Perioperative Medication Management - Adult/Pediatric - Inpatient/Ambulatory Clinical Practice Guideline

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Introduction

Clinicians providing care for surgical patients must decide whether to continue, hold, or modify prior to surgery medication regimens throughout the perioperative period. The risks and benefits of continuing, modifying, or holding a medication regimen in the perioperative period must be weighed and may require the collaboration of the anesthesiologist and/or surgeon, and prescribing provider. Additionally, preoperative instructions must be communicated to the patient to ensure medications are taken appropriately the days prior to and day of surgery.

This guideline organizes medications by therapeutic use for ease of navigation. Key recommendations are summarized in Appendix B. Individual medications can also be found using "Ctrl+F" function to search for individual medications.

If you do not find the drug you are looking for in this document, you may consult the Preop PASS Clinic (InBasket Pool: CSC SAFE TRIAGE NURSE [2277403] or the Preop Clinic main phone: 265-1800). For research medication "study drugs", the anesthesiologist and surgeon should coordinate with the study coordinator, whose name can typically be found by checking the "research FYI flag" section in Health Link.

Scope

Intended Users: Physicians, Advanced Practice Providers, Registered Nurses, Licensed Practical Nurses, Medical Assistants, Pharmacists, Respiratory Therapists

Objectives: To standardize the perioperative management of medications and reduce perioperative complications

Target Population: Patients undergoing an operation/procedure requiring anesthesia services

Clinical Questions Considered:

- For any medication a patient may be taking perioperatively, should the medication be continued, held, or reviewed by the prescribing physician, anesthesiologist, and surgeon to coordinate a plan?

Definitions

- **Perioperative**: The three phases of surgery, preoperative, intraoperative, and postoperative
- **Hold**: A temporary interruption of therapy

Recommendations

1 Acid suppressants

1.1 H2-receptor antagonists: cimetidine, famotidine, nizatidine, ranitidine

1.2 Proton pump inhibitors: dexlansoprazole, esomeprazole, lansoprazole, omeprazole, omeprazole/sodium bicarbonate, pantoprazole, rabeprazole

1.2.1 Parathyroid surgery

1.2.1.1 Recommend to hold proton pump inhibitors 7 days prior to and day of surgery and post-operatively until directed to resume by surgeon. *(UW Health strong recommendation, low quality of evidence)*

1.2.1.1.1 A reduction in gastric acidity may impair effective calcium uptake through the intestine.[1]

1.2.1.1.2 Calcium lowering medications may alter intraoperative parathyroid hormone kinetics which may lead to post-operative hypocalcemia.[2]

1.2.2 All other surgeries

1.2.2.1 It is reasonable to continue H2-receptor antagonist and proton pump inhibitor regimens throughout the perioperative period.[3] *(UW Health weak recommendation, low quality of evidence)*

1.3 Antacids:

1.3.1 Non-soluble antacids: aluminum hydroxide, calcium carbonate, magnesium hydroxide, magnesium oxide

1.3.1.1 Recommend holding non-soluble antacids the day of surgery to reduce aspiration risk. *(UW Health strong recommendation, low quality evidence)*

1.3.2 Soluble antacids: sodium bicarbonate, sodium citrate

1.3.2.1 May continue soluble antacids perioperatively. *(UW Health strong recommendation, low quality evidence)*

2 Allergen-specific Immunotherapy

2.1 Peanut allergen powder

2.1.1 Recommend to coordinate peanut allergen powder perioperative medication management with surgeon and prescribing provider. (*UW Health weak recommendation, very low quality of evidence)*

3 Alpha$_1$ blockers: alfuzosin, doxazosin, phenoxybenzamine, phentolamine, prazosin, silodosin, tamsulosin, terazosin

3.1 Cataract surgery

3.1.1 Recommend to coordinate perioperative alpha1-blocker medication management plan with surgeon. *(UW Health strong recommendation, low quality of evidence)*

3.1.1.1 Intraoperative floppy iris syndrome has been associated with adrenergic alpha$_1$-blockers in the setting of cataract surgery.[4,5]

3.2 All other surgeries

3.2.1 Recommend to continue alpha1-blocker regimens throughout the perioperative period.[3] *(UW Health strong recommendation, low quality of evidence)*

4 Alpha$_2$-adrenergic agonists: clonidine, guanfacine, lofexidine, methyldopa, tizanidine

4.1 Recommend to continue alpha-2 agonist regimens throughout the perioperative period. *(UW Health strong recommendation, low quality of evidence)*

4.1.1 Abrupt discontinuation of clonidine (both oral and transdermal) can result in rebound tachycardia and hypertension.[6-8]

4.1.2 Although less likely due to a slower onset of actions, withdrawal symptoms have also been reported with methyldopa and guanfacine.[9]

4.1.3 It is not recommended to initiate alpha-2 agonists perioperatively for the prevention of cardiac events.[10] *(AHA Class III, Level of Evidence B)*

5 Analgesics

5.1 Acetaminophen

5.1.1 It is reasonable to continue acetaminophen regimens throughout the perioperative period. *(UW Health weak recommendation, low quality of evidence)*

5.1.1.1 Multimodal pain management using acetaminophen is one of many multimodal options for acute pain management in the perioperative setting.[11]

5.2 N-type calcium channel blockers: ziconotide

5.2.1 It is reasonable to continue N-type calcium channel blocker regimens throughout the perioperative period. Any interruptions in therapy (holding or discontinuing) should be coordinated with prescribing provider. *(UW Health weak recommendation, low quality of evidence)*

5.3 Nonsteroidal anti-inflammatory drugs (NSAIDs)

5.3.1 Salicylates: aspirin, choline magnesium trisalicylate, diflunisal, magnesium salicylate, salsalate

5.3.2 Acetic acids: diclofenac, etodolac, indomethacin, ketorolac, nabumetone, sulindac, tolmetin

5.3.3 Propionic acids: fenoprofen, flurbiprofen, ibuprofen, ketoprofen, naproxen, oxaprozin

5.3.4 Fenamic acids: mefenamic acid, meclofenamate

5.3.5 Sulfonamides: celecoxib

5.3.6 Enolic acids: piroxicam, meloxicam

5.3.7 COX-2 selective: celecoxib, diclofenac, etodolac, meloxicam

5.3.8 **For aspirin recommendations, refer to the Anti-platelet section of this guideline.**

5.3.9 For non-aspirin NSAIDS, coordinate with surgeon and prescribing provider. *(UW Health strong recommendation, low quality of evidence)*

5.3.9.1 The beneficial analgesic, anti-inflammatory, and antipyretic effects of NSAIDs must be weighed against the thrombotic, arrthymogenic, bleeding, and nephrotoxic risks.[3,12,13]

5.4 Opioid agonists: alfentanil, codeine, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, opium, oxycodone, oxymorphone, paregoric, remifentanil, sufentanil, tapentadol, tramadol

5.4.1 Recommend to continue chronic opioid regimens throughout the perioperative period, unless reduction or discontinuation is part of the perioperative analgesic plan. Abrupt discontinuation of opioids may cause withdrawal symptoms and/or increased pain.[3,11] *(UW Health weak recommendation, low quality of evidence)*

5.5 Opioid partial agonists

5.5.1 Buprenorphine (Suboxone®), buprenorphine injection (Sublocade®), butorphanol, nalbuphine, pentazocine

5.5.1.1 Recommend to coordinate perioperative pain management plan for patients on opioid partial agonists with anesthesiologist, surgeon, and prescribing physician. *(UW Health strong recommendation, low quality of evidence)*

5.5.1.1.1 In surgeries with anticipated severe post-operative pain, the presence of opioid partial agonists may limit the ability to achieve analgesia goals. One author recommends tapering and discontinuing buprenorphine three days prior to surgery or replacing buprenorphine with methadone or another opioid prior to surgery.[14] However, others have recommended minor tapering or simply continuing these medications in the perioperative period. Therefore, the planned surgical procedure and patient-specific characteristics must be taken into account with the development of perioperative pain management plan. Consultation with the preoperative PASS clinic or Inpatient Anesthesiology Acute Pain Service and the physician prescribing these drugs is essential before and elective case.

6 Anorexiants

6.1 Serotonin 2C receptor agonist: lorcaserin

6.2 Sympathomimetic anorexiants: benzphetamine hydrochloride, diethylpropion hydrochloride, phendimetrazine tartrate, phentermine hydrochloride

6.3 Recommend to hold serotonin 2C receptor agonists and sympathomimetic anorexiant regimens 7 days prior to surgery and postoperatively until directed to resume by surgeon. (*UW Health weak recommendation, low quality of evidence)*
  6.3.1 A case report has documented the potential for sympathomimetic anorexiants to cause unstable perioperative blood pressure.[15]

7 Anti-addiction agents
7.1 Antialcoholic agents: acamprosate calcium, disulfiram
  7.1.1 Recommend to continue acamprosate regimens throughout the perioperative period. (*UW Health weak recommendation, low quality of evidence)*
  7.1.2 Recommend to hold disulfiram 7-14 days prior to surgery. (*UW Health strong recommendation, low quality of evidence)*
    7.1.2.1 Alcohols are present in some medications administered in the perioperative setting, which when taken concomitantly with disulfiram increase serum acetaldehyde levels leading to flushing, nausea, thirst, palpitations, chest pain, vertigo and hypotension. The duration of action for disulfiram is 1 to 2 weeks after the last dose.[16]
7.2 Opioid antagonist: naltrexone
  7.2.1 Recommend to hold oral naltrexone for 1 week prior to surgery and intramuscular naltrexone for 4 weeks prior to surgery. (*UW Health strong recommendation, low quality of evidence)*
  7.2.2 Recommend coordination of post-operative pain management plan with anesthesiologist, surgeon, and primary care physician in order to minimize use of opioids, yet provide sufficient postoperative analgesia.[17] (*UW Health strong recommendation, low quality of evidence)*
7.3 Nicotine replacement: nicotine gum, lozenges, patches, inhalers
  7.3.1 Recommend abstinence from smoking in the perioperative period to reduce respiratory, cardiac, and healing complications. (*UW Health strong recommendation, strong quality of evidence)*[18]
  7.3.2 Recommend to coordinate nicotine replacement perioperative medication management plan with surgeon. If used the day of surgery, gum and lozenges should not be used within 2 hours of procedure. (*UW Health weak recommendation, weak quality of evidence)*[19]

8 Anti-Dementia (Alzheimer's) agents
8.1 Cholinesterase inhibitors: donepezil, galantamine, rivastigmine
  8.1.1 Recommend to continue cholinesterase inhibitors with the knowledge that adjustments to neuromuscular blocking drugs may be necessary. (*UW Health strong recommendation, low quality of evidence)*
    8.1.1.1 Cholinesterase inhibitors may diminish the neuromuscular blocking effects of nondepolarizing neuromuscular blockers.[16,20]
    8.1.1.2 Cholinesterase inhibitors may prolong neuromuscular blocking effects (increase serum concentrations) of succinylcholine.[16]
    8.1.1.3 The duration to hold the medication is based upon the half-life of the medication (donepezil=15 days, galantamine =7hrs, rivastigmine =3hrs)[16]
8.2 NMDA receptor antagonist: memantine
  8.2.1 It is reasonable to continue NMDA receptor antagonist regimens throughout the perioperative period. (*UW Health weak recommendation, low quality of evidence)*

9 Antiarrhythmics: amiodarone, disopyramide, dofetilide, dronedarone, flecainide, ibutilide, lidocaine (systemic), mexiletine, procainamide, propafenone, quinidine
9.1 Electrophysiology surgeries/procedures
  9.1.1 Recommend to coordinate antiarrhythmic perioperative medication management plan with cardiologist and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*
9.2 Non-electrophysiology surgeries/procedures

9.2.1 Recommend to continue antiarrhythmic regimens throughout the perioperative period.[3,13,21] (*UW Health strong recommendation, low quality of evidence)*

10 Anticholinergics: cyclizine, dimenhydrinate, meclizine, scopolamine, trimethobenzamide
10.1 It is reasonable to continue anti-cholinergics throughout the perioperative period, unless a patient-specific perioperative management plan was provided by the surgeon. (*UW Health weak recommendation, low quality of evidence)*

11 Anticoagulants
11.1 Vitamin K antagonist: warfarin
11.2 Direct oral anticoagulants: apixaban, betrixaban, dabigatran, edoxaban, rivaroxaban
11.3 Parenteral anticoagulants: argatroban, bivalirudin, enoxaparin, fondaparinux, unfractionated heparin
11.4 Recommend to coordinate anticoagulant perioperative medication management plan including any plan for neuraxial analgesia with surgeon, and prescribing provider. *(UW Health strong recommendation, low quality of evidence)*
11.5 Additional information can be found in **Periprocedural and Regional Anesthesia Management with Antithrombotic Therapy – Adult – Inpatient and Ambulatory – Clinical Practice Guideline**

12 Anticonvulsants: acetazolamide, brivaracetam, cannabidiol (Epidiolex, prescription), carbamazepine, cenobamate, divalproex, eslicarbazepine acetate, ethosuximide, ethotoin, ezogabine, lacosamide, lamotrigine, levetiracetam, methsuximide, oxcarbazepine, perampanel, phenytoin, pregabalin, primidone, rufinamide, stiripentol, tiagabine, topiramate, valproic acid, vigabatrin, zonisamide
12.1 *Neuromonitoring or Neuromapping*
12.1.1 Recommend to coordinate anticonvulsant perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider. *(UW Health strong recommendation, low quality of evidence)*
12.2 *All other procedures*
12.2.1 Recommend to continue anticonvulsant regimens throughout the perioperative period.[22,23] (*UW Health strong recommendation, low quality of evidence.*
12.2.1.1 Major motor seizures that occur during a surgical procedure can increase morbidity and mortality. In patients with a history of well-controlled epilepsy, it is vital that efforts are made to avoid disruption of antiepileptic medications perioperatively.[23]

13 Anti-diabetic agents
13.1 See **Diabetes Medication Adjustment: Ambulatory Procedures** and **Diabetes Medication Adjustment: Inpatient Procedures** for recommendations
13.2 Alpha-glucosidase inhibitors: acarbose, miglitol
13.3 Amylinomimetics: pramlintide
13.4 Biguanides: metformin
13.5 Dipeptidyl peptidase IV inhibitors: alogliptin, linagliptin, saxagliptin, sitagliptin
13.6 Glucagon-like peptide-1 receptor agonist: albiglutide, dulaglutide, exenatide, liraglutide, lixisenatide, semaglutide
13.7 Insulins: insulin aspart, insulin degludec, insulin detemir, insulin glargine, insulin isophane, insulin lispro, insulin regular
13.8 Meglitinide analogs: nateglinide, repaglinide
13.9 Sodium-glucose cotransporter-2 inhibitors: canagliflozin, dapagliflozin, empagliflozin, ertugliflozin
13.10 Sulfonylureas: chlorpropamide, glimepiride, glipizide, glyburide, tolazamide, tolbutamide
13.11 Thiazolidinediones: pioglitazone, rosiglitazone

14 Anti-dopaminergics: chlorpromazine, metoclopramide, perphenazine, prochlorperazine, promethazine

14.1 It is reasonable to continue anti-dopaminergic regimens throughout perioperative period. (*UW Health weak recommendation, low quality of evidence)*

15 Antiemetics

15.1 5HT3 antagonists: alosetron, dolasetron, granisetron, ondansetron, palonosetron
15.2 Phenothiazines: chlorpromazine, prochlorperazine, promethazine
15.3 Substance P/Neurokinin 1 receptor antagonist: aprepitant, fosaprepitant, fosnetupitant, netupitant, rolapitant
15.4 It is reasonable to continue antiemetic regimens throughout the peri-operative period. (*UW Health weak recommendation, low quality of evidence)*

16 Anti-glaucoma ophthalmics

16.1 Cholinesterase inhibitors: acetylcholine, carbachol, echothiophate iodide, pilocarpine
16.1.1 Recommend to continue cholinesterase inhibitors with the knowledge that adjustments to neuromuscular blocking drugs may be necessary. *(UW Health strong recommendation, low quality of evidence)*
16.2 Alpha adrenergic agonists: apraclonidine, brimonidine
16.3 Beta-adrenergic blocking agents (beta-blockers): betaxolol, carteolol, levobunolol, metipranolol, timolol
16.4 Carbonic anhydrase inhibitors: brinzolamide, dorzolamide
16.5 Docosanoid, synthetic: unoprostone isopropyl
16.6 Prostaglandin analogues: bimatoprost, latanoprost, latanoprostene bunod, tafluprost, travoprost
16.7 Rho kinase inhibitors: netarsudil
16.8 Recommend to continue ophthalmic alpha adrenergic agonist, beta-adrenergic blocking agent (beta-blockers), carbonic anhydrase inhibitor docosanoid, synthetic, and prostaglandin analogue regimens throughout the perioperative period. (*UW Health weak recommendation, low quality of evidence)*

17 Antihistamines

17.1 Peripherally selective: cetirizine, desloratadine, fexofenadine, loratadine, levocetirizine
17.2 Nonselective: brompheniramine, carbinoxamine, chlorcyclizine, chlorpheniramine, clemastine, cyproheptadine, dexbrompheniramine, dexchlorpheniramine, diphenhydramine, doxylamine, hydroxyzine, triprolidine
17.3 Recommend to continue antihistamine regimens throughout the perioperative period. (*UW Health weak recommendation, low quality evidence)*

18 Anti-hyperlipemia agents (non-statins): alirocumab, bempedoic acid, cholestyramine, colesevelam, colestipol, evolocumab, ezetimibe, fenofibrate, gemfibrozil, niacin, lomitapide, mipomersen

18.1 Recommend to hold non-statin anti-hyperlipemia agent regimens 24 hours prior to surgery and day of surgery to reduce risk of rhabdomyolysis and gastrointestinal obstruction.[3,13] (*UW Health weak recommendation, low quality evidence)*

19 Anti-hyperlipemia agents (HMG-CoA Reductase Inhibitors; statins): atorvastatin, fluvastatin, lovastatin, pravastatin, rosuvastatin, simvastatin

19.1 Recommend to continue statin regimens throughout the perioperative period, particularly in patients at high risk for cardiovascular disease.[24-29] *(UW Health strong recommendation, low quality evidence)*
19.2 Perioperative initiation of statin use is reasonable in patients undergoing vascular surgery.[24,30] *(AHA Class IIa Level B)*
19.3 Perioperative initiation of statins may be considered in patients with a clinical risk factor who are undergoing elevated-risk procedures.[24] *(AHA Class IIb Level C)*

