning of surgery and volume overload develops, quick diuresis can be initiated by IV administration intra or post-operatively.
	Digoxin	Continue		➢ Perioperative digoxin levels are usually not required.
	Statins	Continue		
	Non-Statin hypolipidemic agents (e.g. fenofibrate, ezetimibe)	Continue		

4.3 Diabetic Medications

- Link to Diabetes – Peri-operate Management Objectify Policy 1969

4.4 Immunological Agents

Class	Medication	Withholding Recommendation	Restarting Recommendation	Comments
Immunomodulators	**Non-biological DMARDs (e.g. Methotrexate)**	In general, continue the current dose. Strongly recommend consulting with the relevant speciality unit (e.g. rheumatology for CTD or		➢ A systematic review of four studies in RA patients suggests continued methotrexate

		renal/gastro if previous transplant) and in particular where a patient is on multiple DMARDs. If patient is managed by a private rheumatologist they should be consulted.	therapy perioperatively is safe, associated with a reduced risk of flares and does not result in increased incidence of infection or poor wound healing ➢ There is more limited data suggesting it is safe to continue hydroxychloroquine and sulfasalazine in the perioperative period. ➢ There is limited and conflicting data on the use of leflunomide during the perioperative period.
	Biological DMARDs (e.g. Monoclonal antibodies)	Liaise with the treating specialist Infliximab (Remicade): Withhold 6-8 weeks Etanercept (Enbrel): Withhold 1 week Adalimumab (Humira): Withhold 2 weeks ➢ Increased risk of post-op infections (appears more than other immunological drugs) ➢ Withhold pre-op and post-op (until at least wound healing has progressed to allow for suture/ staple removal, i.e. 1-2w) ➢ Need to D/W prescribing dr re: risk of cessation vs continuance Rituximab (monoclonal Ab against CD-20) ➢ Prolonged B-lymphocyte depletion can developing lasting up until 1y post-Rx ➢ Check B-cell count and D/w prescribing dr re: elective surgery timing	➢ For elective procedures consideration should be given to timing the surgery at the end of the dosing cycle of the medication.
	Corticosteroids (e.g. prednisolone)	Continue and consider a stress response dose. For patients with primary adrenal insufficiency or receiving adrenosuppressive doses of steroids (prednisolone equivalent ≥ 5mg for 4 weeks or longer) – IV Hydrocortisone on anaesthetic induction, followed by immediate initiation of continuous infusion of hydrocortisone at 200mg/24h Post-operative steroid replacement: Hydrocortisone 50mg 6 hourly IV if nil by mouth Resume enteral glucocorticoid at double the pre-surgical therapeutic dose for 48 h if recovery is uncomplicated. Otherwise continue double oral dose for up to a week	➢ If primary adrenal insufficiency (eg. Addison's disease), please contact Endocrinology or pateint's usual Endocrinologist ➢ Major complications and critical illness excite a prolonged stress response. Any glucocorticoid supplementation should reflect this pattern.

NOTES:

- Continuing immunological agents in these patient will help with control of immunological diseases and decrease flare ups but will also increase infection risk and delay wound and bone healing.
- Discussion should be had with the surgeon and prescribing doctor (e.g. rheumatologist, gastroenterologist) to clarify individual patient's risk

4.5 Analgesics

Class	Medication	Withholding Recommendation	Restarting Recommendation	Comments
Opioid replacement therapy	**Methadone** **Buprenorphine ± Naloxone**	Continue and ensure regular dose it taken on day of surgery Early referral to APS is recommended.		➢ Opioid requirement for these patients may be high and unpredictable because of opioid tolerance. ➢ A multimodal analgesic strategy should be employed with an emphasis on regional analgesic modalities whenever possible

Analgesics	**NSAID's**	Withhold for 3 days* Ibuprofen can be withheld for 24 hours*	Restart postop Where IV NSAIDS are given intra-op please consider when to re-start NSAIDS (e.g. Parecoxib IV intra-op, will need to wait 12-24 hours before restarting PO NSAID)	➢ Consideration should be given regarding balancing risk of procedural bleeding and pain control ➢ References differ on how long to withhold NSAIDS perioperatively but platelet function normalises after 3 days.
	Opioids	Continue and ensure regular dose is taken on day of surgery		➢ Opioid requirement for these patients may be high and unpredictable because of opioid tolerance. ➢ A multimodal analgesic strategy should be employed with an emphasis on regional analgesic modalities whenever possible ➢ High dose (OMED>50mg) discuss with anaesthetist and consider referral to APS
	Paracetamol	Continue		
	Neuropathic pain agents (e.g. TCA/ gabapentinoids/anti-epileptics)	Continue		
	Cortisone Injections	Discuss with surgeon if in area of surgery		
	Intra-thecal morphine pumps	Continue		➢ Notify Anaesthetics

