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| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| **ACNE AGENTS** | | | | |
| **Retinoic Acid Derivative** | Trifarotene Aklief® | May be continued before surgery. | No specific contraindication or interactions using this drug in the perioperative period. Avoid use on or near the surgical site. | |
| **Topical Androgen Receptor Inhibitor** | Clascoterone (Winlevi®) | Is administered as a topical agent twice daily to the affected areas of skin.<br><br>No specific drug inter-actions or contraindications to using this drug in the perioperative period. Avoid surgery site. Discuss with | No specific contraindications or interactions to using this drug in the perioperative period. Avoid surgery site. Discuss with prescribing provider. | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | prescribing provider. | | |
| **ANALGESIC AGENTS** | | | | |
| **Non-selective NSAIDs** | **Short $t_{1/2}$:**<br>Ibuprofen<br>Indomethacin<br>Diclofenac<br>Ketoprofen<br>Etodolac<br>Ketorolac<br><br>**Intermediate $t_{1/2}$:**<br>Naproxen<br>Sulindac<br>Diflunisal<br>Meloxicam<br><br>**Long $t_{1/2}$:**<br>Nabumetone<br>Piroxicam | Short half-life (2 to 6 hours): discontinue on the day before surgery<br><br>Intermediate half-life (7 to 20 hours): discontinue 3 to 4 days before surgery<br><br>Long half-life (>20 h): discontinue 10 days before surgery<br><br>**Some physicians recommend stopping all NSAIDs 10 days before surgery* | May resume when risk of bleeding is acceptable and intravascular volume status is normal | Discontinuation 5 half-lives prior to surgery should be sufficient, except in individuals with hepatic or renal dysfunction<br><br>Although some experts recommend discontinuing NSAIDs based on half-life, there's a poor correlation between COX inhibition and effects on platelet aggregation.<br><br>May need to consider alternative analgesics or low-dose corticosteroids for arthritis patients who are NSAID-dependent perioperatively |
| **COX-2 Inhibitors** | Celecoxib (Celebrex®) | Stop 1-2 days before surgery, unless elimination half-life warrants earlier discontinuation<br>**Some physicians recommend stopping 1 week before surgery* | May resume when volume status and renal function is stable | Have much less effect on platelet function than aspirin or non-selective NSAIDs<br><br>Have similar effects on renal function as non-selective NSAIDs<br><br>Because of lack of effect on platelet function, may not require discontinuation if benefit > risk |
| **Opioids** | Morphine<br>Oxycodone<br>Fentanyl<br>Methadone | Continue with minimal interruption in the perioperative period | Intravenous preparations are available; transdermal fentanyl (Duragesic®) can also provide flexible dosing | When used chronically, patients are subject to physiologic and psychological dependence. Both opioids and benzodiazepines are used frequently and safely in the routine care of |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Buprenorphine<br><br>Oliceridine (Olinvyk®) | Anticipated minimal post-op pain: continue buprenorphine<br><br>Moderate-severe post-op pain: if elective surgery, may consider discontinuing buprenorphine a week before surgery and transitioning to another opioid, if necessary<br><br>Administered as an acute pain management agent. Recommend continuing chronic opioid regimen throughout the peri-operative period, unless reduction or discontinuation is part of the perioperative analgesic plan. Abrupt discontinuation of opioids may cause withdrawal symptoms and/or increased pain. | and delivery<br><br>Maximize non-opioid analgesia. Resume buprenorphine once post-op pain has resolved.<br><br>Administered as an acute pain management agent. Recommend continuing chronic opioid regimen throughout the peri-operative period, unless reduction or discontinuation is part of the perioperative analgesic plan. Abrupt discontinuation of opioids may cause withdrawal symptoms and/or increased pain. | perioperative patients<br><br>Patients on buprenorphine may present a challenge for postoperative pain control due to antagonist effect at the kappa opioid receptor.<br><br>Opioids decrease bowel motility; monitor for decreased bowel motility in post-operative patients receiving opioids. Use with caution in the perioperative setting; individualize treatment when transitioning from parenteral to oral analgesics. |