20 Anti-infective agents

20.1 Amebicides: iodoquinol
20.2 Aminoglycosides (oral): neomycin, paromomycin

20.3 Aminoglycosides (parenteral): amikacin, gentamicin, plazomicin, streptomycin, tobramycin
20.4 Anthelmintics: albendazole, ivermectin, moxidectin, praziquantel, pyrantel, triclabendazole
20.5 Antibiotic combinations: erythromycin/sulfisoxazole, sulfamethoxazole/trimethoprim
20.6 Antifungal (Allylamine): terbinafine
20.7 Antifungal (Echinocandins): anidulafungin, caspofungin, flucytosine, griseofulvin, micafungin
20.8 Antifungal (Imidazole): ketoconazole
20.9 Antifungal (Polyene): amphotericin B, nystatin
20.10 Antifungal (Triazole): fluconazole, isavuconazole, itraconazole, posaconazole, voriconazole
20.11 Antimalarial (4-Aminoquinoline): chloroquine, hydroxychloroquine, tafenoquine
20.12 Antimalarial (8-Aminoquinoline): artemether/lumefantrine, atovaquone/proguanil, primaquine
20.13 Antimalarial (Cinchona Alkaloid): quinine sulfate
20.14 Antimalarial (Folic Acid Antagonist): pyrimethamine, mefloquine
20.15 Antiprotozoals: atovaquone, miltefosine, nitazoxanide pentamidine, tinidazole
20.16 Antiretroviral agents: abacavir, atazanavir, bictegravir, cobicistat, darunavir, delavirdine, didanosine, dolutegravir, doravirine, efavirenz, elvitegravir, emtricitabine, enfuvirtide, etravirine, fosamprenavir, ibalizumab, indinavir, lamivudine, lopinavir, maraviroc, nelfinavir, nevirapine, raltegravir, rilpivirine, ritonavir, saquinavir, stavudine, tenofovir, tipranavir, zidovudine; or any combination product of antiretrovirals
20.17 Antituberculosis Agents: aminosalicylic acid, bedaquiline, capreomycin, cycloserine, ethambutol, ethionamide, isoniazid, pretomanid, pyrazinamide, rifabutin, rifampin, rifapentine, streptomycin
20.18 Antiviral Agents: adefovir, amantadine, acyclovir, baloxavir, boceprevir, cidofovir, daclatasvir, elbasvir/grazoprevir, entecavir, famciclovir, foscarnet, ganciclovir, glecaprevir/pibrentasvir, ledipasvir/sofosbuvir, letermovir, ombitasvir/paritaprevir/ritonavir/dasabuvir, oseltamivir, peramivir, ribavirin, rimantadine, simeprevir, sofosbuvir, tecovirimat, telaprevir, telbivudine, valacyclovir, valganciclovir, velpatasvir, voxilaprevir, zanamivir
20.19 Bacitracin
20.20 Carbapenems: doripenem, ertapenem, imipenem/cilastatin, imipenem/cilastin/relebactam, meropenem, meropenem/vaborbactam
20.21 Cephalosporins: cefaclor, cefadroxil, cefazolin, cefdinir, cefditoren, cefepime, cefiderocol, cefixime, cefotaxime, cefotetan, cefoxitin, cefpodoxime, cefprozil, ceftaroline, ceftazidime, ceftazidime/avibactam, ceftriaxone, cefuroxime, cephalexin
20.22 Chloramphenicol
20.23 Colistimethate
20.24 Fluoroquinolones: ciprofloxacin, delafloxacin, gemifloxacin, levofloxacin, moxifloxacin, norfloxacin, ofloxacin, ozenoxacin
20.25 Folate Antagonists: trimethoprim
20.26 Glycylcyclines: tigecycline
20.27 Ketolides: telithromycin
20.28 Leprostatics: dapsone
20.29 Lincosamides: clindamycin, lincomycin
20.30 Lipoglycopeptides: dalbavancin, oritavancin, telavancin
20.31 Lipopeptides: Daptomycin
20.32 Macrolides: azithromycin, clarithromycin, erythromycin
20.33 Fidaxomicin
20.34 Methenamines: methenamine hippurate, methenamine mandelate
20.35 Metronidazole
20.36 Miscellaneous anti-infectives/antiseptics: benznidazole, fosfomycin, lefamulin, rifamycin, secnidazole
20.37 Monobactams: aztreonam
20.38 Monoclonal antibodies: bezlotoxumab
20.39 Nitrofurans: nitrofurantoin
20.40 Oxazolidinones: linezolid, tedizolid
20.41 Penicillins: amoxicillin, amoxicillin/clavulanate, ampicillin, ampicillin/sulbactam, dicloxacillin, nafcillin, oxacillin, penicillin G, penicillin V, piperacillin/tazobactam, ticarcillin/clavulanate
20.42 Polymyxin B Sulfate

20.43 Rifaximin
20.44 Streptogramins: quinupristin/dalfopristin
20.45 Sulfadiazine
20.46 Tetracyclines: demeclocycline, doxycycline, eravacycline, minocycline, omadacycline, sarecycline, tetracycline
20.47 Vancomycin
20.48 Active infections
  20.48.1 Recommend to coordinate anti-infective perioperative medication management plan for active infections with surgeon, and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*
20.49 Infection prophylaxis (medical)
  20.49.1 Recommend to coordinate anti-infectives for prophylaxis indications with surgeon and prescribing provider. (*UW Health weak recommendation, low quality of evidence)*

21 Anti-overactive bladder agents
21.1 Anticholinergic: oxybutynin
21.2 Muscarinic receptor antagonists: darifenacin, fesoterodine, solifenacin, tolterodine, trospium
21.3 M3 muscarinic agonist: mirabegron
21.4 Phosphodiesterase inhibitor: flavoxate
21.5 It is reasonable to continue anti-overactive bladder agent regimens throughout the perioperative period. (*UW Health weak recommendation, low quality of evidence)*

22 Anti-neoplastics
22.1 Alkylating agents: altretamine, busulfan, carmustine, chlorambucil, dacarbazine, estramustine, ifosfamide, lomustine, mechlorethamine, melphalan, streptozocin, thiotepa
22.2 Anthracenedione: mitoxantrone
22.3 Antibody-drug conjugates: ado-trastuzumab emtansine, brentuximab vedotin, enfortumab vedotin, fam-trastuzumab deruxtecan, polatuzumab vedotin
22.4 Antimetabolites: allopurinol, capecitabine, cladribine, clofarabine, cytarabine, floxuridine, fludarabine, fluorouracil, gemcitabine, mercaptopurine, methotrexate, pemetrexed, pentostatin, pralatrexate, rasburicase, thioguanine
22.5 Antimitotic agents: cabazitaxel, docetaxel, eribulin, ixabepilone, paclitaxel, vinblastine, vincristine, vinorelbine
22.6 Antineoplastic antibiotics: bleomycin, dactinomycin, daunorubicin, doxorubicin, epirubicin, idarubicin, mitomycin, valrubicin
22.7 BCL-2 Inhibitor: venetoclax
22.8 Biologic response modifiers: aldesleukin, BCG live
22.9 Cytoprotective agents: amifostine, dexrazoxane, leucovorin, levoleucovorin, mesna
22.10 DNA demethylation agents: azacitidine, decitabine, nelarabine
22.11 DNA topoisomerase inhibitors: irinotecan, topotecan
22.12 Enzymes: asparaginase, calaspargase, pegaspargase
22.13 Epipodophyllotoxins: etoposide, teniposide
22.14 EZH2-Inhibitor: tazemetostat
22.15 Histone deacetylase inhibitors: belinostat, panobinostat, romidepsin, vorinostat
22.16 Hormones: abiraterone, anastrazole, apalutamide, bicalutamide, buserelin, darolutamide, enzalutamide, exemestane, flutamide, fulvestrant, goserelin, histrelin, letrozole, leuprolide, medroxyprogesterone, megestrol, nilutamide, tamoxifen, toremifene, triptorelin
22.17 Hedgehog Pathway Inhibitor: glasdegib, sonidegib, vismodegib
22.18 Imidazotetrazine derivatives: temozolomide
22.19 Kinase inhibitors: abemaciclib, acalabrutinib, afatinib, alectinib, alpelisib, axitinib, binimetinib, bosutinib, brigatinib, cabozantinib, ceritinib, copanlisib, crizotinib, cobimetinib, dabrafenib, dacomitinib, dasatinib, duvelisib, enasidenib, encorafenib, entrectinib, erdafitinib, erlotinib, everolimus, gefitinib, gilteritinib, ibrutinib, idelalisib, imatinib, lapatinib, lenvatinib, lorlatinib, larotrectinib, midostaurin, neratinib, nilotinib, osimertinib, palbociclib, pazopanib, pexidartinib, ponatinib, regorafenib, ribociclib, ruxolitinib, sorafenib, sunitinib, temsirolimus, trametinib, vandetanib, vemurafenib, zanubrutinib

22.20 Methylhydrazine derivatives: procarbazine
22.21 Miscellaneous antineoplastics: arsenic trioxide, mitotane, porfimer, sipuleucel-T, sterile talc powder, trabectedin, trifluridine/tipiracil
22.22 Monoclonal antibodies: alemtuzumab, atezolizumab, avapritinib, avelumab, bevacizumab (and biosimilars), blinatumomab, brolucizumab, cemiplimab,cetuximab, daratumumab, dinutuximab, elotuzumab, gemtuzumab, ibritumomab, inotuzumab, ipilimumab, mogamuliziumab, moxetumomab, necitumumab, nivolumab, obinutuzumab, ofatumumab, olaratumab panitumumab, pertuzumab, ramucirumab, rituximab (and biosimilars), tagraxofusp, trastuzumab (and biosimilars)
22.23 PARP enzymes inhibitor: niraparib, olaparib, rucaparib, talazoparib
22.24 Platinum coordination complex: carboplatin, cisplatin, oxaliplatin
22.25 Proteasome inhibitors: bortezomib, carfilzomib, ixazomib
22.26 Protein synthesis inhibitor: omacetaxine
22.27 Radiopharmaceuticals: lutetium dotatate Lu-177, radium Ra-223, samarium Sm-153, sodium iodide I-131, strontium-89
22.28 Retinoids: tretinoin, trifarotene
22.29 Rexinoids: bexarotene
22.30 Substituted ureas: hydroxyurea
22.31 Vascular endothelial growth factor inhibitor: ZIV-aflibercept
22.32 Recommend to coordinate perioperative medication management plan of all antineoplastics with surgeon and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*

23 Anti-osteoporosis agents
23.1 Bisphosphonates: alendronate, etidronate, ibandronate, pamidronate, risedronate, tiludronate, zolendronic acid
23.2 Calcitonin-salmon
23.3 Denosumab
23.4 Romosozumab
23.5 Dental surgery
23.5.1 Recommend to coordinate anti-osteoporosis perioperative medication management plan with surgeon and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*
23.5.1.1 The risk of development of osteonecrosis of the jaw requires assessment of bisphosphonate duration, concomitant use of corticosteroids or antiangiogenic medications, clinical risk factors, and urgency of surgery.[31]
23.6 All other surgeries:
23.6.1 Recommend to hold bisphosphonate therapy the day of surgery and postoperatively until directed to resume by surgeon. (*UW Health strong recommendation, low quality of evidence)*
23.6.2 Recommend to coordinate calcitonin and denosumab perioperative plans with surgeon and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*

24 Anti-Parkinson's agents: amantadine, apomorphine, belladonna alkaloids, benztropine, bromocriptine, carbidopa, carbidopa/levodopa, carbidopa/levodopa/entacapone, entacapone, istradefylline, pramipexole, rasagiline, ropinirole, rotigotine, selegiline, tolcapone
24.1 Recommend to continue anti-Parkinson's agent regimens throughout the perioperative period.[3,32] *(UW Health strong recommendation, low quality evidence)*
24.1.1 Abrupt withdrawal of anti-Parkinson drugs may lead to exacerbation of Parkinson symptoms and other withdrawal related syndromes, including, rarely, neuroleptic malignant syndrome.[33-36]

25 Anti-platelet agents
25.1 Adenosine reuptake inhibitor: dipyridamole
25.2 Combination agents: dipyridamole and aspirin (Aggrenox®)
25.3 Phosphodiesterase-3 enzyme inhibitors: anagrelide, cilostazol

25.4 Protease-activated receptor-1 (PAR-1) antagonist: vorapaxar
25.5 Salicylate: aspirin
25.6 P2Y12 platelet receptor inhibitors: cangrelor, clopidogrel, prasugrel, ticagrelor, ticlopidine
25.7 **For patients on dual antiplatelet therapy (DAPT) with stents in place, ANY interruption in antiplatelets should be** coordinated with surgeon, anesthesiologist, the prescribing provider (e.g. cardiologist, neurosurgeon, vascular surgeon). *(UW Health strong recommendation, low quality evidence)*
25.8 If the prescribing provider is a non UW provider, every effort should be made to engage this provider in this coordination of care. *(UW Health strong recommendation, low quality evidence)* In select cases (e.g. unable to engage a non UW provider with coordination of DAPT (especially if drug eluting stent placed within last 12 months) or irreconcilable questions/concerns about their recommendations), it is reasonable to contact UW Cardiology. *(UW Health conditional recommendation, low quality evidence)*
25.9 All patients with percutaneous coronary intervention (PCI) in the last 12 months should have timing of surgery and antiplatelet medication administration coordinated with surgeon, anesthesiologist and cardiologist. *(UW Health strong recommendation, low quality evidence)*
25.10 The selected regimen and duration for antiplatelet therapy after placement of cardiac stents should be determined by the interventional cardiologist and after placement of carotid stents by the neurosurgeon or vascular surgeon. *(UW Health strong recommendation, low quality*
25.11 Recommend that surgeon document in the medical record shared decision making discussions of risks and benefits of anti-platelet interruption with patients using these agents for carotid and cardiac stents. (*UW Health strong recommendation, low quality of evidence)*
25.12 Elective noncardiac surgery should be delayed at least 30 days after bare metal stent (BMS) implantation and at least 6 months after drug-eluting stent (DES) implantation. *(AHA Class I, Level B-NR)*[37]
25.13 In patients treated with dual antiplatelet therapy (DAPT) after coronary stent implantation who must undergo surgical procedures that mandate the discontinuation of P2Y12 inhibitor therapy, it is recommended that aspirin be continued if possible. The P2Y12 platelet receptor inhibitor (and aspirin, if interrupted) should be restarted as soon as possible after surgery. *(AHA Class I, Level C-EO)*[37]
25.14 When noncardiac surgery is required in patients currently taking a P2Y12 inhibitor, a consensus decision among treating clinicians as to the relative risks of surgery and discontinuation or continuation of antiplatelet therapy can be useful. *(AHA Class IIa, Level C-EO)*[37] It is recommended that this decision and discussion with patient be documented in the medical record.
25.15 Elective noncardiac surgery after DES implantation in patients for whom P2Y12 inhibitor therapy will need to be discontinued may be considered after 3 months if the risk of further delay of surgery is greater than the expected risks of stent thrombosis. *(AHA Class IIb, Level C-EO)*[37] It is recommended that this decision and discussion with the patient be documented in the medical record.
25.16 Elective noncardiac surgery should not be performed within 30 days after BMS implantation or within 3 months after DES implantation in patients in whom DAPT will need to be discontinued perioperatively. *(AHA Class III, Level B-NR*)[37]
25.17 Initiation or continuation of aspirin is not beneficial in patients undergoing elective noncardiac noncarotid surgery who have not had previous coronary stenting *(AHA Class III, Level B);* unless the risk of ischemic events outweighs the risk of surgical bleeding.[10] *(AHA Class III, Level C)*

26 Anti-psychotics

26.1 First generation – typical: chlorpromazine, fluphenazine, haloperidol, loxapine, perphenazine, pimozide, prochlorperazine, thioridazine, thiothixene, trifluoperazine
26.2 Second generation – atypical: aripiprazole, asenapine, brexpiprazole, cariprazine, clozapine, iloperidone, lumateperone, lurasidone, olanzapine, paliperidone, pimavanserin, quetiapine, risperidone, ziprasidone
26.3 Recommend to continue anti-psychotic regimens throughout the perioperative period.[3,13] *(UW Health strong recommendation, low quality evidence)*

27 Anti-rheumatics

27.1 General

27.1.1 The risks of infection and delayed wound healing with perioperative use of tofacitinib must be weighed against risk of flare of underlying rheumatic disease leading to treatment with steroids which may also increase infection risk and delay wound healing.[38,39]

27.2 Janus associated kinase (JAK) inhibitors: baricitinib, fedratinib, ruxolitinib, tofacitinib, upadactinib

27.2.1 Orthopedic surgery

27.2.1.1 Recommend to hold JAK inhibitor therapy 48 hours prior to surgery and resume 7-14 days post-operatively if there are no signs or symptoms of infection and incisions are healing well.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.2.2 All other surgery

27.2.2.1 Recommend to coordinate JAK inhibitor perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.3 Antimetabolites: methotrexate

27.3.1 Orthopedic surgery

27.3.1.1 Recommend to continue antimetabolite regimens throughout the perioperative period.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.3.1.2 In a prospective randomized controlled trial of 388 patients with rheumatoid arthritis (RA) undergoing orthopedic surgery, patients were randomized to continue or withhold methotrexate.[40] There were fewer complications in those patients in whom methotrexate was continued. Similarly, in a prospective randomized non-blinded study of 64 RA patients, the 32 who continued methotrexate had no difference in wound health compared to patients in whom methotrexate was withheld.[41] However, neither study considered the presence of diabetes, corticosteroid therapy, smoking, or disease activity in their analysis, and the average methotrexate dose was less than 15 mg per week.

27.3.2 All other surgery

27.3.2.1 Recommend to coordinate antimetabolite perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.4 Anti-TNF-alpha agents: adalimumab (and biosimilars), certolizumab, etanercept (and biosimilars), golimumab, infliximab (and biosimilars)

27.4.1 Orthopedic surgery

27.4.1.1 Recommend to hold etanercept 2 weeks prior to surgery. [38,39] (*UW Health strong recommendation, low quality of evidence)*

27.4.1.2 Recommend to coordinate anti-TNF-alpha agent perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.4.2 All other surgery

27.4.2.1 Recommend to coordinate anti-TNF-alpha agent perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.4.2.2 A systematic review and meta-analysis of postoperative complications in patients with RA using a biological agent found a slightly increased relative risk of skin and soft tissue infection but no increased risk of wound healing after orthopedic surgery.[42]

27.5 Gold compounds: auranofin, gold sodium thiomalate

27.5.1 Orthopedic surgery

27.5.1.1 Recommend to continue gold compound regimens throughout the perioperative period.[38,39] (*UW Health weak recommendation, low quality of evidence)*

27.5.2 All other surgery

27.5.2.1 Recommend to coordinate gold compound perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.6 Interleukin-6 blockers: tocilizumab

27.6.1 Orthopedic surgery

27.6.1.1 Recommend to hold subcutaneous tocilizumab 3 weeks prior to surgery and hold intravenous tocilizumab 4 weeks prior to surgery.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.6.2 All other surgery

27.6.2.1 Recommend to coordinate interleukin-6 blocker perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.6.2.2 For tocilizumab, there is no direct information on surgical site infection. However, in a retrospective study of 161 operations in 122 patients with rheumatoid arthritis, 20 cases are described in which wound healing was delayed, as well as three infections, of which two were superficial.[43] In another case-control study, 22 tocilizumab-treated rheumatoid arthritis patients were compared with 22 conventional disease modifying antirheumatic drug (DMARD)-treated patients, a significant difference in temperature rise and increase in C-reactive protein was demonstrated.[44] Increased vigilance may be warranted in tocilizumab-treated patients, as the usual manifestations of a post-operative complication such as fever may not be present.