4.6 Other Medications

Class	Medication	Withholding Recommendation	Restarting Recommendation	Comments
Psychiatric	**TCAs**	Continue		
	SSRIs	Continue		
	SNRIs	Continue		
	Mood stabiliers (e.g. lithium, valproate)	Continue		➢ Monitor serum levels regularly throughout the perioperative period ➢ Regarding lithium, additional monitoring is required regarding fluid and electrolytes as well as a low threshold to check thyroid function pre-surgery.
	Antipsychotics agents	Continue Consult patient's psychiatrist if there are any concerns.		➢ Check ECG for evidence of prolongation of QT interval and if present discuss with anaesthetics ➢ Antipsychotic agents may potentiate sedative and hypotensive effects of anaesthetics and opioid analgesics perioperatively
	Benzodiazepines (for use in anxiety)	Continue		➢ Allow patients to take prescribed anti-anxiety medication on day if they require, and to inform nursing staff.
	Psychostimulants	Withhold morning dose	Resume when patient is stable.	
	MOA-I irreversible (e.g. Phenelzine)	Withhold for 14 days and discuss with treating	Restart post-op	➢ D/W anaesthetist, psychiatrist, these drugs likely need controlled

		psychiatrist.		cessation considered
	MOA-I reversible (e.g. Moclobemide)	Withhold for 1 day	Restart post-op	
Gastrointestinal Agents	**H2 blockers and PPIs**	Continue		➢ If still symptomatic, consider increased dose 2-3 days pre-op.
Pulmonary Agents	**Inhaled Steroids, anticholinergics and beta agonists**	Continue		➢ Encourage smoking cessation (ideally 6/52 pre-op). ➢ Encourage compliance especially in 1-2/52 pre-op. ➢ Encourage patient to bring Ventolin and self-medicate as desired.
Endocrine Agents	**Oral Contraceptive Pill (ORT)**	Continue High VTE Risk: Consider withholding 4 weeks pre-surgery (discuss with treating team)	If withholding pre-surgery, restart post-surgery and additionally continue alternate birth control methods for one week	➢ VTE risk assessment based on VTE Prophylaxis Guidelines using objectify policy 74 . ➢ Patients on OCP are generally at higher risk of VTE and appropriate prophylaxis should always be given in the perioperative period. ➢ If the OCP is withheld pre-surgery, appropriate counselling on alternative birth control methods should be given
	Post-menopausal hormone therapy (HRT)	Continue Moderate to High VTE Risk: Consider withholding for 2 weeks pre-surgery (discuss with treating team)	If withholding pre-surgery, can restart postoperatively once the period of elevated risk for VTE has resolved.	➢ VTE risk assessment based on VTE Prophylaxis Guidelines using objectify policy 74 . ➢ Patients on HRT are at higher risk of VTE and appropriate prophylaxis should always be given in the perioperative period.
	Selective Estrogen Receptor Modulators (SERMs)	Continue High VTE Risk, Indication osteoporosis (e.g. Raloxifene): Consider withholding 3 days before surgery High VTE Risk, Indication Breast Cancer Prevention/ Treatment: Consult treating oncologist.	If withholding pre-surgery, can restart postoperatively once the period of elevated risk for VTE has resolved.	➢ VTE risk assessment based on VTE Prophylaxis Guidelines using objectify policy 74 . ➢ Patients on SERMs are at higher risk of VTE and appropriate prophylaxis should always be given in the perioperative period. ➢ Patients who do not discontinue a SERM pre-surgery should not have their surgery delayed, and appropriate VTE prophylaxis should be charted.
	Thyroid Drugs	Continue		
	Bisphosphonates for osteoporosis	Withhold morning of surgery	Restart post-op	
	Sildenafil	Withold 24 hours pre-op*	Restart post-op	➢ Do not withhold if indication is pulmonary hypertension
Neurological Agents	**Anti-seizure medication**	Continue		➢ IV options exist for phenytoin, valproate, levetiracetam and phenobarbital.
	Anti-Parkinsonian medication	Continue		➢ Abrupt withdrawal of anti-parkinsonian drugs may to lead to flares of Parkinson symptoms. ➢ Consider changing over to

				a rotigotine patch if expected to be nil orally for a prolonged period.
Antiretroviral Agents	**Antiretroviral Agents**	Continue		➢ Viral resistance is more likely to occur when doses of some medications are intermittently missed over an extended period of time.
Gout Therapy	**Colchicine**	Continue		➢ Surgery is known to precipitate acute gouty arthropathy
	Allopurinol	Continue		
Other	**Naltrexone**	Withhold for 72 hours	Restart when patient no longer requires opioids as part of their pain management plan.	➢ Limited evidence for how long to withhold and when to restart. ➢ Always maximise use of non-opioid pain management options where possible, including blocks.

4.7 Complementary Medications

Herbal Medications	**Calcium, Folate, Magnesium, Vitamin A, Vitamin D and Zinc (short term only)**	Continue		
	All others	Withhold for 14 days	Restart post-op	➢ The justification for withholding most herbal medicines for 14 days pre-op is that while there is no evidence that herbal medications improve surgical outcomes, there are theoretical reasons that these agents may increase perioperative morbidity and the purity and nature of some herbal medications is unclear. ➢ If required, UpToDate provides more specific recommendations on the following common herbal medications: Ephedra, Garlic, Ginkgo, Ginseng, Kava, St Johns Wort, Valerian and Echinacea.