| **Urinary Analgesics** | Pentosan polysulfate sodium (Elmiron®) | Hold 12 to 24 hours prior to surgery | Depending on the type of surgery, Elmiron should be re-started at physician's discretion | Elmiron is a low-molecular weight heparin-like compound with anticoagulant and fibrinolytic effect. It is a weak anticoagulant with 1/15 the activity of heparin. Bleeding complications of ecchymosis, epistaxis, and gum hemorrhage have been reported. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| **Antimigraine** | Eptinezumab-jjmr (Vyepti®)<br>Erenumab-aooe (Aimovig®)<br>Fremanezumab-vfrm (Ajovy®)<br>Galcanezumb-gnlm (Emgality®)<br>Rimegepant (Nurtec ODT®)<br>Ubrogepant (Ubrelvy®) | Discuss with prescribing provider | Discuss with prescribing provider | Aimovig®, Ajovy®, and Emgality®<br>Given monthly or every three months and can likely be held and given post-operatively when the patient is stable (non-formulary agents)<br><br>Ubrelvy®<br>Taken as needed, adverse reactions primarily consist of nausea and somnolence.<br><br>Drug-drug interactions are common as this medication is metabolized by CYP3A4. |
| **ANTICOAGULANTS** | | | | |
| **Vitamin K Antagonists**<br><br>***See Perioperative Anticoagulation Management Guidelines* *under quick-links on FHS home page. Updated 2017* | Warfarin (Coumadin®) | Should be stopped >5 days prior to surgery if INR supratherapeutic, 5 days prior if INR therapeutic, 3-4 days if INR subtherapeutic<br><br>In patients who require temporary interruption of Warfarin and whose INR is still above 1.5 one to two days prior to surgery, 2.5 mg of oral vitamin K is suggested<br><br>***See Vitamin K – INR Reversal Protocol for patients with elevated INR despite discontinuation of warfarin* | Resume warfarin on evening of or the morning after procedure or surgery<br><br>The traditional management of perioperative anticoagulation, referred to as "bridging" therapy, uses preoperative and postoperative therapy with LMWH when an alternative is needed after oral anti-coagulant therapy is discontinued for several days<br>***Bridging recommendations: see preoperative recommendations* | *Considerations:*<br>1. The risk of thromboembolism if anticoagulation is discontinued (the risk is related to the indication for anticoagulation as well as the postoperative risk induced by the procedure<br>2. Risk of bleeding if anticoagulant is continued (procedural risk and patient-specific risk)<br>3. Effectiveness and safety of alternative anticoagulant interventions (i.e. "bridging" therapy)<br><br>Please refer to:<br>ACCP Evidence-Based Clinical Practice Guidelines (9th Edition) [Chest **2012;141(2)(*Suppl):e*326S-*e*350S]** and 2017: ACC Expert Consensus Decision Pathway for NVAF. ***JACC* 2017;69:** |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | ***Bridging recommendations: Use **therapeutic-dose** SC LMWH > IV UFH in patients with mechanical heart value, atrial fibrillation or VTE at moderate or high risk for thromboembolism* | | |
| **Thrombin Inhibitor**<br><br>***See Perioperative Anticoagulation Management guidelines under quick-links on FHS home page. Updated 2017* | Dabigatran (Pradaxa®) | Surgery with low risk of bleeding:<br>CrCl >80: discontinue ≥24 hours before surgery<br>CrCl 50-79: discontinue ≥36 hours before surgery<br>CrCl 30 to 49: discontinue ≥48 hours before surgery<br>CrCl 15-29: discontinue ≥72 hours before surgery<br>CrCl <15: discontinue ≥96 hours before surgery<br><br>Surgery with moderate or high risk of bleeding:<br>CrCl >80: discontinue ≥48 hours before surgery<br>CrCl 50-79: discontinue ≥72 hours before surgery<br>CrCl 30 to 49: discontinue ≥96 hours before surgery<br>CrCl 15-29: discontinue ≥120 hours before surgery<br>CrCl <15: discontinue no | Peak plasma level 6 hours post-surgery.<br><br>Once hemostasis has been established:<br>Low post-procedural bleeding risk: resume DOAC within 24 hours following procedure (consider lower dose on evening of procedure)<br><br>High post-procedural bleeding risk: 48-72 hours following procedure | Extreme caution must be considered before performing neuraxial anesthesia<br><br>Dabigatran should not be used for bridging warfarin due to lack of supporting literature and the perioperative bleed risk<br><br>Please refer to: 2017 ACC Expert Consensus Decision Pathway for NVAF. ***JACC* 2017;69:** |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | data | | |