27.7 Interleukin-1 blockers: anakinra

27.7.1 Orthopedic surgery

27.7.1.1 Recommend to hold subcutaneous anakinra 7 days prior to surgery. [38,39,45] (*UW Health strong recommendation, low quality of evidence)*

27.7.2 All other surgery

27.7.2.1 Recommend to coordinate interleukin-1 blocker perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.8 Phosphodiesterase-4 enzyme inhibitor: apremilast

27.8.1 Recommend to coordinate phosphodiesterase-4 enzyme inhibitor perioperative medication management plan with surgeon and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*

27.9 Pyrimidine synthesis inhibitors: leflunomide

27.9.1 Orthopedic surgery

27.9.1.1 Recommend to hold leflunomide 14 days prior to surgery. [38,39,45] (*UW Health strong recommendation, low quality of evidence)*

27.9.2 All other surgery

27.9.2.1 Recommend to coordinate perioperative pyrimidine synthesis inhibitor medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

27.10 Selective T-cell costimulation blocker: abatacept

27.10.1 Orthopedic surgery

27.10.1.1 Recommend to hold subcutaneous abatacept 2 weeks prior to surgery and intravenous abatacept 4 weeks prior to surgery. [38,39,45] (*UW Health strong recommendation, low quality of evidence)*

27.10.2 All other surgery

27.10.2.1 Recommend to coordinate selective T-cell costimulation blocker perioperative medication management plan with surgeon and prescribing provider.[38,39] (*UW Health strong recommendation, low quality of evidence)*

28 Beta-blockers

28.1 Alpha/beta-adrenergic blocking agents: carvedilol, labetalol

28.2 Beta-adrenergic blocking agents (beta-blockers): acebutolol, atenolol, betaxolol, bisoprolol, esmolol, metoprolol, nadolol, nebivolol, penbutolol, pindolol, propranolol, sotalol, timolol

28.3 Recommend to continue beta-blocker regimens throughout the perioperative period unless contraindicated by hemodynamic instability or profound bronchospasm.[46,47] *(AHA Grade I Level B)*

28.3.1 The use of beta-blockers for patients on established therapy perioperatively has been shown to avoid withdrawal. Acute withdrawal of a beta blocker perioperatively can lead to an increase in morbidity and mortality. In light of the potential benefits of perioperative beta blockade, minimal adverse effects, and consequences of acute withdrawal, it is recommended that beta blockers be continued in the perioperative period and throughout the hospital stay, unless contraindicated by hemodynamic instability or profound bronchospasm.[48]

29 Benzodiazepines: alprazolam, chlordiazepoxide, clobazam, clonazepam, clorazepate, diazepam, lorazepam, oxazepam

29.1 Recommend to continue benzodiazepine regimens throughout the perioperative period.[3,13,21] *(UW Health strong recommendation, low quality evidence)*

30 Calcium channel blockers

30.1 Dihydropyridines: amlodipine, clevidipine, felodipine, isradipine, nicardipine, nifedipine, nimodipine, nisoldipine

30.2 Non-dihydropyridines: diltiazem, verapamil

30.3 Recommend to continue calcium channel blocker regimens throughout the perioperative period.[3] (*UW Health strong recommendation, low quality of evidence)*

31 Cardiovascular agents – Miscellaneous

31.1 $Alpha_1$-agonist: midodrine

31.1.1 Recommend to continue alpha1-agonist regimens throughout the perioperative period.[3] *(UW Health strong recommendation, low quality evidence)*

31.2 Cardiac glycosides: digoxin

31.2.1 Recommend to continue cardiac glycoside regimens throughout the perioperative period.[3,13] *(UW Health strong recommendation, low quality evidence)*

31.3 Central monoamine-depleting agents: deutetrabenazine, reserpine, tetrabenazine, valbenazine

31.3.1 Recommend to coordinate central monoamine-depleting agent perioperative medication management plan with anesthesiologist, surgeon and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*

31.4 Cyclic nucleotide-gated (HCN) channels (f-channel): ivabradine

31.4.1 Recommend to continue cyclic nucleotide-gated (HCN) channels (f-channel) regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

31.5 Dopamine agonist: fenoldopam

31.5.1 Recommend to coordinate dopamine agonist perioperative medication management plan with anesthesiologist, surgeon and prescribing provider. (*UW Health strong recommendation, low quality of evidence)*

31.6 Ganglionic Blocker: mecamylamine

31.6.1 Recommend to coordinate ganglionic blocker perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

31.7 Inotropics: inamrinone, milrinone

31.7.1 Recommend to coordinate inotropic perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

31.8 Inward sodium channel inhibitors: ranolazine

31.8.1 Recommend to continue inward sodium channel inhibitor regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

31.8.1.1 There were no trials identified looking at the risk and benefit of continuing ranolazine during the perioperative period. One study was identified that evaluated postoperative atrial fibrillation (POAF) after on-pump coronary artery bypass graft (CABG) surgery. The results of the study did show a statistically significant decrease in the number of patients with POAF that were treated with ranolazine.[49]

31.9 Potassium removing resins: patiromer, sodium polystyrene sulfonate, sodium zirconium cyclosilicate

31.9.1 Recommend to coordinate potassium removing resin perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

31.10 Transthyretin stabilizer: tafamidis

31.10.1 Recommend to coordinate tafamidis perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, very low quality evidence)*

32 Central nervous system (CNS) miscellaneous

32.1 Antianxiety agents: buspirone, meprobamate

32.1.1 Recommend to continue antianxiety agent regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

32.2 Antidepressants: bupropion, nefazodone, trazodone, vortioxetine

32.2.1 Recommend coordination of antidepressant perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider.[3,13,21] *(UW Health strong recommendation, low quality evidence)*

32.2.1.1 See Appendix D – Methylene Blue and Serotonin Syndrome

32.3 Anticholinesterase muscle stimulants: edrophonium, neostigmine, pyridostigmine

32.3.1 Recommend to coordinate anticholinesterase muscle stimulant perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

32.4 Antioxidants: edaravone

32.4.1 Recommend to coordinate anticholinesterase muscle stimulant perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

32.5 Antisense Oligonucleotide: eteplirsen, golodirsen, inotersen, nusinersin

32.5.1 Recommend to coordinate antisense oligonucleotide management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

32.6 Cholinergic muscle stimulant: guanidine

32.6.1 Recommend to coordinate cholinergic muscle stimulant perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

32.7 CNS stimulants: armodafinil, amphetamine, caffeine, dexmethylphenidate, dextroamphetamine, lisdexamfetamine, methamphetamine, methylphenidate modafinil

32.7.1 Recommend to coordinate armodafinil and modafinil perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider.[3] *(UW Health strong recommendation, low quality evidence)*

32.7.2 It may be reasonable to continue chronic amphetamine, caffeine, dexmethylphenidate, dextroamphetamine, lisdexamfetamine, methamphetamine, and methylphenidate regimens throughout the perioperative period.[3] *(UW Health weak recommendation, low quality evidence)*

32.8 Dopamine and norepinephrine reuptake inhibitors: solriamfetol

32.8.1 Recommend to coordinate solriamfetol perioperative management plan with anesthesiologist, surgeon, and prescribing provider. (*UW Health strong recommendation, very low quality evidence*)

32.9 Glutamate inhibitor: riluzole
- 32.9.1 Recommend to continue glutamate inhibitor regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

32.10 Lithium
- 32.10.1 Recommend to continue lithium regimens throughout the perioperative period.[3,13] *(UW Health strong recommendation, low quality evidence)*

32.11 Miscellaneous psychotherapeutic agents: atomoxetine, pitolisant, sodium oxybate
- 32.11.1 Recommend to continue atomoxetine regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*
- 32.11.2 Recommend to coordinate pitolisant and sodium oxybate perioperative management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

32.12 Mixed $5HT_{1A}$ agonist/$5HT_{2A}$ antagonists: flibanserin
- 32.12.1 Recommend to coordinate mixed $5HT_{1A}$ agonist/$5HT_{2A}$ antagonist perioperative management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

32.13 N-Methyl-D-Aspartate (NMDA) antagonists: esketamine
- 32.13.1 Recommend to coordinate esketamine perioperative management plan with anesthesiologist, surgeon, and prescribing provider. (*UW Health strong recommendation, very low quality evidence*)

32.14 Partial neuronal α4 β2 nicotinic receptor agonist: varenicline
- 32.14.1 Recommend to hold therapy varenicline the day of surgery and post-operatively until directed to resume by surgeon. *(UW Health strong recommendation, low quality of evidence)*

32.15 Potassium channel blocker: amifampridine, dalfampridine
- 32.15.1 Recommend to continue potassium channel blocker regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

32.16 Tripeptidyl peptidase-1 (TPP-1) analog: Cerliponase alfa
- 32.16.1 Recommend to coordinate cerliponase alfa perioperative management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

33 Corticosteroid: betamethasone, budesonide, cortisone, cosyntropin, deflazacort, dexamethasone, fludrocortisone, hydrocortisone, methylprednisolone, prednisolone, prednisone, triamcinolone
- 33.1 Recommend to continue corticosteroid regimens throughout the perioperative period.[3,13] *(UW Health strong recommendation, low quality evidence)*

34 Diuretics
- 34.1 Carbonic anhydrase inhibitors: acetazolamide, methazolamide
- 34.2 Loop diuretics: bumetanide, ethacrynic acid, furosemide, torsemide
- 34.3 Osmotic: mannitol
- 34.4 Potassium sparing: amiloride, spironolactone, triamterene
- 34.5 Thiazides: chlorothiazide, chlorthalidone, hydrochlorothiazide, indapamide, methyclothiazide, metolazone
- 34.6 Heart failure with volume overload indication
  - 34.6.1 Recommend to coordinate diuretic perioperative management plan with anesthesiologist, surgeon, and prescribing provider.[3,13] (*UW Health strong recommendation, low quality of evidence)*
- 34.7 Hypertension indication
  - 34.7.1 Recommend to hold diuretic the day of surgery.[3,13] (*UW Health weak recommendation, low quality of evidence)*
    - 34.7.1.1 Taking diuretics in the perioperative period has the potential to cause hypotension and electrolyte abnormalities. These conditions can lead to the need for more vasoactive medications and can potentiate the effects of muscle relaxants used during anesthesia as well as provoke paralytic ileus.[48]

35 Estrogens and Progestins

35.1 Estrogens: conjugated estrogens, ethinyl estradiol, estradiol valerate, esterified estrogens, estradiol, estradiol cypionate, estropipate
35.2 Progestins: desogestrel, drospirenone, etonogestrel, ethynodiol diacetate, hydroxyprogesterone caproate, levonorgestrel, medroxyprogesterone acetate, megestrol acetate, norelgestromin, norgestimate, norgestrel, norethindrone acetate, progesterone, segesterone, ulipristal
35.3 Selective estrogen receptor modulators: bazedoxifene, clomiphene citrate, ospemifene, raloxifene
35.4 Recommend to coordinate estrogen and progestin perioperative management plan with surgeon, and prescribing provider.[3,13] (*UW Health strong recommendation, low quality of evidence)*

36 Endocrine and metabolic agents - miscellaneous

36.1 4-Hydroxyphenylpyruvate dioxygenase inhibitors: nitisinone
36.2 5-Alpha reductase inhibitors: dutasteride, finasteride
36.3 Enzyme replacement: asfotase, agalsidase beta, alglucosidase alfa, elosulfase alfa, galsulfase, idursulfase, imiglucerase, laronidase, sebelipase, taliglucerase alfa, velaglucerase alfa
36.4 Anabolic steroid: oxymetholone
36.5 Androgens: danazol, oxandrolone, fluoxymesterone, methyltestosterone, testosterone
36.6 Anti-androgen: cyproterone, dienogest
36.7 Anti-ammonia agent: carglumic acid, glycerol phenylbutyrate, sodium benzoate and sodium phenylacetate, sodium phenylbutyrate
36.8 Anti-cystine agent: cysteamine
36.9 Anti-prolactin agents: bromocriptine, cabergoline
36.10 Antithyroid agents: methimazole, propylthiouracil, sodium iodide
36.11 Betaine anhydrous
36.12 Bile acids: cholic acid
36.13 Calcimimetics: cinacalcet, etelcalcetide
36.14 Chelating agents: deferasirox, deferiprone, deferoxamine
36.15 Cystic fibrosis transmembrane conductance regulator potentiator: elexacaftor, ivacaftor, lumacaftor, tezacaftor
36.16 Detoxification agents: dimercaprol, edetate calcium disodium, pentetate calcium trisodium, pentetate zinc trisodium, Prussian blue (ferric hexacyanoferrate succimer (DMSA)), trientine hydrochloride
36.17 Glucosylceramide synthase inhibitor: eliglustat, miglustat
36.18 Gonadotropin releasing hormone agonist: nafarelin
36.19 Gonadotropin releasing hormone antagonist: cetrorelix, degarelix, elagolix,ganirelix
36.20 Growth hormone: somatropin
36.21 Growth hormone agonists: macimorelin
36.22 Insulin-like growth factor: mecasermin
36.23 Lipodystrophy agents: metreleptin, tesamorelin
36.24 Lipolytic: deoxycholic acid
36.25 Melanocortin receptor agonist: bremelanotide
36.26 Ovulation stimulator: choriogonadotropin alfa, chorionic gonadotropin, follitropin alfa, follitropin beta, lutropin alpha, menotropins, urofollitropin
36.27 Parathyroid hormone analogues: abaloparatide, parathyroid, teriparatide
36.28 Pegvisomant
36.29 Pharmacologic chaperone: migalastat
36.30 Phenylketonuria agents: pagvaliase, sapropterin dichloride
36.31 Phosphate binders: lanthanum, sevelamer
36.32 Posterior pituitary hormones: desmopressin, vasopressin
36.33 Somatostatin analogs: lanreotide, octreotide, pasireotide
36.34 Thyroid drugs: potassium iodide, levothyroxine sodium, liothyronine sodium, liotrix, thyroid desiccated
36.35 Tryptophan hydroxylase inhibitors: telotristat

36.36 Uridine Triacetate
36.37 Uterine active agents: carboprost, dinoprostone, methylergonovine maleate, mifepristone, oxytocin
36.38 Vasopressin receptor antagonists: conivaptan, tolvaptan
36.39 It is reasonable to continue these endocrine and metabolic agents - miscellaneous regimens listed throughout the perioperative period, unless specific instructions provided by surgeon or prescribing provider.[13] *(UW Health weak recommendation, low quality evidence)*

37 Gastrointestinal agents

37.1 5-aminosalicylic acid derivatives: balsalazide, mesalamine, olsalazine, sulfasalazine
- 37.1.1 Recommend to continue 5-aminosalicylic acid derivative regimens throughout the perioperative period.[50] *(UW Health strong recommendation, low quality evidence)*

37.2 Antidiarrheals: bismuth subsalicylate, crofelemer, difenoxin/atropine, diphenoxylate/atropine, loperamide, loperamide/simethicone
- 37.2.1 Recommend to hold bismuth subsalicylate the day of surgery due to the potential to cause black stools. *(UW Health strong recommendation, low quality evidence)*
- 37.2.2 It is reasonable to continue other antidiarrheals throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

37.3 Laxatives
- 37.3.1 Bowel evacuants: polyethylene glycol, PEG-electrolyte combination, sodium phosphate, sodium phosphate/magnesium oxide/citric acid
- 37.3.2 Bulk producing laxatives: calcium polycarbophil, methylcellulose, psyllium
- 37.3.3 Emollients: mineral oil
- 37.3.4 Surfactants: docusate calcium, docusate sodium
- 37.3.5 Hyperosmotic agents: glycerin, lactilol, lactulose, sorbitol
- 37.3.6 Stimulants: bisacodyl, cascara sagrada, sennosides
  - 37.3.6.1 Recommend to coordinate laxative perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

37.4 Anti-TNF-alpha agents: adalimumab (and biosimilars), certolizumab, golimumab, infliximab (and biosimilars)
- 37.4.1 Recommend to coordinate anti-TNF-alpha agents perioperative medication management plan with surgeon and prescribing provider.[50] *(UW Health strong recommendation, low quality evidence)*

37.5 Anti-integrins: natalizumab, vedolizumab
- 37.5.1 Recommend to coordinate anti-integrin perioperative medication management plan with surgeon and prescribing provider. *(UW Health strong recommendation, low quality evidence)*
  - 37.5.1.1 Clinical evidence suggests that perioperative vedolizumab use is associated with no increase in postoperative complication risk and may possibly reduce the risk of postoperative complications in patients with inflammatory bowel disease.[51]

37.6 Other gastrointestinal agents
- 37.6.1 Antiflatulents: alpha-d-galactosidase, simethicone
- 37.6.2 Antispasmodics: dicyclomine
- 37.6.3 Belladonna alkaloids: atropine sulfate, hyoscyamine sulfate, scopolamine
- 37.6.4 Cholinergic agonists: cevimeline, pilocarpine
- 37.6.5 Chloride channel activator: lubiprostone
- 37.6.6 Digestive enzymes: pancreatic enzymes, pancrelipase
- 37.6.7 Gastrointestinal anticholinergic combinations: clidinium/chlordiazepoxide, atropine/scopolamine/hyoscyamine/phenobarbital
- 37.6.8 Gastrointestinal quaternary anticholinergics – antispasmodics: glycopyrrolate, mepenzolate, methscopolamine, propantheline
- 37.6.9 GI Stimulants: dexpanthenol, metoclopramide, prucalopride, tegaserod
- 37.6.10 GLP-2 analogs: teduglutide
- 37.6.11 Glutamine: L-glutamine

37.6.12 Guanylate cyclase-C agonist: linaclotide, plecanatide
37.6.13 Miscellaneous: eluxadoline, sucralfate, chenodiol, ursodiol, alvimopan, methylnaltrexone, naloxegol, tenapanor
37.6.14 Systemic deodorizers: bismuth subgallate, chlorophyll derivatives, chlorophyllin
37.6.15 Recommend to coordinate perioperative medication management plan of regimens containing agents in 36.6 with surgeon and prescribing provider except sucralfate *(UW Health strong recommendation, low quality evidence)*
37.6.15.1 Recommend to hold sucralfate the day of surgery *(UW Health strong recommendation, low quality evidence)*

38 Genitourinary and renal agents – miscellaneous
38.1 Phosphodiesterase Type 5 (PDE-5) Inhibitors: avanafil, sildenafil, tadalafil, vardenafil (see section 46)
38.2 Cystine depleting agents: cysteamine bitartrate, penicillamine, tiopronin
38.3 Interstitial cystitis agents: dimethyl sulfoxide, pentosan polysulfate sodium, phenazopyridine, phenazopyridine/butabarbital/hyoscyamine
38.4 Urinary acidifiers: ascorbic acid
38.5 Urinary cholinergics: bethanechol
38.6 Urinary alkalinizers: potassium citrate, sodium bicarbonate, sodium bicarb/citric acid
38.7 Miscellaneous genitourinary agents: acetohydroxamic acid, cellulose sodium phosphate
38.8 It is reasonable to continue regimens containing agents in 37.2-37.7 throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

39 Gout agents
39.1 β-tubulin polymerization inhibitor: colchicine
39.1.1 Recommend to coordinate colchicine perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*
39.2 Uric acid transporter-1(URAT-1) inhibitor: lesinurad
39.2.1 It is reasonable to continue uric acid transporter-1(URAT-1) inhibitor regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*
39.3 Urate oxidase: pegloticase
39.3.1 It is reasonable to continue urate oxidase regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*
39.4 Xanthine oxidase inhibitors: allopurinol, febuxostat
39.4.1 It is reasonable to continue xanthine oxidase inhibitors regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*
39.5 Uricosuric agents: probenecid
39.5.1 Recommend to hold probenecid therapy the day of surgery and postoperatively until directed to resume by surgeon. (*UW Health strong recommendation, low quality of evidence)*

40 Hematological agents
Additional information can be found in **Periprocedural and Regional Anesthesia Management with Antithrombotic Therapy – Adult – Inpatient and Ambulatory – Clinical Practice Guideline**
40.1 Activin Receptor Ligand Trap: luspatercept
40.1.1 Recommend to coordinate luspatercept perioperative medication management plan with surgeon and prescribing provider (*UW Health strong recommendation, low quality evidence*)
40.2 Antihemophilic agents: anti-inhibitor coagulant complex, antihemophilic Factor VIII, coagulation Factor XIIIa, Factor IX, Factor VIIa, Factor XIII, antihemophilic factor/von Willebrand factor complex
40.2.1 Recommend to coordinate antihemophilic agent perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider (typically a Hematologist). (*UW Health strong recommendation, low quality of evidence)*

40.3 Anti-von Willebrand Factor: caplacizumab
- 40.3.1 Recommend to coordinate caplacizumab perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. (*UW strong recommendation, low quality of evidence)*

40.4 Antisickling agents: hydroxyurea, voxelotor
- 40.4.1 Recommend to continue antisickling agent regimens throughout the perioperative period. (*UW Health strong recommendation, low quality of evidence)*

40.5 Bradykinin inhibitors: icatibant
- 40.5.1 It is reasonable to continue bradykinin inhibitor regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

40.6 Coagulants: protamine
- 40.6.1 Recommend to coordinate protamine perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. (*UW strong recommendation, low quality of evidence)*

40.7 Erythropoiesis-stimulating agents (ESA): darbepoetin (and biosimilars), epoetin alfa (and biosimilars), epoetin beta (and biosimilars), methoxy polyethylene glycol-epoetin beta
- 40.7.1 It is reasonable to continue erythropoiesis-stimulating agent regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