5. Scope

For use within Eastern Health in the elective setting including in-patients undergoing surgical procedures, pre-admission clinics and day stay patients.

6. Tools & Techniques

Nil

7. References

General:

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8. **Development History**

09/07/2020 – First draft created (JS)

09/07/2020 – Commisioning statement sent to CPC (JS)

13/07/2020 – Box Hill PAC Guide to Periperative Management of Medications (Candy Edwards MBBS FANZA, collated 11/2/2017, reviewed 2020).

9. **Attachments**

App 1. Bleeding Risk Assessment.docx

Eastern Health Authorship

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Dr Candy Edwards, Staff Anaesthetist, Eastern Health

Mr Jeremy Szmerling, Acting Senior Theatre and Perioperative Medicines Pharmacist, Eastern Health

Development / Review (complete this section after development/review, prior to approval)

Key external information sources consulted: Legislation ☐ External benchmarks ☐ External standards ☐ Risk Register Item ☐ Other ☐ Provide specific details:	
Key Stakeholders consulted in development/review *eg. IPAC, OHS, Support Services, ICT, Residential Care, Legal Counsel.*	Title/Name
Consumer consulted	Yes ☐ No ☐
Has development or revision of this Guideline, Procedure or Protocol impacted on the Medical Record – Electronic or Paper?	☐ Yes - Electronic Medical Record - Refer to the EMR Clinical Practice Change & Optimisation Guideline* ☐ Yes – Paper Medical Record – Refer to the Clinical Document Approval Guideline* *Wherever possible, EMR change requests and revised Clinical Documents are to be submitted for approval at the same time as the standard ☐ No
Implementation plan developed and attached?	Yes –Guideline/Procedure/Protocol is new or significantly revised ☐ No –Guideline/Procedure/Protocol has undergone only a minor revision ☐
Policy documents to be removed following approval	Document Numbers & Titles
Further comments/notes	
Key search words	Surgery, Perioperative, Withhold, Restart, Medication Management, Elective Surgery

Endorsement and Approval

Endorsement by relevant committee (*completed by committee secretary or delegate)*		
Name(s) of Endorsing Committee(s) *e.g. Quality & Safety Committee, CPC, Clinical Risk Governance Committee.*	Conditions of endorsement	Date Endorsed dd/mm/yy
Medication Management CRGC		13/08/2021
Perioperative Q&S		15/07/2021
Approval by relevant committee *(completed by committee secretary or delegate)*		
Approved for		1 Year (Extreme Risk) ☐ 2 Years (High Risk) ☐ 3 Years (Moderate or Low Risk) ☒
Alignment of Guideline, Procedure or Protocol EH-Wide	Clinical Practice Committee	Date approved dd/mm/yy ☒ 14/9/21

Program or Directorate-specific	Program Quality & Safety Committee *Specify:*	☐ / /
Corporate Procedure	Executive Committee	☐ / /
	Board/Board Committee	☐ / /
	Date of next review: 14/9/24 *Please notify coordinating author and Manager Clinical Governance of approval*	

Publishing

Date approval notified to Manager Clinical Governance *(completed by Manager Clinical Governance)*	14/9/21
Date forwarded to policy administrator *(completed by QPI Executive Assistant)*	14/9/21
Date published on Objectify *(completed by publishing administrator)*	14/9/21

3553 Perioperative Medication Management Guideline Attachment 1. Bleeding Risk Assessment

Minimal bleeding risk procedures	Low bleeding risk procedures (2-day risk of major bleed < 2%)	High bleeding risk procedures (2-day risk of major bleed ≥ 2%)
• Minor dermatologic procedures (excision of basal and squamous cell skin cancers, actinic keratoses, and premalignant or cancerous skin nevi) • Cataract procedures • Minor dental procedures (dental extractions, restorations, prosthetics, endodontics), dental cleanings, fillings • Pacemaker or cardioverter-defibrillator device implantation*	• Arthroscopy • Cutaneous/lymph node biopsies • Shoulder/foot/hand surgery • Coronary angiography • Gastrointestinal endoscopy +/- biopsy • Abdominal hysterectomy • Laparoscopic cholecystectomy • Abdominal hernia repair • Haemorrhoidal surgery • Bronchoscopy +/- biopsy • Epidural injections with INR <1.2	• Major surgery with extensive tissue injury • Cancer surgery • Major orthopaedic surgery • Reconstructive plastic surgery • Urologic or gastrointestinal surgery • Transurethral prostate resection, bladder resection, or tumor ablation • Nephrectomy, kidney biopsy • Colonic polyp resection** • Bowel resection • Percutaneous endoscopic gastrotomy placement, endoscopic retrograde cholangiopancreatography • Surgery in highly vascular organs (kidneys, liver, spleen) • Cardiac, intracranial or spinal [illegible]ery [illegible]major operation (procedure duration of > 45 min)

30 / 40

Reference: Spyropoulos A C, Al-Badri A, Sherwood M W, Douketis J D. Periprocedural management of patients receiving a vitamin K antagonist or a direct oral anticoagulant requiring an elective procedure or surgery. J Haemost 2016; 14:875-85. (Reproduced with minor adaptation)