| **Unfractionated Heparin (UFH)**<br><br>***See Perioperative Anticoagulation Management guidelines under quick-links on FHS home page* | Heparin | Stop heparin infusion 4 to 6 hours prior to surgery<br><br>Stop heparin infusion at least 6 hours before removing epidural catheter<br><br>Stop SQ heparin 6 hours prior to surgery | Restarting UFH should be done at the surgeon's discretion<br><br>For minor surgical/invasive procedures resume therapeutic dose UFH ~24 hours after procedure (or next day)<br><br>For major surgery or a high bleeding risk delay initiation for ~48 to 72 hours post-op OR administer low-dose UFH after surgery when hemostasis is secured | |
| **Low-molecular weight heparin (LMWH)**<br><br>***See Perioperative Anticoagulation Management guidelines under quick-links on FHS home page* | Enoxaparin (Lovenox®)<br><br>Dalteparin (Fragmin®) | *Enoxaparin and Dalteparin:*<br>Hold prophylactic LMWH for at least 12 hours before anticipated neuraxial anesthetic<br><br>Hold LMWH for 24 hours if therapeutic dose being used prior to neuraxial anesthetic | Restarting LMWHs or Anti-Xa Inhibitors should be done at the surgeon's discretion<br><br>For minor surgical/invasive procedures: resume therapeutic dose LMWH ~24 hours after procedure (or next day) and Anti-Xa Inhibitors ~6-8 hours after procedure<br><br>For major surgery or a high bleeding risk: delay initiation for ~48 to 72 hours post-op OR administer low-dose | Please refer to:<br>ACCP Evidence-Based Clinical Practice Guidelines (9th Edition) [Chest 2012;141(2)(*Suppl):e*326S-*e*350S] |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | | LMWH or prophylactic fondaparinux after surgery when hemostasis is secured | |
| **Indirect Factor Xa Inhibitor** | Fondaparinux (Arixtra®) | Due to 17-hour half-life, hold at least 36 to 48 hours prior to major surgery<br><br>Hold for 72 hours prior to neuraxial anesthetic.<br>**Consult anesthesiologist | For minor surgical/invasive procedures: resume ~6-8 hours after procedure<br><br>Recommended duration of bridging overlap with fondaparinux and warfarin is 5-9 days | Avoid use in spinal injury or surgery patients<br><br>Extreme caution must be considered before performing neuraxial anesthesia |
| **Direct Factor Xa Inhibitor**<br><br>***See Perioperative Anticoagulation Management guidelines* under quick-links on FHS home page. Updated 2017** | Rivaroxaban (Xarelto®)<br><br>Apixaban (Eliquis®)<br><br>Edoxaban (Savaysa®) | Surgery with low risk of bleeding:<br>Rivaroxaban, apixaban:<br>CrCl >30 ml/min: Discontinue ≥24 hours before surgery<br>CrCl 15-29 ml/min: Discontinue ≥36 hours before surgery<br>CrCl <15 ml/min: ≥48 hours before surgery<br><br>Surgery with moderate or high risk of bleeding:<br>Rivaroxaban, apixaban:<br>CrCl >30 ml/min: Discontinue ≥48 hours before surgery | Once hemostasis has been established:<br>Low post-procedural bleeding risk: resume DOAC within 24 hours following procedure (consider lower dose on evening of procedure)<br><br>High post-procedural bleeding risk: 48-72 hours following procedure | Avoid use in spinal injury or surgery patients<br><br>Extreme caution must be considered before performing neuraxial anesthesia.<br><br>**The manufacturer of edoxaban does not specify the difference between standard and high-risk surgery, but for patients with high bleed risk, may consider holding ~48 hours prior to surgery due to T ½ of ~10-14 hours.<br><br>Please refer to 2017 ACC Expert Consensus Decision Pathway for NVAF. ***JACC* 2017;69:** |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | CrCl <30 ml/min: Discontinue ≥72 hours before surgery<br><br>Edoxaban: discontinue 24 hours prior to procedure | | |
| | Betrixaban (Bevyxxa®) | Due to half-life of >72 hours, hold at least 7-10 days prior to major surgery | | Neuraxial anesthesia: In patients who receive both betrixaban and neuraxial anesthesia, avoid removal of epidural catheter for at least 72 hours following the last betrixaban dose; avoid administration of betrixaban for at least 5 hours following catheter removal |
| **ANTIEPILEPTICS** | | | | |