40.8 Hematopoietic stem cell mobilizer: plerixafor
- 40.8.1 Recommend to coordinate plerixafor perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.9 Granulocyte-colony stimulating factors: filgrastim(and biosimilars), pegfilgrastim (and biosimilars)
- 40.9.1 Recommend to coordinate granulocyte-colony stimulating factor perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.10 Granulocyte macrophage colony-stimulating factor: sargramostim
- 40.10.1 Recommend to coordinate granulocyte macrophage colony-stimulating factor perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.11 Thrombopoietic agents: avatrombopag, eltrombopag, lusutrombopag, oprelvekin, romiplostim
- 40.11.1 Recommend to coordinate thrombopoietic agent perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.12 Porphyria agents: hemin, givosiran
- 40.12.1 Recommend to coordinate porphyria agents perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.13 Hemorrheologic agents: pentoxifylline
- 40.13.1 Recommend to coordinate pentoxifylline perioperative medication management plan with surgeon and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.14 Hemostatics: absorbable gelatin, aminocaproic acid, ferric subsulfate, fibrinogen concentrate, microfibrillar collagen hemostat, oxidized cellulose, prothrombin complex concentrate, thrombin, tranexamic acid
- 40.14.1 Recommend to coordinate hemostatic perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.15 Kallikrein Inhibitor: ecallantide, lanadelumab
- 40.15.1 It is reasonable to continue kallikrein inhibitor regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

40.16 Plasma expanders: albumin human, dextran 40, hetastarch, plasma protein fraction, tetrastarch
- 40.16.1 It is reasonable to continue plasma expander regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

40.17 Protein C1 esterase inhibitor: C1 esterase inhibitor (Cinryze)

40.17.1 Recommend to continue C1 esterase inhibitor regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

40.18 Thrombolytic agents: alteplase, defibrotide, protein C concentrate, reteplase, tenecteplase, urokinase

40.18.1 Recommend to coordinate thrombolytic agents perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider *(UW Health strong recommendation, low quality evidence)*

40.19 Monoclonal antibodies: crizanlizumab

40.19.1 Recommend to coordinate monoclonal antibodies perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider (*UW Health strong recommendation, low quality evidence*)

41 Herbals and Supplements

41.1 Amino Acids: levocarnitine, L-lysine, methionine, threonine

41.2 Cannabidiol (CBD oil, OTC or supplement; not including Epidiolex prescription for seizure management)

41.3 Electrolytes: potassium, sodium chloride

41.4 Fish Oils: omega-3 fatty acids

41.5 Lipotropics: choline, inositol

41.6 Minerals: calcium, magnesium, phosphorus

41.7 Miscellaneous: coenzyme q10, lactase, sacrosidase

41.8 Systemic Alkalinizers: citric acid, citrate, tromethamine

41.9 Trace Elements: chromium, copper, ferric maltol, fluoride, iron, manganese, selenium, zinc

41.10 Vitamins: beta-carotene, phytonadione, vitamin A, calcitriol, cholecalciferol, doxercalciferol, ergocalciferol, paricalcitol, vitamin E, aminobenzoate potassium, bioflavonoids, biotin, hydroxycobalamin, cobalamin, folic acid, niacin, niacinamide, pantothenic acid, pyridoxine, riboflavin, thiamin, vitamin C, ascorbic acid, calcium ascorbate, sodium ascorbate

41.11 Patients with inborn errors of metabolism

41.11.1 Recommend to coordinate use of supplements and perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider *(UW Health strong recommendation, low quality evidence)*

41.12 All other patients

41.12.1 Recommend to hold herbals and supplements 7 days prior to surgery.[3,13,21] *(UW Health strong recommendation, low quality evidence)*

42 Immunologic agents

42.1 Immunomodulators: abatacept, adalimumab (and biosimilars), anakinra, apremilast, brodalumab, canakinumab, certolizumab, daclizumab, dimethyl fumarate, diroximel fumarate, etanercept (and biosimilars), fingolimod, golimumab, guselkumab, infliximab (and biosimilars), interferons, ixekizumab, lenalidomide, mitoxantrone, natalizumab, pembrolizumab, pomalidomide, rilonacept, risankizumab, secukinumab, selinexor, siponimod, teriflunomide, thalidomide, tildrakizumab, tocilizumab, ustekinumab, vedolizumab

42.2 Immunostimulants: elapegademase, pegademase bovine

42.3 Immunosuppressives: alefacept, azathioprine, basiliximab, belatacept, cyclosporine, dupilumab, durvalumab, glatiramer, mycophenolate, ocrelizumab, sirolimus, tacrolimus

42.4 Keratinocyte Growth Factors: palifermin

42.5 Miscellaneous Monoclonal Antibodies: belimumab, burosumab, denosumab, eculizumab, , palivizumab, ravulizumab, raxibacumab, sarilumab, siltuximab, teprotumumab

42.6 Recommend to coordinate immunologic agent perioperative medication management plan with surgeon and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

42.6.1 Ustekinumab continued perioperatively did not increase surgical site infections in Crohn's disease patients undergoing abdominal surgery.[52]

43 Intranasal anti-allergy: azelastine, olopatadine

43.1 It is reasonable to continue intranasal anti-allergy regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

44 Migraine agents: isometheptene, almotriptan, eletriptan, eptinezumab, erenumab, fremanezumab, frovatriptan, galcanezumab, lasmiditan, naratriptan, rimegepant, rizatriptan, sumatriptan, zolmitriptan, ubrogepant

44.1 Recommend to hold migraine agents the day of surgery, although may be approved with coordination of anesthesiologist. *(UW Health strong recommendation, low quality evidence)* See Appendix C – Methylene Blue and Serotonin Syndrome

44.1.1 Drug-drug interactions between serotonin agonists "triptans" and common perioperative medications (e.g. ondansetron, methylene blue) may result in serotonin syndrome.[16]

45 Monoamine Oxidase Inhibitors (MAOIs): isocarboxazid, phenelzine, selegiline, tranylcypromine

45.1 Recommend to coordinate monoamine oxidase inhibitor perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider *(UW Health strong recommendation, low quality evidence)* See Appendix C – Methylene Blue and Serotonin Syndrome

46 Ophthalmic/Otic agents (miscellaneous); see above for anti-glaucoma agents

46.1 Cycloplegic mydriatics: atropine sulfate, cyclopentolate HCl, homatropine hydrobromide, scopolamine hydrobromide, tropicamide, cyclopentolate/phenylephrine hydroxyamphetamine, hydrobromide/tropicamide

46.2 Antibiotics: azithromycin, bacitracin, besifloxacin, ciprofloxacin HCl, erythromycin, gatifloxacin, gentamicin, levofloxacin, moxifloxacin, ofloxacin, sulfacetamide Na, tobramycin

46.3 Antihistamines: alcaftadine, azelastine HCl, emedastine difumarate, epinastine HCl, ketotifen, olopatadine HCl

46.4 Corticosteroids: dexamethasone, difluprednate, fluocinolone acetonide, fluorometholone acetate, loteprednol etabonate, prednisolone, rimexolone, triamcinolone acetonide

46.5 Decongestants: naphazoline HCl, oxymetazoline HCl, phenylephrine HCl, tetrahydrozoline HCl

46.6 Immunologic: cyclosporine

46.7 Mast Cell Stabilizer: bepotastine besilate, cromolyn Na, lodoxamide tromethamine, nedocromil Na

46.8 Nonsteroidal Anti-Inflammatories: bromfenac, diclofenac Na, flurbiprofen Na, ketorolac tromethamine, nepafenac

46.9 Otic Preparations (Miscellaneous): antipyrine/benzocaine, ciprofloxacin, ofloxacin, fluocinolone acetonide, ciprofloxacin HCl/hydrocortisone, ciprofloxacin/dexamethasone, neomycin/polymyxin b/hydrocortisone

46.10 Recombinant Human Nerve Growth Factor: cenegermin

46.11 Selective Vascular Endothelial Growth Factor Antagonists: aflibercept, pegaptanib Na, ranibizumab

46.12 It is reasonable to continue regimens using agents in 45.1-45.11 throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

47 Phosphodiesterase Type 5 (PDE-5) Inhibitors: avanafil, sildenafil, tadalafil, vardenafil

47.1 Erectile dysfunction

47.1.1 Recommend to hold phosphodiesterase type 5 (PDE-5) inhibitor regimens when used for erectile dysfunction five days prior to and the day of surgery. (*UW Health strong recommendation, low quality of evidence)*

47.2 Pulmonary artery hypertension (PAH)

47.2.1 Recommend to **continue phosphodiesterase type 5 (PDE-5) inhibitor regimens when used for PAH** throughout the perioperative period as discontinuation may be fatal. [53-56] (*UW Health strong recommendation, low quality of evidence)*

47.3 Benign prostatic hyperplasia (BPH)

47.3.1 Recommend to coordinate phosphodiesterase type 5 (PDE-5) inhibitor perioperative medication management plan when used for BPH with anesthesiologist, surgeon, and prescribing provider. [53-56] (*UW Health strong recommendation, low quality of evidence)*

48 Pheochromocytoma agents

48.1 Tyrosine Hydroxylase Inhibitor: metyrosine

48.2 Alpha 1-Blocker: phenoxybenzamine hydrochloride, phentolamine mesylate
48.3 Recommend to coordinate pheochromocytoma agent perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. Typically these medications should be continued. *(UW Health strong recommendation, low quality evidence)*

49 Renin Angiotensin System Antagonists

49.1 Angiotensin Converting Enzyme Inhibitor (ACE): benazepril, captopril, cilazapril enalapril, enalaprilat, fosinopril, lisinopril, moexipril, perindopril, quinapril, ramipril, trandolapril
49.2 Angiotensin II receptor blockers (ARB): candesartan, losartan, olmesartan, valsartan
49.3 Direct renin inhibitors: aliskiren
49.4 Recommend holding ACE, ARB, and direct renin inhibitor regimens 24 hours prior to surgery and the day of surgery.[57] *(UW Health strong recommendation, moderate quality evidence)*
49.4.1 Perioperative omission of ACE inhibitors is associated with reduced intraoperative hypotension; intraoperative hypotension is associated with an increased risk of end organ damage and death.[58]

49.4.2 Sample patient instructions

	One day prior to surgery	Day of surgery
Morning doses	Take prior to 0700	Do not take
Noon, evening, or bedtime doses	Do not take	Do not take

49.5 Recommend to coordinate ACE, ARB, and direct renin inhibitor perioperative medication management plan with anesthesiologist and prescribing physician in patients with significant heart failure (American College of Cardiology Foundation/American Heart Association (ACCF/AHA) heart failure staging system Stage D, or New York Heart Association (NYHA) Functional Classification III or IV) or history of very high blood pressure (systolic ≥ 180 mmHg, or diastolic ≥ 120 mmHg) *(UW Health strong recommendation, low quality evidence)*
49.5.1 Studies have shown that continuing ACE inhibitors through the perioperative phase increases the likelihood of intraoperative hypotension.[59,60] These medications should be restarted after surgery as soon as clinically appropriate.[61]
49.6 Neprilysin inhibitor: sacubitril
49.6.1 Recommend to coordinate neprilysin inhibitor regimens with anesthesiologist and prescribing physician. *(UW Health strong recommendation, low quality evidence)*
49.7 Aldosterone Receptor Antagonists: eplerenone, spironolactone
49.7.1 It is reasonable to continue aldosterone receptor antagonist regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

50 Respiratory agents

50.1 Inhaled (oral) sympathomimetics: albuterol, arformoterol, ephedrine, epinephrine, formoterol, indacaterol, isoproterenol, levalbuterol, metaproterenol, olodaterol, pirbuterol, salmeterol, terbutaline, vilanterol
50.1.1 Recommend to continue inhaled (oral) sympathomimetics regimens throughout the perioperative period and to administer on the morning of surgery. (*UW Health strong recommendation, low quality of evidence).*[62]
50.2 Inhaled (oral) anticholinergics: aclidinium, ipratropium, revefenacin, tiotropium, umeclidinium
50.2.1 Recommend to continue inhaled (oral) anticholinergics regimens throughout the perioperative period and to administer on the morning of surgery.[63] *(UW Health strong recommendation, low quality of evidence)*
50.3 Xanthine derivatives: aminophylline, dyphylline, theophylline
50.3.1 Recommend to coordinate xanthine derivative perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider.[64] Generally, hold the day of surgery. *(UW Health strong recommendation, low quality of evidence)*

50.3.1.1 No specific evidence is available to show that theophylline decreases pulmonary complications after surgery, however it does have the potential to cause serious arrhythmias and neurotoxicity

50.4 Inhaled corticosteroids: beclomethasone, budesonide, ciclesonide, flunisolide, fluticasone, mometasone
- 50.4.1 Recommend to continue inhaled corticosteroid regimens throughout the perioperative period.[65] (*UW Health strong recommendation, moderate quality of evidence*)

50.5 Interleukin-5 receptor antagonists: mepolizumab, reslizumab
- 50.5.1 Recommend to continue interleukin-5 receptor antagonist regimens throughout the perioperative period. *(UW Health strong recommendation; low quality evidence)*

50.6 Leukotriene inhibitors/ modifiers: montelukast, zafirlukast, zileuton
- 50.6.1 Recommend to continue leukotriene inhibitor/ modifier regimens throughout the perioperative period and administer on the morning of surgery.[13] *(UW Health strong recommendation, low quality evidence)*

50.7 Monoclonal antibody (IgE): omalizumab
- 50.7.1 Recommend to continue monoclonal antibody (IgE) regimens throughout the perioperative period. *(UW Health strong recommendation; low quality evidence)*

50.8 Antifibrotic agent: pirfenidone
- 50.8.1 Recommend to coordinate pirfenidone perioperative medication management plan with surgeon and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

50.9 Arylalkylamine decongestants: phenylephrine, pseudoephedrine
- 50.9.1 Recommend to hold arylalkylamine decongestants the day of surgery. *(UW Health strong recommendation, low quality evidence)*

50.10 Expectorants: guaifenesin, potassium iodide
- 50.10.1 It is reasonable to continue expectorant regimens throughout the perioperative period. *(UW Health weak recommendation; low quality evidence)*

50.11 Lung surfactant: beractant, calfactant, lucinactant, poractant
- 50.11.1 It is reasonable to continue lung surfactant regimens throughout the perioperative period. *(UW Health weak recommendation; low quality evidence)*

50.12 Mucolytic: acetylcysteine, dornase alfa
- 50.12.1 Recommend to continue mucolytic regimens throughout the perioperative period. (*UW Health strong recommendation, low quality of evidence*)

50.13 Non-narcotic anti-tussive: benzonatate, dextromethorphan
- 50.13.1 It is reasonable to continue non-narcotic anti-tussive regimens throughout the perioperative period. *(UW Health weak recommendation; low quality evidence)*

50.14 Phosphodiesterase 4 inhibitor: roflumilast
- 50.14.1 Recommend to continue phosphodiesterase 4 inhibitor regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

50.15 Respiratory enzymes: alpha 1- proteinase inhibitor
- 50.15.1 Recommend to continue respiratory enzyme regimens throughout the perioperative period. *(UW Health strong recommendation, low quality of evidence)*

50.16 Tyrosine kinase inhibitor: fostamatinib, nintedanib
- 50.16.1 Recommend to continue tyrosine kinase inhibitor regimens throughout the perioperative period. *(UW Health strong recommendation, low quality of evidence)*

51 Sedatives and Hypnotics

51.1 Barbiturates: amobarbital, butabarbital, pentobarbital, phenobarbital, secobarbital

51.2 Nonbarbiturates: chloral hydrate, dexmedetomidine, eszopiclone, lemborexant, ramelteon, suvorexant, tasimelteon, zaleplon, zolpidem

51.3 Recommend to coordinate sedative and hypnotic perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

52 Selective Serotonin Reuptake Inhibitors (SSRIs): citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine, sertraline, vilazodone

52.1 Recommend to coordinate SSRI perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider.[3,13,21] *(UW Health strong recommendation, low quality evidence)* See Appendix D – Methylene Blue and Serotonin Syndrome
52.1.1 Drug interactions between SSRIs and antiplatelet therapy for secondary prevention (aspirin or thienopyridine therapy) may increase the risk of bleeding.[66,67,68]

53 Selective Norepinephrine Reuptake Inhibitors (SNRIs): desvenlafaxine, duloxetine, levomilnacipran, milnacipran, venlafaxine
53.1 Recommend to coordinate SNRI perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider. [3,13,21] *(UW Health strong recommendation, low quality evidence)* See Appendix D – Methylene Blue and Serotonin Syndrome

54 Skeletal Muscle Relaxants
54.1 Direct Acting: dantrolene
54.1.1 Recommend to continue dantrolene regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*
54.2 Centrally Acting: baclofen, carisoprodol, chlorzoxazone, cyclobenzaprine, diazepam, metaxalone, methocarbamol, orphenadrine, tizanidine
54.2.1 Recommend to continue baclofen regimens throughout the perioperative period.[69,70] *(UW Health strong recommendation, low quality evidence)*
54.2.1.1 Baclofen acts as an agonist at GABA receptors in the spinal cord. It reduces the pain associated with muscle spasms and may delay development of contractures. This facilitates normal daily activity. Abrupt withdrawal from oral or intrathecal baclofen may result in seizures, hallucinations, disorientation, dyskinesias, and itching. Symptoms may last up to 72 hours.[69]
54.2.2 It is reasonable to continue carisoprodol, chlorzoxazone, cyclobenzaprine, diazepam, metaxalone, methocarbamol, orphenadrine, and tizanidine regimens throughout the perioperative period. *(UW Health weak recommendation, low quality evidence)*

55 Tetracyclic antidepressants: maprotiline, mirtazapine
55.1 It is reasonable to continue tetracyclic antidepressant regimens throughout the perioperative period. *(UW Health weak recommendation, low quality of evidence)*

56 Toxins
56.1 Botulinum Type A toxin: abobotulinum, incobotulinum, onabotulinum, prabotulinumtoxinA
56.2 Type B toxin: rimabotulinum
56.3 It is reasonable to hold toxins 48 hours prior to surgery and not resume until approved by surgeon. *(UW Health weak recommendation, low quality of evidence)*

57 Tricyclic antidepressants: amitriptyline, amoxapine, clomipramine, desipramine, doxepin, imipramine, nortriptyline, protriptyline, trimipramine
57.1 It is reasonable to continue tricyclic antidepressant regimens throughout the perioperative period.[3,13,21] *(UW Health weak recommendation, low quality of evidence)*
57.1.1 Due to effects on the cardiac conduction system, tricyclic antidepressants may increase the risk of cardiac arrhythmia.[71]
57.1.2 Drug-drug interactions between tricyclic antidepressants and common perioperative medications (sympathomimetics [epinephrine, norepinephrine], serotonergics [meperidine, tramadol], and anticholinergics (atropine, scopolamine) may result in hypertension, serotonin syndrome or confusion.[71]

58 Vasodilators
58.1 Endothelin Receptor Antagonist: ambrisentan, bosentan, macitentan
58.1.1 Recommend to continue endothelin receptor antagonist regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*
58.2 Human B-Type Natriuretic Peptide: nesiritide

58.2.1 Recommend to continue nesiritide regimens throughout the perioperative period. *(UW Health strong recommendation, low quality evidence)*

58.3 Nitrates: amyl nitrate, isosorbide dinitrate, isosorbide mononitrate, nitroglycerin
58.3.1 Recommend to continue nitrate regimens throughout the perioperative period.[3,13] *(UW Health strong recommendation, low quality evidence)*

58.4 Peripheral Vasodilators: hydralazine, isoxsuprine, minoxidil, papaverine
58.4.1 Recommend to coordinate peripheral vasodilator perioperative medication management plan with surgeon, anesthesiologist and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

58.5 Prostanoids: epoprostenol, iloprost, selexipag, treprostinil
58.5.1 Recommend to coordinate prostanoid perioperative medication management plan with surgeon, anesthesiologist and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

58.6 Soluble Guanylate Cyclase Stimulator : riociguat
58.6.1 Recommend to coordinate riociguat perioperative medication management plan with surgeon, anesthesiologist and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

59 Vasopressors: dobutamine, dopamine, droxidopa, ephedrine, epinephrine, isoproterenol, norepinephrine, phenylephrine
59.1 Recommend to coordinate vasopressor perioperative medication management plan with surgeon, anesthesiologist and prescribing provider. *(UW Health strong recommendation, low quality evidence)*

Disclaimer

Clinical practice guidelines assist clinicians by providing a framework for the evaluation and treatment of patients. This guideline outlines the preferred approach for most patients. It is not intended to replace a clinician's judgment or to establish a protocol for all patients. It is understood that some patients will not fit the clinical condition contemplated by a guideline and that a guideline will rarely establish the only appropriate approach to a problem.