| | Phenytoin (Dilantin®)<br>Carbamazepine (Tegretol®)<br>Eslicarbazepine<br>Valproic acid (Depakote®)<br>Topiramate (Topamax®)<br>Gabapentin (Neurontin®)<br>Levetiracetam (Keppra®)<br>Lacosamide<br>Lamotrigine (Lamictal®)<br>Suxilep®<br>Aptiom®<br>Felbamate<br>Clobazam | Continue medications during the perioperative period<br><br>If patient will be admitted after surgery and will be NPO for 24 hours, consider obtaining baseline preoperative serum drug levels | Continue patient's regular schedule; if oral intake is not possible, utilize intravenous preparations | In outpatients who have been stable on their AED regimen with a long-standing seizure-free history, there is probably no need to routinely check serum levels<br><br>If patient is being treated with a drug for which there is no intravenous form and delay in postoperative oral intake is anticipated, preoperative conversion to a drug for which an intravenous form is available may be considered<br><br>May increase or decrease the metabolism of some anesthetic agents, especially neuromuscular blocking agents<br><br>Patients with epilepsy have an increased risk for postoperative complications |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Zonisamide<br>Pregabalin<br>Ethosuximide<br>(Diacomit®)<br>Brivaracetam<br>Cannabidiol<br>(Epidiolex®)<br>Cenobomate<br>(Xcopri®) | | | |
| **ANTIHYPERLIPIDEMICS** | | | | |
| **Bile Acid Resins** | Cholestyramine<br>(Questran®)<br>Colesevelam<br>Colestipol<br>(Colestid®) | Discontinue before surgery | Resume postoperatively when patient is stable and eating a full diet | Bile sequestrants can interfere with bowel absorption of medications that may be required perioperatively |
| **Fibric Acid Derivatives** | Gemfibrozil<br>(Lopid®)<br>Fenofibrate | Discontinue before surgery | Resume postoperatively when patient is stable and eating a full diet | Niacin, fibric acid derivatives such as gemfibrozil, and the statins all have the potential to cause myopathy and rhabdomyolysis, especially if used in combination<br><br>Muscle injury may occur during the perioperative period.<br><br>Evidence suggests that HMG-CoA reductase inhibitors (statins) may prevent vascular events in the perioperative period. |
| **HMG-CoA Reductase Inhibitors ("statins")** | Simvastatin<br>(Zocor®)<br>Atorvastatin<br>(Lipitor®)<br>Lovastatin<br>(Mevacor®)<br>Rosuvastatin<br>(Crestor®)<br>Pitavastatin<br>(Pivalo®)<br>Pravastatin<br>(Pravachol®)<br>Fluvastatin | Continue preoperatively and throughout the hospital stay without interruption, if possible | Resume postoperatively when patient is stable and eating a full diet | |
| **Supplements** | Niacin | Discontinue before surgery | Resume postoperatively when patient is stable and eating a | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | | full diet | |
| **Cholesterol absorption inhibitor** | Ezetemibe (Zetia®) | Discontinue before surgery | Resume postoperatively when patient is stable and eating a full diet | |
| **PCSK9 Inhibitors** | Repatha®<br>Praluent® | Can continue preoperatively<br><br>Repatha $t_{1/2}$: 11-17 days<br>Praluent $t_{1/2}$: 10-20 days | Resume postoperatively when appropriate | SQ injections given every 14 days, missed doses may be administered within 7 days of scheduled administration date |
| **Adenosine Triphosphate-Citrate Lyase (ACL) Inhibitor** | Bempedoic acid (Nexletol®) | Discuss with prescribing provider | Discuss with prescribing provider | Usually taken in conjunction with statin therapy<br><br>Warnings include hyperuricemia (gout) and risk for tendon rupture<br><br>Associated with persistent changes in laboratory tests within the first four weeks of treatment, including increases in creatinine and blood urea nitrogen, decreases in hemoglobin and leukocytes, increases in platelet counts, increases in liver enzymes (AST and/or ALT), and increases in creatine kinase. |
| **ANTIHYPERTENSIVES** | | | | |
| **ß-blockers** | Atenolol<br>Metoprolol | Continue preoperatively and throughout the hospital stay without interruption, if possible | Resume postoperatively<br>Several intravenous β-blockers are available for patients who have not resumed taking oral medications when postoperative doses are due | Beta blockers may have benefits when taken perioperatively by decreasing ischemia via decreased oxygen demand and by preventing/controlling arrhythmias.<br><br>Potential adverse effects of perioperative beta blockage include bradycardia and hypotension |