Methodology

Development Process

Each guideline is reviewed and updated a minimum of every 3 years. All guidelines are developed using the guiding principles, standard processes, and styling outlined in the UW Health Clinical Practice Guideline Resource Guide. This includes expectations for workgroup composition and recruitment strategies, disclosure and management of conflict of interest for participating workgroup members, literature review techniques, evidence grading resources, required approval bodies, and suggestions for communication and implementation.

Methods Used to Collect/Select the Evidence:

Electronic database searches (e.g., PUBMED) were conducted by the guideline authors and workgroup members to collect evidence for review. Search terms included: perioperative medication management, intraoperative complications, postoperative complications, therapeutic drug classes (e.g. adrenergic alpha 2 receptor antagonist), and individual drug names. Medical Subject Heading (MeSH) terms were also used when available. Expert opinion and clinical experience were also considered during discussions of the evidence.

Methods Used to Formulate the Recommendations:

The workgroup members agreed to adopt recommendations developed by external organizations and/or created recommendations internally via a consensus process using discussion of the literature and expert experience/opinion. If issues or controversies arose where consensus could not be reached, the topic was escalated appropriately per the guiding principles outlined in the UW Health Clinical Practice Guideline Resource Guide.

Methods Used to Assess the Quality of the Evidence/Strength of the Recommendations:

Recommendations developed by external organizations maintained the evidence grade assigned within the original source document and were adopted for use at UW Health.

Internally developed recommendations, or those adopted from external sources without an assigned evidence grade, were evaluated by the guideline workgroup using an algorithm adapted from the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology (see **Figure 1**).

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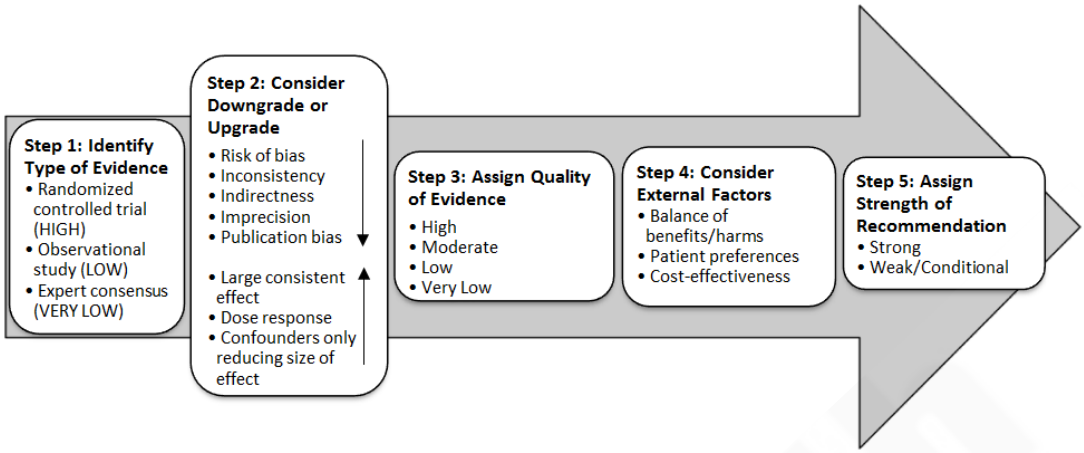
Figure 1. GRADE Methodology adapted by UW Health



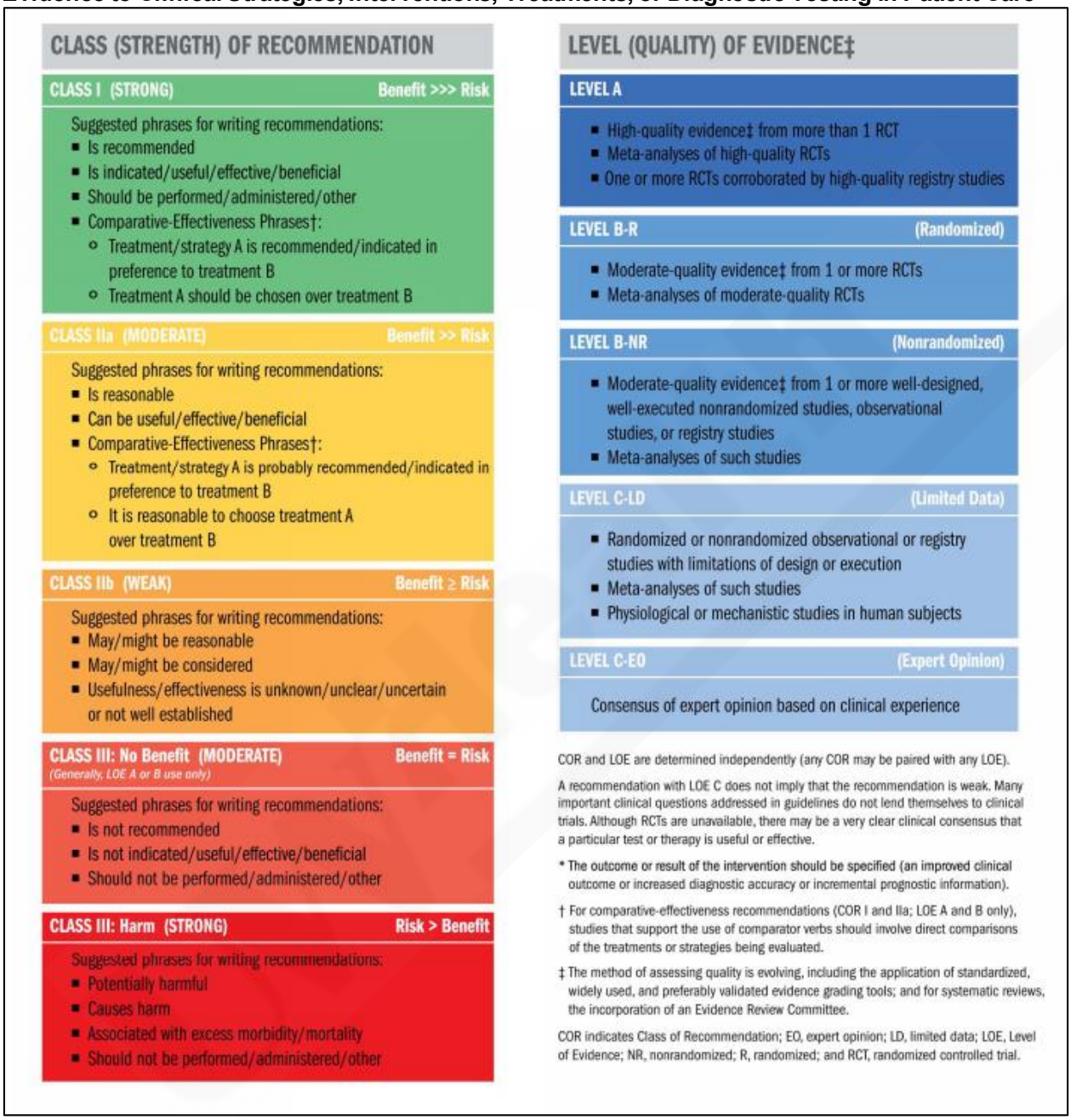
GRADE Ranking of Evidence

High	We are confident that the effect in the study reflects the actual effect.
Moderate	We are quite confident that the effect in the study is close to the true effect, but it is also possible it is substantially different.
Low	The true effect may differ significantly from the estimate.
Very Low	The true effect is likely to be substantially different from the estimated effect.

GRADE Ratings for Recommendations For or Against Practice

Strong (S)	Generally should be performed (i.e., the net benefit of the treatment is clear, patient values and circumstances are unlikely to affect the decision.)
Conditional (C)	May be reasonable to perform (i.e., may be conditional upon patient values and preferences, the resources available, or the setting in which the intervention will be implemented.)

Figure 2. ACC/AHA Recommendation System: Applying Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care[72]



Recognition of Potential Heath Care Disparities:
Health disparities exist in surgical patients, particularly amongst those who have inadequate health literacy. Health literacy issues affect upwards of 90 million Americans and have been linked to poor perioperative outcomes.[73,74] Careful consideration of health literacy during the perioperative period is paramount in order to ensure the best perioperative outcome for surgical patients. Health literacy issues are pervasive amongst all races and peoples

Collateral Tools & Resources

The following collateral tools and resources support staff execution and performance of the evidence-based guideline recommendations in everyday clinical practice.

Metrics

- Perioperative medication-related complications (e.g. hypotension, bleeding, infection)
- Delay or cancellation of surgeries because of a failure to modify/hold a medication preoperatively

Guidelines

- Standards of Medical Care in Diabetes – Pediatric/Adult – Inpatient/Ambulatory
  - Diabetes Medication Adjustment (Inpatient Procedures)
  - Diabetes Medication Adjustment (Ambulatory Procedures)
- Periprocedural and Regional Anesthesia Management with Antithrombotic Therapy – Adult – Inpatient/Ambulatory
- Assessment of Tobacco Use or Secondhand Exposure – Adult/Pediatric – Inpatient/Ambulatory
- Management of Patients with Non-ST Elevation Acute Coronary Syndromes – Adult - Inpatient
- Mechanical Circulatory Device (MCD) – Adult – Inpatient/Ambulatory

External Databases

- Lexicomp Drug Information Database
- Natural Medicines Database
- Natural Products Database

Appendix A: Perioperative Medication Management

From: Perioperative Medication Management – Adult/Pediatric – Inpatient/Ambulatory Clinical Practice Guideline
Last Reviewed 6/2019; Last Updated 6/2019
Contact information: Philip J. Trapskin, PharmD, Phone Number: (608) 263-1328, PTrapskin@uwhealth.org

Class	Medication	Recommendation	
Acid Suppressants			
Antacids	Non-soluble Aluminum hydroxide Calcium carbonate Magnesium hydroxide Magnesium oxide Soluble Sodium bicarbonate Sodium citrate	**Non-soluble:** Recommend to hold therapy the day of surgery **Soluble:** Recommend to continue regimen throughout the perioperative period	
H_2-Receptor Antagonists	Cimetidine Famotidine Nizatidine Ranitidine	It is reasonable to continue regimen throughout the perioperative period	
Proton pump inhibitors	Dexlansoprazole Esomeprazole Lansoprazole Omeprazole Omeprazole/sodium bicarbonate Pantoprazole Rabeprazole	**Parathyroid surgery**: Recommend to hold 7 days prior to and day of surgery and post-operatively until directed to resume by surgeon. **All other surgeries**: Recommend to continue regimen throughout the perioperative period	
Allergen-specific Immunotherapy			
	Peanut allergen powder	Recommend to coordinate perioperative medication management plan with surgeon and prescribing physician	
Alpha$_1$ blockers			
Alpha$_1$ blockers	Alfuzosin Doxazosin Phenoxybenzamine Phentolamine Prazosin Silodosin Tamsulosin Terazosin	**Cataract surgery**: Recommend to coordinate perioperative medication management plan with surgeon **All other surgeries**: Recommend to continue regimen throughout the perioperative period	
Alpha$_2$-adrenergic agonists			
Alpha$_2$- agonists	Clonidine Guanfacine Lofexidine Methyldopa Tizanidine	Recommend to continue regimen throughout the perioperative period	
Analgesics			

Class	Medication		Recommendation	
	Acetaminophen		It is reasonable to continue regimen throughout the perioperative period	
N-type calcium channel blocker	Ziconotide		It is reasonable to continue regimen throughout the perioperative period. Any interruptions in therapy (holding or discontinuing) should be coordinated with prescribing provider.	
Nonsteroidal anti-inflammatory drugs (NSAIDs)	Aspirin Celecoxib Choline magnesium trisalicylate Diclofenac Diflunisal Etodolac Fenoprofen Flurbiprofen Ibuprofen Indomethacin Ketoprofen	Ketorolac Magnesium salicylate Meclofenamate Mefenamic acid Meloxicam Nabumetone Naproxen Oxaprozin Piroxicam Salsalate Sulindac Tolmetin	**For aspirin recommendations, refer to the Anti-platelet section.** For non-aspirin NSAIDS, coordinate with surgeon and prescribing provider.	
Opioid agonists	Alfentanil Codeine Fentanyl Hydrocodone Hydromorphone Levorphanol Meperidine Methadone Morphine sulfate	Opium Oxycodone Oxymorphone Paregoric Remifentanil Sufentanil Tapentadol Tramadol	Recommend to continue chronic opioid regimen throughout the perioperative period, unless reduction or discontinuation is part of the perioperative analgesic plan. Abrupt discontinuation of opioids may cause withdrawal symptoms and/or increased pain	
Opioid partial agonists	Buprenorphine Buprenorphine injection Buprenorphine/naloxone (Suboxone®) Butorphanol Morphine sulfate/naltrexone Nalbuphine Pentazocine		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing physician	
Anorexiants				
Serotonin 2C receptor agonists	Lorcaserin		Recommend to hold therapy 7 days prior to surgery and postoperatively until directed to resume by surgeon	
Sympathomimetic anorexiants	Benzphetamine Diethylpropion	Phendimetrazine Phentermine		
Anti-addiction Agents (see also "Opioid partial agonists" above)				
Antialcoholic agents	Acamprosate calcium Disulfiram		**Acamprosate**: Recommend to continue regimen throughout the perioperative period	
			Disulfiram: Recommend to hold 7 to14 days prior to surgery	
Opioid Antagonist	Naltrexone		Recommend to hold oral naltrexone for 1 week prior to surgery and intramuscular naltrexone for 4 weeks prior to surgery Recommend coordination of post-operative pain management plan with anesthesiologist, surgeon, and primary care physician in order to minimize use of opioids	

Class	Medication		Recommendation	
Nicotine replacement	Nicotine gum, lozenges, patches, inhalers		Recommend abstinence from smoking in the perioperative period Recommend to coordinate nicotine replacement perioperative medication management plan with surgeon. If used the day of surgery, gum and lozenges should not be used within 2 hours of procedure	
Anti-Dementia (Alzheimer's)Agents				
Cholinesterase inhibitors	Donepezil Galantamine Rivastigmine		Recommend to continue cholinesterase inhibitors with the knowledge that adjustments to neuromuscular blocking drugs may be necessary	
NMDA receptor antagonist	Memantine		It is reasonable to continue regimen throughout the perioperative period	
Anti-arrhythmics				
Anti-arrhythmics	Amiodarone Disopyramide Dofetilide Dronedarone Flecainide Ibutilide	Lidocaine (systemic) Mexiletine Procainamide Propafenone Quinidine	**Electrophysiology surgeries/procedures** Recommend to coordinate perioperative medication management plan with cardiologist and prescribing provider	
			Non-electrophysiology surgeries/procedures Recommend to continue regimen throughout the perioperative period	
Anti-cholinergics				
Anti-cholinergics	Cyclizine Dimenhydrinate Diphenhydramine	Meclizine Scopolamine Trimethobenzamide	It is reasonable to continue anti-cholinergics throughout the perioperative period, unless a patient-specific perioperative management plan was provided by the surgeon.	
Anti-coagulants				
Anticoagulants	Antithrombin Apixaban Betrixaban Argatroban Bivalirudin Dabigatran Dalteparin	Desirudin Edoxaban Enoxaparin Fondaparinux Heparin Rivaroxaban Warfarin	Recommend to coordinate perioperative medication management including any plan for neuraxial analgesia with surgeon, anesthesiologist and prescribing provider Refer to Management of Antithrombotic Therapy in the Setting of Periprocedural, Regional Anesthesia and/or Pain Procedures Clinical Practice Guideline	

Anti-convulsants				
Anticonvulsants	Acetazolamide Brivaracetam Cannabidiol (Epidiolex) Carbamazepine Cenobamate Divalproex Eslicarbazepine Felbamate Lacosamide Lamotrigine	Levetiracetam Oxcarbazepine Perampanel Primidone Rufinamide Stiripentol Tiagabine Topiramate Valproic acid Vigabatrin	**Planned Neuromonitoring or Neuromapping** Recommend to coordinate anticonvulsant perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider **All other Procedures** Recommend to continue anticonvulsant regimens throughout the perioperative period.	
Anticonvulsants (GABA analogues)	Gabapentin	Pregabalin		
Hydantoins	Ethotoin Fosphenytoin	Phenytoin		
Potassium Channel Openers	Ezogabine			
Succinimides	Ethosuximide	Methsuximide		
Sulfonamides	Zonisamide			
Anti-diabetic agents				
Alpha-glucosidase inhibitor	Acarbose Miglitol		Refer to: • Diabetes Medication Adjustment: Ambulatory Procedures • Diabetes Medication Adjustment: Inpatient Procedures	
Amylinomimetic	Pramlintide			
Biguanide	Metformin			
Dipeptidyl Peptidase IV Inhibitor	Alogliptin Linagliptin	Saxagliptin Sitagliptin		
Glucagon-Like Peptide-1 Receptor Agonist	Albiglutide Dulaglutide Exenatide	Liraglutide Lixisenatide Semaglutide		
Insulin	Insulin Aspart Insulin Degludec Insulin Detemir Insulin Glargine	Insulin Isophane Insulin Lispro Insulin Regular		
Meglitinide Analog	Nateglinide Repaglinide			
Sodium-Glucose Cotransporter-2 Inhibitor	Canagliflozin Dapagliflozin	Empagliflozin Ertugliflozin		
Sulfonylurea	Chlorpropamide Glimepiride Glipizide	Glyburide Tolazamide Tolbutamide		
Thiazolidinedione	Pioglitazone	Rosiglitazone		
Anti-dopaminergics				
Antidopaminergics	Chlorpromazine Amisulpride	Metoclopramide Perphenazine	It is reasonable to continue regimen in the perioperative period	
Anti-emetics				
5HT3 antagonists	Alosetron Dolasetron Granisetron	Ondansetron Palonosetron	It is reasonable to continue regimen in the perioperative period	
Phenothiazine	Prochlorperazine	Promethazine		
Substance P/Neurokinin 1 receptor antagonist	Aprepitant Fosaprepitant Fosnetupitant	Netupitant Rolapitant		

Anti-glaucoma ophthalmics				
Miotics, Cholinesterase Inhibitors	Acetylcholine Carbachol	Echothiophate Iodide Pilocarpine	Recommend to continue cholinesterase inhibitors with the knowledge that adjustments to neuromuscular blocking drugs may be necessary.	
Alpha Adrenergic Agonists	Apraclonidine	Brimonidine	Recommend to continue ophthalmic alpha adrenergic agonist, beta-adrenergic blocking agent (beta-blockers), carbonic anhydrase inhibitor docosanoid, synthetic, and prostaglandin analogue regimens throughout the perioperative period	
Beta-Adrenergic Blocking Agents (Beta-Blockers)	Betaxolol Carteolol Levobunolol	Metipranolol Timolol		
Carbonic Anhydrase Inhibitors	Brinzolamide Dorzolamide			
Prostaglandin Analogues	Bimatoprost Latanoprost Latanoprostene bunod	Tafluprost Travoprost		
Rho kinase inhibitor	Netarsudil			
Unoprostone Isopropyl	Unoprostone Isopropyl			
Anti-histamines				
Peripherally selective	Cetirizine Desloratadine Fexofenadine	Loratadine Levocetirizine	Recommend to continue regimen throughout the perioperative period	
Nonselective	Brompheniramine Carbinoxamine Chlorcyclizine Chlorpheniramine Clemastine Cyproheptadine	Dexbrompheniramine Dexchlorpheniramine Diphenhydramine Doxylamine Hydroxyzine Triprolidine		
Anti-hyperlipidemia agents (non-statins)				
	Alirocumab Bempedoic acid Cholestyramine Colesevelam Colestipol Evolocumab	Ezetimibe Fenofibrate Gemfibrozil Niacin Lomitapide Mipomersen	Recommend to hold therapy 24 hours prior to surgery and day of surgery to reduce risk of rhabdomyolysis and gastrointestinal obstruction	
Statins (HMG-CoA Reductase Inhibitors)				
Statins	Atorvastatin Fluvastatin Lovastatin	Pravastatin Rosuvastatin Simvastatin	Recommend to continue regimen throughout the perioperative period, particularly in patients at high risk for cardiovascular disease	

Anti-infectives				
Amebicides	Iodoquinol (Yodoxin)		**Active infection:** Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider **Infection Prophylaxis:** Recommend to coordinate anti-infectives for prophylaxis indications with surgeon and prescribing provider	
Aminoglycosides (oral)	Neomycin	Paromomycin		
Aminoglycosides (parenteral)	Amikacin Gentamicin Plazomicin	Streptomycin Tobramycin		
Anthelmintics	Albendazole (Albenza) Ivermectin (Stromectol) Moxidectin	Praziquantel (Biltricide) Pyrantel (Pin-X) Triclabendazole		
Antibiotic Combinations	Erythromycin/Sulfisoxazole Sulfamethoxazole/Trimethoprim			
Antifungal (Allylamine)	Terbinafine Anidulafungin Caspofungin Flucytosine Griseofulvin Micafungin Ketoconazole	Amphotericin B Nystatin Fluconazole Isavuconazonium Itraconazole Posaconazole Voriconazole		
Antimalarial	Chloroquine Hydroxychloroquine Artemether/Lumefantrine Atovaquone/Proguanil	Primaquine Quinine sulfate Pyrimethamine Mefloquine Tafenoquine		
Antiprotozoals	Atovaquone Miltefosine Nitazoxanide	Pentamidine Tinidazole		
Antiretroviral agents	Abacavir Atazanavir Bictegravir Cobicistat Darunavir Delavirdine Didanosine Dolutegravir Doravirine Efavirenz Elvitegravir Emtricitabine Enfuvirtide Etravirine Fosamprenavir Ibalizumab Indinavir	Lamivudine Lopinavir Maraviroc Nefinavir Nevirapine Raltegravir Rilpivirine Ritonavir Saquinavir Stavudine Tenofovir Tipranavir Zidovudine Any antiretroviral combination product		
Antituberculosis Agents	Aminosalicylic acid Benaquiline Capreomycin Cycloserine Ethambutol Ethionamide Isoniazid	Pretomanid Pyrazinamide Rifabutin Rifampin Rifapentine Streptomycin		

Antiviral Agents	Adefovir Amantadine Acyclovir Baloxavir Boceprevir Cidofovir Daclatasvir Elbasvir/grazoprevir Entecavir Famciclovir Foscarnet Ganciclovir Glecaprevir/pibrentasvir Ledipasvir/Sofosbuvir	Letermovir Ombitasvir/Paritaprevir/Ritonavir/Dasabuvir Oseltamivir Peramivir Ribavirin Rimantadine Simeprevir Sofosbuvir Tecovirimat Telaprevir Telbivudine Valacyclovir Valganciclovir Velpatasvir Voxilaprevir Zanamivir	**Active infection:** Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider **Infection Prophylaxis:** Recommend to coordinate anti-infectives for prophylaxis indications with surgeon and prescribing provider	
Bacitracin	Bacitracin			
Carbapenems	Doripenem Ertapenem Imipenem/Cilastatin	Meropenem Meropenem/vaborbactam		
Cephalosporins	Cefaclor Cefadroxil Cefazolin Cefdinir Cefditoren Cefepime Cefiderocol Cefixime Cefotaxime Cefotetan	Cefoxitin Cefpodoxime Cefprozil Ceftaroline Ceftazidime Ceftazidime/Avibactam Ceftriaxone Cefuroxime Cephalexin		
	Chloramphenicol			
	Colistimethate			
Fluoroquinolones	Ciprofloxacin Delafloxacin Gemifloxacin Levofloxacin	Moxifloxacin Norfloxacin Ofloxacin (drops) Ozenoxacin		
Folate Antagonists	Trimethoprim			
Glycylcylines	Tigecycline			
Ketolides	Telithromycin			
Leprostatics	Dapsone			
Lincosamides	Clindamycin	Lincomycin		
Lipoglycopeptides	Dalbavancin Oritavancin	Telavancin		
Lipopeptides	Daptomycin			
Macrolides	Azithromycin Clarithromycin	Erythromycin Fidaxomicin		
Methenamines	Methenamine Hippurate Methenamine Mandelate			
Miscellaneous	Benznidazole Fosfomycin Lefamulin	Metronidazole Rifamycin Secnidazole		
Monobactams	Aztreonam			
Monoclonal antibodies	Bezlotoxumab			
Nitrofurans	Nitrofurantoin			
Oxazolidinones	Linezolid	Tedizolid		

Penicillins	Amoxicillin Amoxicillin/Clavulanate Ampicillin Ampicillin/sulbactam Dicloxacillin Nafcillin	Oxacillin Penicillin G Penicillin V Piperacillin/Tazobactam Ticarcillin/Clavulanate	**Active infection:** Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider **Infection Prophylaxis:** Recommend to coordinate anti-infectives for prophylaxis indications with surgeon and prescribing provider	
	Polymyxin B Sulfate			
	Rifaximin			
Streptogramins	Quinupristin/Dalfopristin			
Sulfadiazine	Sulfadiazine			
Tetracyclines	Demeclocycline Doxycycline Eravacycline Minocycline	Omadacycline Sarecycline Tetracycline		
Vancomycin	Vancomycin			
Anti-over active bladder agents				
Anticholinergic	Oxybutynin		It is reasonable to continue regimen throughout the perioperative period	
Muscarinic receptor antagonist	Darifenacin Fesoterodine Solifenacin	Tolterodine Trospium		
M3 muscarinic agonist	Mirabegron			
Phosphodiesterase inhibitor	Flavoxate			
Anti-neoplastics				
Alkylating Agents	Altretamine Busulfan Carmustine Chlorambucil Dacarbazine Estramustine	Ifosfamide Lomustine Mechlorethamine Melphalan Streptozocin Thiotepa	Recommend to coordinate antineoplastic perioperative medication management plan with surgeon and prescribing provider	
Anthracenedione	Mitoxantrone			
Antibody-Drug Conjugates	ADO-Trastuzumab Brentuximab Vedotin Emtansine	Enfortumab vedotin Fam-trastuzumab deruxtecan Polatuzumab vedotin		
Antimetabolites	Allopurinol Capecitabine Cladribine Clofarabine Cytarabine Floxuridine Fludarabine Fluorouracil	Gemcitabine Mercaptopurine Methotrexate Pemetrexed Pentostatin Pralatrexate Rasburicase Thioguanine		
Antimitotic agents	Cabazitaxel Docetaxel Eribulin Ixabepilone	Paclitaxel Vinblastine Vincristine Vinorelbine		
Antineoplastic Antibiotics	Bleomycin Dactinomycin Daunorubicin Doxorubicin	Epirubicin Idarubicin Mitomycin Valrubicin		
BCL-2 Inhibitor	Venetoclax			
Biologic Response Modifiers	Aldesleukin	BCG live		
Cytoprotective Agents	Amifostine Dexrazoxane Leucovorin	Levoleucovorin Mesna		

DNA Demethylation Agents	Azacitidine Decitabine Nelarabine			
DNA Topoisomerase Inhibitors	Irinotecan Topotecan			
Enzymes	Asparaginase Calaspargase	Pegaspargase		
Epipodophyllotoxin	Etoposide	Teniposide		
EZH2-Inhibitor	Tazemetostat			
Histone Deacetylase Inhibitors	Belinostat Panobinostat	Romidepsin Vorinostat		
Hormones	Abiraterone Anastrazole Apalutamide Bicalutamide Buserelin Darolutamide Enzalutamide Exemestane Flutamide Fulvestrant	Goserelin Histelin Letrozole Leuprolide Medroxyprogesterone Megestrol Nilutamide Tamoxifen Toremifene Triptorelin		
Hedgehog Pathway Inhibitor	Glasdegib Sonidegib	Vismodegib		
Imidazotetrazine derivatives	Temozolomide		Recommend to coordinate antineoplastic perioperative medication management plan with surgeon and prescribing provider	
Kinase inhibitors	Abemaciclib Acalabrutinib Afatinib Alectinib Alpelisib Axitinib Binimetinib Bosutinib Brigatinib Cabozantinib Ceritinib Cobimetinib Copanlisib Crizotinib Dabrafenib Dacomitinib Dasatinib Duvelisib Encorafenib Enasidenib Entrectinib Erdafitinib Erlotinib Everolimus Gefitinib Gilteritinib	Ibrutinib Idelalisib Imatinib Ivosidenib Lapatinib Lenvatinib Lorlatinib Larotrectinib Midostaurin Neratinib Nilotinib Osimertinib Palbociclib Pazopanib Pexidartinib Ponatinib Regorafenib Ribociclib Ruxolitinib Sorafenib Sunitinib Temsirolimus Trametinib Vandetanib Vemurafenib Zanubrutinib		
Methylhydrazine derivatives	Procarbazine			
Miscellaneous Antineoplastics	Arsenic Trioxide Mitotane Porfimer Sipuleucel-T	Sterile Talc Powder Trabectedin Trifluridine/tipiracil		
Monoclonal antibodies	Alemtuzumab Atezolizumab Avapritinib Avelumab Bevacizumab (and biosimilars) Blinatumomab	Ipilimumab Mogamulizumab Moxetumomab Necitumumab Nivolumab Obinutuzumab Ofatumumab		

	Brolucizumab Cemiplimab Cetuximab Daratumumab Dinutuximab Elotuzumab Gemtuzumab Ibritumomab Inotuzumab	Olaratumab Panitumumab Pertuzumab Ramucirumab Rituximab (and biosimilars) Tagraxofusp Trastuzumab (and biosimilars)	Recommend to coordinate antineoplastic perioperative medication management plan with surgeon and prescribing provider	
PARP Enzymes Inhibitor	Niraparib Olaparib	Rucaparib Talazoparib		
Platinum Coordination Complex	Carboplatin Cisplatin Oxaliplatin			
Proteasome Inhibitors	Bortezomib Carfilzomib	Ixazomib		
Protein Synthesis Inhibitor	Omacetaxine			
Radiopharmaceuticals	Lutetium Lu-177 Radium Ra-223 Samarium Sm-153 Sodium Iodide I-131 Strontium-89 Chloride			
Retinoids	Tretinoin Trifarotene			
Rexinoids	Bexarotene			
Substituted Ureas	Hydroxyurea			
Vascular Endothelial Growth Factor	ZIV-Aflibercept			
Anti-osteoporosis Agents				
Bisphosphonates	Alendronate Etidronate Ibandronate Pamidronate	Risedronate Tiludronate Zolendronic Acid	**Dental surgeries:** Recommend to coordinate anti-osteoporosis perioperative medication management plan with surgeon and prescribing provider **All other surgeries:** Recommend to hold bisphosphonate therapy the day of surgery and postoperatively until directed to resume by surgeon and to coordinate perioperative calcitonin and denosumab medication management plan with surgeon and prescribing provider	 
Calcitonin-salmon	Calcitonin-salmon			
Denosumab	Denosumab			
Romosozumab	Romosozumab			
Anti-Parkinson's Agents				
Antiparkinson agents	Amantadine Apomorphine Belladonna alkaloids Benztropine Bromocriptine Carbidopa Carbidopa/Levodopa Carbidopa/Levodopa/Entacapone	Istradefylline Entacapone Pramipexole Rasagiline Ropinirole Rotigotine Selegiline Tolcapone	Recommend to continue regimen throughout the perioperative period	
Anti-platelets				
Antiplatelet agents	Anagrelide Dipyridamole Dipyridamole/Aspirin Cangrelor Cilostazol Clopidogrel	Prasugrel Ticagrelor Ticlopidine Vorapaxar	Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider (e.g. interventional	

			cardiologist, neurosurgeon, vascular surgeon)	
Anti-psychotics				
1st generation – Typical	Chlorpromazine Fluphenazine Haloperidol Loxapine Perphenazine	Pimozide Prochlorperazine Thioridazine Thiothixene Trifluoperazine	Recommend to continue regimen throughout the perioperative period	
2nd generation – Atypical	Aripiprazole Asenapine Brexpiprazole Cariprazine Clozapine Iloperidone Lumateperone	Lurasidone Olanzapine Paliperidone Pimavanserin Quetiapine Risperidone Ziprasidone		
Antirheumatic Agents				
Janus associated kinase (JAK) inhibitors	Baricitinib Fedratinib Ruxolitinib Tofacitinib Upadacitinib		**Orthopedic surgery**: Recommend to hold therapy 48 hours prior to surgery and resume 7-14 days post-operatively if there are no signs or symptoms of infection and incisions are healing well	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Antimetabolites	Methotrexate		**Orthopedic surgery**: Recommend to continue regimen throughout the perioperative period	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Anti-TNF-alpha agents	Adalimumab (and biosimilars) Certolizumab Etanercept (and biosimilars) Golimumab Infliximab (and biosimilars)		**Orthopedic surgery**: Recommend to hold etanercept 2 weeks prior to surgery	
			Orthopedic surgery: Recommend to coordinate all other anti-TNF-alpha agent perioperative medication management plan with surgeon and prescribing provider	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Gold compounds	Auranofin Gold sodium thiomalate		**Orthopedic surgery**: Recommend to continue regimen throughout the perioperative period	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	

Interleukin-6 blockers	Tocilizumab		**Orthopedic surgery**: Recommend to • hold subcutaneous tocilizumab 3 weeks prior to surgery • hold intravenous tocilizumab 4 weeks prior to surgery	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Interleukin-1 blockers	Anakinra		**Orthopedic surgery**: Recommend to hold subcutaneous anakinra 7 days prior to surgery	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Phosphodiesterase -4 enzyme inhibitor	Apremilast		**Orthopedic surgery**: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Pyrimidine synthesis inhibitors	Leflunomide		**Orthopedic surgery**: Recommend to hold 14 days prior to surgery	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Selective T-cell costimulation blocker	Abatacept		**Orthopedic surgery**: Recommend to hold subcutaneous abatacept 2 weeks prior to surgery and intravenous abatacept 4 weeks prior to surgery	
			All other surgeries: Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Beta-blockers				
Beta-Adrenergic Blocking Agents (Beta-Blockers)	Acebutolol Atenolol Betaxolol Bisoprolol Esmolol Metoprolol Nadolol	Nebivolol Penbutolol Pindolol Propranolol Sotalol Timolol	Recommend to continue beta-blocker regimens throughout the perioperative period unless contraindicated by hemodynamic instability or profound bronchospasm	
Alpha/Beta-Adrenergic Blocking Agents	Carvedilol Labetalol			
Benzodiazepines				
Benzodiazepines	Alprazolam Chlordiazepoxide Clobazam Clonazepam	Clorazepate Diazepam Lorazepam Oxazepam	Recommend to continue regimen throughout the perioperative period	

Calcium Channel Blockers				
Calcium channel blockers	Amlodipine Clevidipine Diltiazem Felodipine Isradipine	Nicardipine Nifedipine Nimodipine Nisoldipine Verapamil	Recommend to continue regimen throughout the perioperative period	
Cardiovascular Agents – Miscellaneous				
Alpha$_1$-Agonist	Midodrine		Recommend to continue regimen throughout the perioperative period	
Cardiac Glycoside	Digoxin		Recommend to continue regimen throughout the perioperative period	
Central Monoamine-Depleting Agent	Deutetrabenazine Reserpine Tetrabenazine Valbenazine		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon and prescribing provider	
Cyclic nucleotide-gated (HCN) channels (f-channels)	Ivabradine		Recommend to continue regimen throughout the perioperative period	
Dopamine Agonist	Fenoldopam		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon and prescribing provider	
Ganglionic Blocker	Mecamylamine		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon and prescribing provider	
Inotropics	Inamrinone Milrinone		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon and prescribing provider	
Inward sodium channel inhibitor	Ranolazine		Recommend to continue regimen throughout the perioperative period	
Potassium removing resins	Patiromer Sodium polystyrene sulfonate Sodium zirconium cyclosilicate		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon and prescribing provider	
Transthyretin stabilizer	Tafamidis		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon and prescribing provider	
Central Nervous System – Miscellaneous				
Antianxiety agent	Buspirone Meprobamate		Recommend to continue regimen throughout the perioperative period	
Antidepressants	Bupropion Nefazodone hydrochloride Trazodone Vortioxetine		Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider	

Anticholinesterase muscle stimulants	Edrophonium Neostigmine Pyridostigmine		Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider	
Antioxidants	Edaravone		Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider	
Antisense Oligonucleotide	Eteplirsen Golodirsen Inotersen Nusinersin		Recommend to coordinate antisense oligonucleotide management plan with anesthesiologist, surgeon, and prescribing provider	
Cholinergic muscle stimulant	Guanidine		Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider	
CNS stimulants	Amphetamine Armodafinil Caffeine Dexmethylphenidate Dextroamphetamine	Doxapram Lisdexamfetamine Methamphetamine Methylphenidate Modafinil	**Armodafinil, Modafinil**: Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
			All other CNS stimulants: Recommend to continue regimen throughout the perioperative period	
Dopamine and Norepinephrine Reuptake Inhibitor	Solriamfetol		Recommend to coordinate perioperative management plan with anesthesiologist, surgeon, and prescribing provider	
Glutamate Inhibitor	Riluzole		Recommend to continue regimen throughout the perioperative period	
Lithium	Lithium		Recommend to continue regimen throughout the perioperative period	
Miscellaneous psychotherapeutic agents	Atomoxetine Sodium oxybate		**Atomoxetine**: Recommend to continue regimen throughout the perioperative period	
			Pitolisant, Sodium oxybate: Recommend to coordinate perioperative management plan with anesthesiologist, surgeon, and prescribing provider	
Mixed $5HT_{1A}$ agonist/$5HT_{2A}$ antagonist	Flibanserin		Recommend to coordinate perioperative management plan with anesthesiologist, surgeon, and prescribing provider	
NMDA Antagonist	Esketamine		Recommend to coordinate perioperative management plan with anesthesiologist, surgeon, and prescribing provider	
Partial neuronal α4 β2 nicotinic receptor agonist	Varenicline		Recommend to hold therapy the day of surgery and post-operatively until directed to resume by surgeon	

Potassium Channel Blocker	Amifampridine Dalfampridine		Recommend to continue regimen throughout the perioperative period	
Tripeptidyl peptidase-1 (TPP-1) analog	Cerliponase alfa		Recommend to coordinate perioperative management plan with anesthesiologist, surgeon, and prescribing provider	
Corticosteroid				
Corticosteroid	Betamethasone Budesonide Cortisone Cosyntropin Deflazacort Dexamethasone	Hydrocortisone Fludrocortisone Methylprednisolone Prednisolone Prednisone Triamcinolone	Recommend to continue regimen throughout the perioperative period	
Diuretics				
Carbonic anhydrase inhibitors	Acetazolamide Methazolamide		**Heart failure of volume overload indication:** Recommend to coordinate diuretic perioperative management plan with anesthesiologist, surgeon, and prescribing provider **Hypertension indication:** Recommend to hold diuretic the day of surgery	 
Diuretic Combinations	Amiloride/Hydrochlorothiazide Spironolactone/ Hydrochlorothiazide Triamterene/ Hydrochlorothiazide			
Loop Diuretics	Bumetanide Ethacrynic Acid	Furosemide Torsemide		
Osmotic	Mannitol			
Potassium Sparing	Amiloride Spironolactone	Triamterene		
Thiazides	Chlorothiazide Chlorthalidone Hydrochlorothiazide	Indapamide Methyclothiazide Metolazone		
Estrogens and Progestins – Miscellaneous				
Estrogen	Conjugated Estrogens Ethinyl Estradiol Estradiol valerate Esterified Estrogens	Estradiol Estradiol Cypionate Estropipate	Recommend to coordinate perioperative management plan with surgeon, and prescribing provider	
Progestins	Desogestrel Drospirenone Etonogestrel Ethynodiol Diacetate Hydroxyprogesterone caproate Levonorgestrel Medroxyprogesterone acetate	Megestrol Acetate Norelgestromin Norgestimate Norgestrel Norethindrone Acetate Progesterone Segesterone Ulipristal		
Selective Estrogen Receptor Modulator	Bazedoxifene Clomiphene Citrate	Ospemifene Raloxifene		
Endocrine and Metabolic Agents – Miscellaneous				
4-Hydroxyphenylpyruvate dioxygenase inhibitor	Nitisinone		It is reasonable continue regimen throughout the perioperative period.	
5-Alpha Reductase Inhibitor	Dutasteride Finasteride			
Anabolic Steroid	Oxymetholone			
Androgens	Danazol Oxandrolone Fluoxymesterone	Methyltestosterone Testosterone		
Anti-androgen	Cyproterone	Dienogest		
Antithyroid Agents	Methimazole Propylthiouracil	Sodium Iodide		
Betaine Anhydrous	Betaine Anhydrous			

Bile Acids	Cholic Acid			
Bromocriptine Mesylate	Bromocriptine Mesylate			
Cabergoline	Cabergoline			
Calcimimetics	Cinacalcet	Etelcalcetide		
Carglumic acid	Carglumic acid			
Chelating Agent	Deferasirox Deferiprone	Deferoxamine		
Cysteamine	Cysteamine			
Cystic fibrosis transmembrane conductance regulator potentiator	Elexacaftor Ivacaftor Lumacaftor Tezacaftor			
Detoxification agents	Dimercaprol Edetate Calcium Disodium Pentetate Calcium Trisodium Pentetate Zinc Trisodium	Prussian Blue (Ferric Hexacyanoferrate) Succimer (DMSA) Trientine Hydrochloride		
Enzyme replacement	Asfotase Agalsidase Beta Alglucosidase alfa Elosulfase alfa Galsulfase Idursulfase	Imiglucerase Laronidase Sebelipase Taliglucerase Alfa Velaglucerase alfa		
Farnesoid X receptor agonist	Obeticholic acid			
Glucosylceramide Synthase Inhibitor	Eliglustat Miglustat			
Glycerol Phenylbutyrate	Glycerol Phenylbutyrate			
Gonadotropin Releasing Hormone Agonist	Nafarelin			
Gonadotropin Releasing Hormone Antagonist	Cetrorelix Degarelix	Elagolix Ganirelix		
Growth Hormone	Somatropin			
Growth Hormone Agonists	Macimorelin			
Insulin-like growth factor	Mecasermin			
Lipodystrophy agents	Metreleptin Tesamorelin			
Lipolytic	Deoxycholic acid			
Ovulation Stimulator	Choriogonadotropin Alfa Chorionic Gonadotropin Follitropin alfa	Follitropin beta Lutropin Alpha Menotropins Urofollitropin		
Melanocortin receptor agonist	Bremelanotide			
Parathyroid hormone analogues	Abaloparatide Parathyroid	Teriparatide		
Pegvisomant	Pegvisomant			
Pharmacologic Chaperone	Migalastat			
Phenylketonuria agents	Sapropterin Dichloride			

Phosphate Binders	Lanthanum	Sevelamer		
Posterior Pituitary Hormones	Desmopressin Vasopressin			
Selective Estrogen Receptor Modulator	Bazedoxifene Clomiphene Citrate	Ospemifene Raloxifene		
Sodium Benzoate and Sodium Phenylacetate	Sodium Benzoate and Sodium Phenylacetate			
Sodium Phenylbutyrate	Sodium Phenylbutyrate			
Somatostatin Analogs	Lanreotide Octreotide	Pasireotide		
Thyroid Drugs	Potassium Iodide Levothyroxine Sodium Liothyronine Sodium	Liotrix Thyroid Desiccated		
Tryptophan hydroxylase inhibitors	Telotristat			
Uridine Triacetate				
Uterine Active Agents	Carboprost Dinoprostone Methylergonovine Maleate	Mifepristone Oxytocin		
Vasopressin Receptor Antagonists	Conivaptan Hydrochloride Tolvaptan			
Gastrointestinal Agents – Laxatives				
Bowel evacuants	Polyethylene glycol (PEG) PEG-electrolyte combination Sodium phosphate Sodium phosphate/magnesium oxide/citric acid		Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Bulk-producing laxatives	Calcium polycarbophil Methylcellulose	Psyllium		
Emollients	Mineral oil			
Surfactants	Docusate calcium	Docusate sodium		
Hyperosmotic agents	Glycerin Lactilol	Lactulose Sorbitol		
Stimulants	Bisacodyl Cascara sagrada	Sennosides		
Gastrointestinal Agents – Miscellaneous				
5-Aminosalicylic Acid Derivative	Balsalazide Mesalamine	Olsalazine Sulfasalazine	Recommend to continue regimen throughout the perioperative period	
Antidiarrheals	Bismuth subsalicylate Crofelemer Difenoxin/atropine Diphenoxylate/atropine Loperamide Loperamide/simethicone		**Bismuth subsalicylate**: Recommend to hold bismuth subsalicylate the day of surgery due to the potential to cause black stools **All other medications**: It is reasonable to continue other antidiarrheals throughout the perioperative period	 
Antiflatulents	Alpha-d-galactosidase	Simethicone	**Sucralfate:** Recommend to hold sucralfate the day of surgery	
Antispasmodics	Dicyclomine			
Belladonna alkaloids	Atropine sulfate Hyoscyamine sulfate	Scopolamine		

Cholinergic Agonist	Cevimeline	Pilocarpine	**All other medications:** Recommend to continue regimen throughout the perioperative period	
Chloride Channel Activator	Lubiprostone			
Digestive Enzymes	Pancreatic Enzymes	Pancrelipase		
GI Anticholinergic Combinations	Atropine/scopolamine/hyoscyamine/phenobarbital Clidinium/chlordiazepoxide			
GI Quaternary Anticholinergics	Glycopyrrolate Mepenzolate	Methscopolamine Propantheline		
GI stimulants	Dexpanthenol Metoclopramide	Prucalopride Tegaserod		
GLP-2 analogs	Teduglutide			
Glutamine	L-glutamine			
Guanylate cyclase-C agonist	Linaclotide Plecanatidecalci			
Miscellaneous	Eluxadoline Sucralfate Chenodiol Ursodiol	Alvimopan Methylnaltrexone Naloxegol Tenapanor		
Systemic Deodorizers	Bismuth subgallate Chlorophyll derivatives	Chlorophyllin		
Genitourinary and Renal Agents – Miscellaneous				
Cystine depleting agents	Cysteamine bitartrate Penicillamine	Tiopronin	It is reasonable to continue regimen throughout the perioperative period	
Interstitial cystitis agents	Dimethyl sulfoxide Pentosan polysulfate sodium	Phenazopyridine Phenazopyridine/butabarbital/hyoscyamine		
Urinary acidifiers	Ascorbic acid			
Urinary cholinergics	Bethanechol			
Urinary alkalinizers	Potassium citrate Sodium bicarbonate Sodium bicarbonate/citric acid (Shohl's solution)			
Miscellaneous	Acetohydroxamic acid Cellulose sodium phosphate			
Gout Agents				
β-tubulin polymerization inhibitor	Colchicine		Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Uric acid transporter-1 (URAT-1) inhibitor	Lesinurad		It is reasonable to continue regimen throughout the perioperative period	
Xanthine Oxidase Inhibitor	Allopurinol Febuxostat		It is reasonable to continue regimen throughout the perioperative period	
Recombinant urate-oxidase	Pegloticase		It is reasonable to continue regimen throughout the perioperative period	
Uricosurics	Probenecid		Recommend to hold therapy the day of surgery and postoperatively until directed to resume by surgeon	

Hematological Agents – Miscellaneous For additional information, see Management of Antithrombotic Therapy in the Setting of Periprocedural, Regional Anesthesia and/or Pain Procedures Clinical Practice Guideline				
Antihemophilic agents	Anti-inhibitor coagulant complex Antihemophilic Factor VIII Coagulation Factor XIIIa Factor IX Factor VIIa Factor XIII		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Antihemophilic Factor Combinations	Antihemophilic factor/von Willebrand Factor Complex			
Anti-von Willebrand Factor	Caplacizumab		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Antisickling agents	Hydroxyurea Voxelotor		Recommend to continue regimen in the perioperative period	
Bradykinin inhibitors	Icatibant		It is reasonable to continue regimen in the perioperative period	
Coagulants	Protamine		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Erythropoiesis-stimulating agents	Darbepoetin and biosimilars Epoetin Alfa and biosimilars Epoetin Beta and biosimilars Methoxy Polyethylene Glycol-Beta		It is reasonable to continue regimen in the perioperative period	
Hematopoietic stem cell mobilizer	Plerixafor		Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Granulocyte-colony stimulating factors	Filgrastim (and biosimilars) Pegfilgrastim (and biosimilars)		Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Granulocyte macrophage colony-stimulating factor	Sargramostim		Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Thrombopoietic agents	Avatrombopag Eltrombopag Lusutrombopag	Oprelvekin Romiplostim	Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Porphyria Agents	Hemin Givosiran		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Hemorrheologic agents	Pentoxifylline		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	

Hemostatics	Absorbable Gelatin Aminocaproic Acid Ferric subsulfate Fibrinogen Concentrate Microfibrillar Collagen Hemostat	Oxidized Cellulose Prothrombin Complex Concentrate Thrombin Tranexamic Acid	Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Kallikrein Inhibitor	Ecallantide Lanadelumab		It is reasonable to continue regimen in the perioperative period	
Plasma expanders	Albumin Human Dextran 40 Hetastarch	Plasma Protein Fraction Tetrastarch	It is reasonable to continue regimen in the perioperative period	
Protein C1 inhibitors	C1 Inhibitor (Cinryze)		Recommend to continue regimen in the perioperative period	
Thrombolytic agents	Alteplase Defibrotide Protein C Concentrate	Reteplase Tenecteplase Urokinase	Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Monoclonal Antibodies	Crizanlizumab		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Herbals and Supplements				
Amino Acids	Levocarnitine L-Lysine	Methionine Threonine	**Inborn errors of metabolism** Recommend to coordinate use of supplements and perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider **All other patients** Recommend to hold herbals and supplements 7 days prior to surgery.	 
Cannabidiol	CBD oil, OTC or supplement; not including Epidiolex prescription for seizure management)			
Electrolytes	Potassium	Sodium Chloride		
Fish Oils	Omega-3 Fatty Acids			
Lipotropics	Choline	Inositol		
Minerals	Calcium Magnesium	Phosphorus		
Systemic Alkalinizers	Citric Acid Citrate	Tromethamine		
Trace Elements	Chromium Copper Fluoride Ferric Maltol	Iron Manganese Selenium Zinc		
Vitamins	Beta-Carotene Phytonadione (Vitamin K) Vitamin A Calcitriol Cholecalciferol Doxercalciferol Ergocalciferol Paricalcitol Vitamin E Aminobenzoate potassium Bioflavonoids Biotin	Hydroxycobalamin Cobalamin (B12) Folic Acid Niacin (B3) Niacinamide Pantothenic Acid (B5) Pyridoxine (B6) Riboflavin (B2) Thiamine (B1) Ascorbic acid (Vitamin C) Calcium Ascorbate Sodium Ascorbate		
Miscellaneous	Coenzyme Q10 Edavarone	Lactase Sacrosidase		

Immunologic Agents				
Immunomodulators	Abatacept Adalimumab (and biosimilars) Anakinra Apremilast Brodalumab Canakinumab Certolizumab Daclizumab Dimethyl Fumarate Diroximel Fumarate Etanercept (and biosimilars) Fingolimod Golimumab Guselkumab Infliximab (and biosimilars)	Interferons Ixekizumab Lenalidomide Mitoxantrone Natalizumab Pembrolizumab Pomalidomide Rilonacept Secukinumab Selinexor Siponimod Risankizumab Teriflunomide Thalidomide Tildrakizumab Tocilizumab Ustekinumab Vedolizumab	Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Immunostimulants	Elapegdemase	Pegademase Bovine		
Immunosuppressives	Alefacept Azathioprine Basiliximab Belatacept Cyclosporine Dupilumab	Durvalumab Glatiramer Mycophenolate Ocrelizumab Sirolimus Tacrolimus		
Keratinocyte Growth Factors	Palifermin			
Miscellaneous Monoclonal Antibodies	Belimumab Burosumab Denosumab Eculizumab	Palivizumab Ravulizumab Raxibacumab Sarilumab Siltuximab Teprotumumab		
Intranasal anti-allergy				
Antihistamines	Azelastine	Olopatadine	It is reasonable to continue regimen in the perioperative period	
Mast cell stabilizers	Cromolyn			
Steroids	Beclomethasone Budesonide Ciclesonide Flunisolide	Fluticasone Mometasone Triamcinolone		
Migraine Agents				
Sympathomimetic	Isometheptene		Recommend to hold therapy the day of surgery, although may be approved with coordination of anesthesiologist	
Serotonin $5HT_{1B,1D}$ Agonist (triptans)	Almotriptan Eletriptan Frovatriptan Naratriptan	Rizatriptan, Sumatriptan, Zolmitriptan		
Serotonin $5HT_{1F}$ Agonist	Lasmiditan			
Ergot Derivatives	Dihydroergotamine mesylate Ergotamine tartrate			
Calcitonin Gene-related Peptide Receptor Antagonist	Eptinezumab Erenumbe Fremanezumab Galcanezumab	Rimegepant Ubrogepant		
Monoamine Oxidase Inhibitors				
Monoamine Oxidase Inhibitors (MAOI)	Isocarboxazid Phenelzine Tranylcypromine		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	

Ophthalmic Agents – Miscellaneous				
Cycloplegic Mydriatics	Atropine Sulfate Cyclopentolate HCl Homatropine HBr Scopolamine HBr Tropicamide	Cyclopentolate/Phenylephrine Hydroxyamphetamine Hydrobromide/Tropicamide	Recommend to continue regimen throughout the perioperative period	
Antibiotics	Azithromycin Bacitracin Besifloxacin Ciprofloxacin HCl Erythromycin Gatifloxacin	Gentamicin Levofloxacin Moxifloxacin Ofloxacin Sulfacetamide Tobramycin		
Antihistamines	Alcaftadine Azelastine HCl Emedastine difumarate	Epinastine HCl Ketotifen Olopatadine HCl		
Corticosteroids	Dexamethasone Difluprednate Fluocinolone acetonide Fluorometholone acetate	Loteprednol etabonate Prednisolone Rimexolone Triamcinolone acetonide		
Decongestants	Naphazoline HCl Oxymetazoline HCl	Phenylephrine HCl Tetrahydrozoline HCl		
Decongestant/ Antihistamine	Naphazoline/Pheniramine			
Immunologic	Cyclosporine			
Mast Cell Stabilizer	Bepotastine besilate Cromolyn Na	Lodoxamide tromethamine Nedocromil Na		
Nonsteroidal Anti-Inflammatory	Bromfenac Diclofenac Flurbiprofen	Ketorolac Nepafenac		
Otic Preparations Misc.	Antipyrine/Benzocaine Ciprofloxacin Ofloxacin Fluocinolone acetonide Ciprofloxacin HCl/Hydrocortisone Ciprofloxacin/Dexamethasone Neomycin/Polymyxin B/Hydrocortisone			
Recombinant Human Nerve Growth Factor	Cenegermin			
Selective VEGF Antagonist	Aflibercept Pegaptanib Na Ranibizumab			
Steroid/ Antibiotic	Bacitracin/Neomycin/Polymyxin B/Hydrocortisone Dexamethasone/Tobramycin Loteprednol/Tobramycin Neomycin/Polymyxin B/Dexamethasone Neomycin/Polymyxin B/Hydrocortisone Sulfacetamide/Prednisolone			
Phosphodiesterase-5 enzyme inhibitors				
Phosphodiesterase -5 enzyme inhibitors	Avanafil Sildenafil Tadalafil Vardenafil		**Taking for Pulmonary Arterial Hypertension (PAH) indication:** Recommend to continue regimen throughout the perioperative period	
			Taking for BPH Recommend to coordinate perioperative management plan with anesthesiologist, surgeon, and prescribing provider	

			Taking for other indications: Recommend to hold therapy five days prior to and the day of surgery in all patients	
Pheochromocytoma Agents				
Tyrosine Hydroxylase Inhibitor	Metyrosine		Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Alpha$_1$-Blocker	Phenoxybenzamine HCL Phentolamine Mesylate			
Renin Angiotensin System Antagonists				
Angiotensin Converting Enzyme (ACE) Inhibitors	Benazepril Captopril Cilazapril Enalapril Enalaprilat Fosinopril Lisinopril	Moexipril Perindopril Quinapril Ramipril Trandolapril	**Significant Heart Failure** (American College of Cardiology Foundation/American Heart Association (ACCF/AHA) heart failure staging system Stage D, or New York Heart Association (NYHA) Functional Classification III or IV) **or History of High Blood Pressure** (systolic ≥ 180 mmHg, or diastolic ≥ 120 mmHg **)** Recommend to coordinate perioperative medication management plan with anesthesiologist, prescribing provider **For all other indications**: Hold for 24 hours prior to surgery and the day of surgery	
Angiotensin II receptor blockers	Candesartan Losartan	Olmesartan Valsartan		
Direct renin inhibitors	Aliskiren			
Neprilysin inhibitor	Sacubitril		Recommend to coordinate perioperative medication management plan with anesthesiologist, prescribing provider	
Selective Aldosterone Receptor Antagonists	Eplerenone		It is reasonable to continue regimen throughout the perioperative period	
Respiratory Agents				
Antifibrotic agents	Pirfenidone		Recommend to coordinate perioperative medication management plan with surgeon and prescribing provider	
Arylalkylamine decongestants	Phenylephrine Pseudoephedrine		Recommend to hold therapy the day of surgery	
Inhaled anticholinergics	Aclidinium Ipratropium Revefenacin	Tiotropium Umeclidinium	Recommend to continue regimen throughout the perioperative period and to administer on the morning of surgery	
Expectorants	Guaifenesin Potassium iodide		It is reasonable to continue regimen throughout the perioperative period	
Inhaled corticosteroids	Beclomethasone Budesonide Ciclesonide	Flunisolide Fluticasone Mometasone	Recommend to continue regimen throughout the perioperative period	

Inhaled sympathomimetics	Albuterol Arformoterol Ephedrine Epinephrine Formoterol Indacaterol Isoproterenol	Levalbuterol Metaproterenol Olodaterol Pirbuterol Salmeterol Terbutaline Vilanterol	Recommend to continue regimen throughout the perioperative period and to administer on the morning of surgery	
Interleukin-5 receptor antagonists	Mepolizumab Reslizumab		Recommend to continue regimen throughout the perioperative period	
Leukotriene modifiers	Montelukast Zafirlukast	Zileuton	Recommend to continue regimen throughout the perioperative period and administer on the morning of surgery	
Lung surfactants	Beractant Calfactant	Lucinactant Poractant	It is reasonable to continue regimen throughout the perioperative period	
Monoclonal antibodies (IgE inhibitor)	Omalizumab		Recommend to continue regimen throughout the perioperative period	
Mucolytics	Acetylcysteine	Dornase alfa	Recommend to continue regimen throughout the perioperative period	
Non-narcotic antitussives	Benzonatate Dextromethorphan		It is reasonable to continue regimen throughout the perioperative period	
PDE-4 inhibitor	Roflumilast		Recommend to continue regimen throughout the perioperative period	
Respiratory enzymes	Aplha1-proteinase inhibitor		Recommend to continue regimen throughout the perioperative period	
Tyrosine kinase inhibitor	Fostamatinib Nintedanib		Recommend to continue regimen throughout the perioperative period	
Xanthine derivatives	Aminophylline Dyphylline	Theophylline	Recommend to coordinate perioperative medication management plan with anesthesiologist, surgeon, and prescribing provider	
Sedatives and Hypnotics				
Sedatives and hypnotics	Amobarbital Butabarbital Pentobarbital	Phenobarbital Secobarbital	Recommend to coordinate perioperative medication management plan with anesthesiologist, and prescribing provider	
Nonbarbiturate sedatives and hypnotics	Chloral hydrate Dexmedetomidine Eszopiclone Lemborexant Ramelteon	Suvorexant Tasimelteon Zaleplon Zolpidem		

Selective Serotonin Reuptake Inhibitors (SSRIs) & Serotonin Norepinephrine Reuptake Inhibitors (SNRIs)				
SSRI	Citalopram Escitalopram Fluoxetine Fluvoxamine	Paroxetine Sertraline Vilazodone	Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider	
SNRI	Desvenlafaxine Duloxetine Levomilnacipran	Milnacipran Venlafaxine		
Skeletal Muscle Relaxants				
Direct acting	Dantrolene		Recommend to continue regimen throughout the perioperative period	
Centrally acting	Baclofen			
	Carisoprodol Chlorzoxazone Cyclobenzaprine Diazepam	Metaxalone Methocarbamol Orphenadrine Tizanidine	It is reasonable to continue regimen throughout the perioperative period	
Tetra-cyclic antidepressants				
Tetra-cyclic antidepressants	Maprotiline Mirtazapine		It is reasonable to continue regimen throughout the perioperative period	
Toxins				
Botulinum toxins: Type A	AbobotulinumtoxinA IncobotulinumtoxinA	OnabotulinumtoxinA PrabotulinumtoxinA	It is reasonable to hold 48 hours prior to surgery and not resume until approved by surgeon	
Type B toxin	Rimabotulinum toxin B			
Tri-cyclic antidepressants				
Tricyclic antidepressants	Amitriptyline Amoxapine Clomipramine Desipramine Doxepin	Imipramine Nortriptyline Protriptyline Trimipramine	It is reasonable to continue regimen throughout the perioperative period	
Vasodilators				
Endothelin Receptor Antagonist	Ambrisentan Bosentan Macitentan		Recommend to continue regimen throughout the perioperative period	
Human B-Type Natriuretic Peptide	Nesiritide		Recommend to continue regimen throughout the perioperative period	
Nitrates	Amyl Nitrate Isosorbide Dinitrate	Isosorbide Mononitrate Nitroglycerin	Recommend to continue regimen throughout the perioperative period	
Peripheral Vasodilators	Hydralazine Isoxsuprine	Minoxidil Papaverine	Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist and prescribing provider	
Prostanoids	Epoprostenol Iloprost	Selexipag Treprostinil	Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist and prescribing provider	
Soluble Guanylate Cyclase Stimulator	Riociguat		Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist and prescribing provider	

Vasopressors	Angiotensin II Dobutamine Dopamine Droxidopa Ephedrine	Epinephrine Isoproterenol Norepinephrine Phenylephrine	Recommend to coordinate perioperative medication management plan with surgeon, anesthesiologist and prescribing provider	

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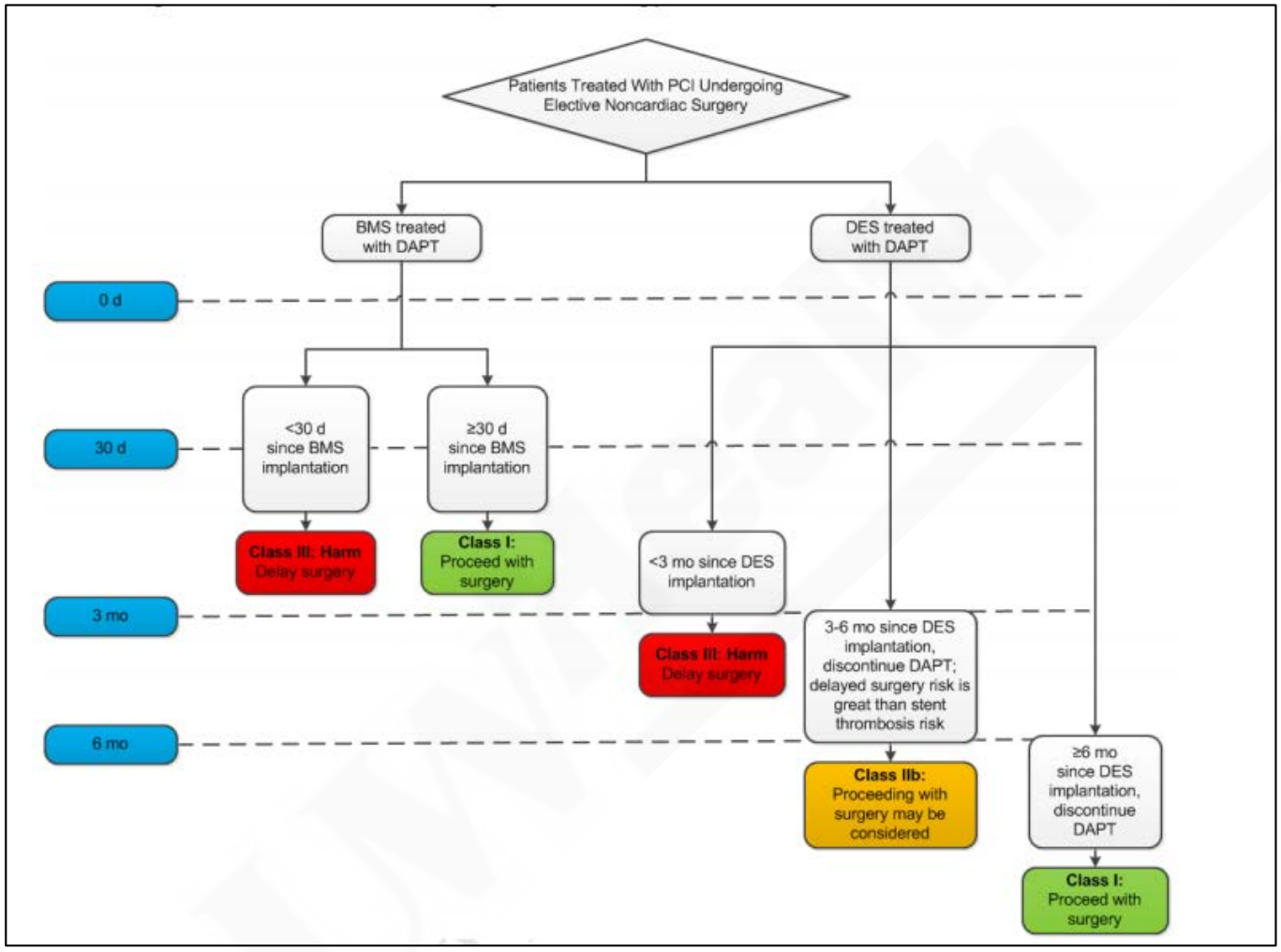
Appendix B: Treatment Algorithm for the Timing of Elective Noncardiac Surgery in Patients With Coronary Stents

From: Perioperative Medication Management – Adult/Pediatric – Inpatient/Ambulatory Clinical Practice Guideline
Last Reviewed 2/2020; Last Updated 4/2016
Contact information: Philip J. Trapskin, PharmD, Phone Number: (608) 263-1328, PTrapskin@uwhealth.org



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Appendix C: Methylene Blue and Serotonin Syndrome

From: Perioperative Medication Management – Adult/Pediatric – Inpatient/Ambulatory Clinical Practice Guideline
Last Reviewed 2/2020; Last Updated 6/2019
Contact information: Philip J. Trapskin, PharmD, Phone Number: (608) 263-1328, PTrapskin@uwhealth.org

Summary:
Although the exact mechanism of this drug interaction is unknown, **methylene blue inhibits the action of monoamine oxidase A** - an enzyme responsible for breaking down serotonin in the brain. It is believed that when methylene blue is given to patients taking serotonergic psychiatric medications, high levels of serotonin can build up in the brain, causing toxicity. See Table 1. Psychiatric medications with serotonergic activity.

- **In emergency situations** requiring life-threatening or urgent treatment with methylene blue (as described above), the availability of alternative interventions should be considered and the benefit of methylene blue treatment should be weighed against the risk of serotonin toxicity. If methylene blue must be administered to a patient receiving a serotonergic drug, the serotonergic drug must be immediately stopped, and the patient should be closely monitored for emergent symptoms of CNS toxicity for two weeks (five weeks if fluoxetine [Prozac] was taken), or until 24 hours after the last dose of methylene blue, whichever comes first.
- **In non-emergency situations** when non-urgent treatment with methylene blue is contemplated and planned, the serotonergic psychiatric medication should be stopped to allow its activity in the brain to dissipate. Most serotonergic psychiatric drugs should be stopped at least 2 weeks in advance of methylene blue treatment. Fluoxetine (Prozac), which has a longer half-life compared to similar drugs, should be stopped at least 5 weeks in advance
- Possible signs/symptoms of Serotonin Syndrome: mental status changes, muscle twitching, excessive sweating, shivering or shaking, diarrhea, ataxia, fever
- Treatment with the serotonergic psychiatric medication may be resumed 24 hours after the last dose of methylene blue
- Serotonergic psychiatric medications should not be started in a patient receiving methylene blue. Wait until 24 hours after the last dose of methylene blue before starting the antidepressant.

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Table 1. Psychiatric medications with serotonergic activity

Generic name	Found in Brand name(s)
Selective Serotonin Reuptake Inhibitors (SSRIs)	
paroxetine	Paxil, Paxil CR, Pexeva
fluvoxamine	Luvox, Luvox CR
fluoxetine	Prozac, Sarafem, Symbyax
sertraline	Zoloft
citalopram	Celexa
escitalopram	Lexapro
Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs)	
venlafaxine	Effexor, Effexor XR
desvenlafaxine	Pristiq
duloxetine	Cymbalta
Tricyclic Antidepressants (TCAs)	
amitriptyline	Amitid, Amitril, Elavil, Endep, Etrafon, Limbitrol, Triavil
desipramine	Norpramin, Pertofrane
clomipramine	Anafranil
imipramine	Tofranil, Tofranil PM, Janimine, Pramine, Presamine
nortriptyline	Pamelor, Aventyl hydrochloride
protriptyline	Vivactil
doxepin	Sinequan, Zonalon, Silenor
trimipramine	Surmontil
Monoamine Oxidase Inhibitors (MAOIs)	
isocarboxazid	Marplan
phenelzine	Nardil
selegiline	Emsam, Eldepryl, Zelapar
tranylcypromine	Parnate
Other Psychiatric Medications	
amoxapine	Asendin
maprotiline	Ludiomil
nefazodone	Serzone
trazodone	Desyrel, Oleptro, Trialodine
bupropion	Wellbutrin, Wellbutrin SR, Wellbutrin XL, Zyban, Aplenzin
buspirone	Buspar
vilazodone	Viibryd
mirtazapine	Remeron, Remeron Soltab

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Appendix D: Aminolevulinic acid and Phototoxicity

From: Perioperative Medication Management – Adult/Pediatric – Inpatient/Ambulatory Clinical Practice Guideline
Last Reviewed 2/2020; Last Updated 6/2019
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Summary
Use of aminolevulinic acid is associated with photosensitivity. Patients exposed to photosensitizing agents may experience phototoxic skin reactions (e.g. severe sunburn). Due to the increased risk of phototoxic reactions, administration of other phototoxic medications should be avoided whenever possible for 24 hours before and after systemic aminolevulinic acid administration.

Medications associated with inducing phototoxicity are listed in the table below. Coordinate a management plan for these medications with the surgeon and prescribing physician.

Generic name	Therapeutic class
Acitretinoin	Retinoid
Adapalene	Retinoid
Afatinib	Antineoplastic; tyrosine kinase inhibitor
Alitretinoin	Retinoid
Alprazolam	Anxiolytic
Aminolevulinic acid topical	Photosensitizing agent
Amiodarone	Anti-arrhythmic
Amlodipine	Calcium channel blocker
Aripiprazole	Antipsychotic
Atorvastatin	HMG Co-A reductase inhibitor
Atovaquone/proguanil	Anti-malarial
Bendroflumethiazide	Diuretic
Besifloxacin	Antimicrobial; fluoroquinolone
Bexarotene	Retinoid
Bicalutamide	Antineoplastic; antiandrogen
Cabazitaxel	Antineoplastic; antimitotic agent
Calcitriol	Vitamin D analog
Candesartan	Angiotensin II receptor blocker
Capecitabine	Antineoplastic; anti-metabolite
Carbamazepine	Anticonvulsant
Cefotaxime	Beta-lactam antimicrobial
Ceftazidime	Beta-lactam antimicrobial
Celecoxib	Non-steroidal anti-inflammatory
Chlordiazepoxide	Anxiolytic
Chloroquine	Anti-malarial
Chlorothiazide	Diuretic
Chlorpromazine	Antipsychotic
Chlorthalidone	Diuretic
Ciprofloxacin	Antimicrobial; fluoroquinolone
Citalopram	Antidepressant

Generic name	Therapeutic class
Clomipramine	Antidepressant
Clopidogrel	Antiplatelet
Clozapine	Antipsychotic
Cobimetinib	Antineoplastic; MEK inhibitor
Crizotinib	Antineoplastic; tyrosine kinase inhibitor
Dacarbazine	Antineoplastic; anti-metabolite
Dapsone	Antimicrobial
Delafloxacin	Antimicrobial; fluoroquinolone
Demeclocycline	Tetracycline
Diclofenac	Non-steroidal anti-inflammatory
Diflunisal	Non-steroidal anti-inflammatory
Diltiazem	Calcium channel blocker
Diphenhydramine	Antihistamine
Docetaxel	Antineoplastic; antimitotic agent
Doxorubicin	Antineoplastic; antimitotic agent
Doxycycline	Tetracycline
Dronedarone	Anti-arrhythmic
Eculizumab	Monoclonal antibody
Efavirenz	Antiretroviral
Enalapril	Angiotensin II converting enzyme inhibitor
Epirubicin	Antineoplastic; antimitotic agent
Eravacycline	Tetracycline
Erlotinib	Antineoplastic; tyrosine kinase inhibitor
Escitalopram	Antidepressant
Esomeprazole	Proton pump inhibitor
Ethinyl estradiol	Contraceptive hormone
Etodolac	Non-steroidal anti-inflammatory
Fenofibrate	Fibrate
Fenoprofen	Non-steroidal anti-inflammatory
Fluorouracil	Antineoplastic; anti-metabolite
Fluoxetine	Antidepressant
Flupentixol	Antipsychotic
Fluphenazine	Antipsychotic
Flurbiprofen	Non-steroidal anti-inflammatory
Flutamide	Antineoplastic; antiandrogen
Fluvoxamine	Antidepressant
Furosemide	Diuretic
Gatifloxacin	Antimicrobial; fluoroquinolone
Gemifloxacin	Antimicrobial; fluoroquinolone
Glimepiride	Anti-diabetic
Glipizide	Anti-diabetic
Glyburide	Anti-diabetic
Griseofulvin	Antifungal
Haloperidol	Antipsychotic
Hydrochlorothiazide	Diuretic
Hydroxychloroquine	Anti-malarial
Hydroxyurea	Antineoplastic

Generic name	Therapeutic class
Ibuprofen	Non-steroidal anti-inflammatory
Imatinib	Antineoplastic; tyrosine kinase inhibitor
Imipramine	Antidepressant
Indapamide	Diuretic
Indomethacin	Non-steroidal anti-inflammatory
Irbesartan	Angiotensin II receptor blocker
Isoniazid	Anti-tuberculosis
Isotretinoin	Retinoid
Itraconazole	Antifungal
Ketoconazole	Antifungal
Ketoprofen	Non-steroidal anti-inflammatory
Ketorolac	Non-steroidal anti-inflammatory
Leflunomide	Anti-inflammatory
Levofloxacin	Antimicrobial; fluoroquinolone
Losartan	Angiotensin II receptor blocker
Meclofenamate	Non-steroidal anti-inflammatory
Meclofenamide sodium	Non-steroidal anti-inflammatory
Mefenamic acid	Non-steroidal anti-inflammatory
Meloxicam	Non-steroidal anti-inflammatory
Mesalamine	Anti-inflammatory
MESNA	Chemoprotective agent
Metformin	Anti-diabetic
Methyldopa	Antihypertensive; centrally acting agent
Methylene blue	Antidote; Phenothiazine
Metolazone	Diuretic
Minocycline	Tetracycline
Moxifloxacin	Antimicrobial; fluoroquinolone
Nabumetone	Non-steroidal anti-inflammatory
Naproxen	Non-steroidal anti-inflammatory
Nifedipine	Calcium channel blocker
Ofloxacin	Antimicrobial; fluoroquinolone
Olanzapine	Antipsychotic
Olmesartan	Angiotensin II receptor blocker
Omadacycline	Tetracycline
Oxaprozin	Non-steroidal anti-inflammatory
Paclitaxel	Antineoplastic; antimitotic agent
Panitumumab	Antineoplastic; monoclonal antibody
Pantoprazole	Proton pump inhibitor
Paroxetine	Antidepressant
Perphenazine	Antipsychotic
Phenelzine	Antidepressant
Pirfenidone	Anti-inflammatory
Piroxicam	Non-steroidal anti-inflammatory
Porfimer	Antineoplastic
Pravastatin	HMG Co-A reductase inhibitor
Prochlorperazine	Antipsychotic
Promethazine	Antihistamine

Generic name	Therapeutic class
Pyrazinamide	Anti-tuberculosis
Quinapril	Angiotensin II converting enzyme inhibitor
Quinidine	Anti-malarial
Quinine	Anti-malarial
Ramipril	Angiotensin II converting enzyme inhibitor
Ranitidine	Antihistamine
Risperidone	Antipsychotic
Sarecycline	Tetracycline
Sertraline	Antidepressant
Simvastatin	HMG Co-A reductase inhibitor
Sitagliptin	Anti-diabetic
St. John's Wort	Herbal
Sulfacetamide	Antimicrobial; sulfonamide derivative
Sulfadiazine	Antimicrobial; sulfonamide derivative
Sulfamethoxazole	Antimicrobial; sulfonamide derivative (in combo w/ trimethoprim)
Sulindac	Non-steroidal anti-inflammatory
Tegafur	Antineoplastic; anti-metabolite
Telmisartan	Angiotensin II receptor blocker
Tenofovir	Antiretroviral
Terbinafine	Antifungal
Tetracycline	Tetracycline
Thioridazine	Antipsychotic
Tocilizumab	Monoclonal antibody
Tolbutamide	Anti-diabetic
Tolmetin	Non-steroidal anti-inflammatory
Tretinoin	Retinoid
Triamterene	Diuretic
Trifluoperazine	Antipsychotic
Trimethoprim	Antimicrobial
Trimethoprim/sulfamethoxazole	Antimicrobial; sulfonamide derivative
Valsartan	Angiotensin II receptor blocker
Vandetanib	Antineoplastic; tyrosine kinase inhibitor
Vemurafenib	Antineoplastic; BRAF kinase inhibitor
Venlafaxine	Antidepressant
Verteporfin	Ophthalmic agent
Vinblastine	Antimitotic agent
Voriconazole	Antifungal

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