| **Angiotensin-Converting Enzyme Inhibitors (ACE-Inhibitors)** | Lisinopril<br>Enalapril<br>Captopril<br>Benazepril<br>Ramipril | If ACE inhibitors are indicated only for hypertension and the blood pressure is controlled, discontinue the day before | Resume postoperatively as long as the patient is not hypotensive and has not suffered acute renal injury | Exaggeration of hemodynamic lability after induction of anesthesia has been reported with patient taking ACEIs/ARBs. While controversial, the evidence seems to support holding ACEIs/ARBs the morning of surgery |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Quinapril | surgery. If ACEI is indicated for other indications or blood pressure is not controlled, contact anesthesiologist. | Intravenous enalaprilat may be used if the patient becomes hypertensive before resuming oral medications | for patients taking any of these agents indicated for hypertension. |
| **Angiotensin Receptor Blockers (ARBs)** | Valsartan<br>Irbesartan<br>Losartan<br>Candesartan<br>Olmesartan | If ARBs are indicated only for hypertension and the blood pressure is controlled, discontinue 24 hours before surgery. If ARBs are used indicated for other indications or if blood pressure is not controlled, contact anesthesiologist. | | |
| **Calcium Channel Blockers (CCBs)** | Diltiazem<br>Verapamil<br>Nifedipine<br>Amlodipine | Continue preoperatively and throughout the hospital stay without interruption, if possible, as long as heart rate and blood pressure are stable | Resume postoperatively<br><br>Intravenous verapamil and diltiazem are available for patients who have not resumed taking oral medications when postoperative doses are due | *CCBs may interact with agents used in anesthesia: they may prolong neuromuscular blockade and have an additive hypotensive effect - use with caution. CCBs also act synergistically with ß-adrenergic blockers and may cause profound bradycardia and hypotension.<br><br>Withholding these agents for significant bradycardia or hypotension should not result in withdrawal effects. |
| **Centrally Acting Sympatholytics** | Clonidine<br>Methyldopa<br>Guanfacine | Continue perioperatively to avoid withdrawal effects, most significant with clonidine<br><br>Will patient be able to take oral meds within 12 hours | If a surgical patient who is taking oral clonidine is expected to resume it within 12 hours of the preoperative dose, oral dosing may continue<br>If more than 12 hours are | If prolonged NPO expected, then prior to surgery, discontinue the oral dose by tapering over 2 to 3 days while initiating an equivalent dose of a clonidine patch. This provides steady dosing during the conversion.<br><br>Transdermal patch (Catapres-TTS) is available. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | of preoperative dose? *If not, see next column →* | expected to pass, conversion from oral clonidine to a clonidine patch *at least 3 days before surgery* may be wise | Steady-state levels are achieved 2-3 days after application. Each patch is used for 7 days. |
| **Direct Renin Inhibitors** | Aliskiren (Tekturna®) | For patients treated for hypertension, strongly consider holding direct renin inhibitors on the morning of surgery due to the increased risk of post-anesthetic induction hemodynamic lability | Resume postoperatively as long as patient is not hypotensive and has not suffered acute renal injury | Assess risk vs. benefit between hyper- and hypotensive events intraoperatively |
| **Direct vasodilators and alpha-adrenergic blockers** | Hydralazine<br>Prazosin<br>Terazosin | Continue perioperatively when possible | Use intravenous preparations postoperatively if blood pressure is elevated and patient is unable to resume oral intake | IV hydralazine is a potent arterial dilator and may cause reflex tachycardia<br><br>Use caution with intravenous formulations as the dose required is lower than the oral dose |
| **ANTIHYPERTENSIVES (COMBINATION)** | | | | |
| **HCTZ/ACE-Inhibitors** | Benazepril/ HCTZ (Lotensin®)<br><br>Captopril/HCTZ (Capozide®) | Refer to diuretics and ACE-Inhibitors | Refer to diuretics and ACE-Inhibitors | |
| **HCTZ/ARBs** | Losartan/HCTZ (Hyzaar®)<br><br>Valsartan/HCTZ (Diovan®) | Refer to diuretics and ARBs | Refer to diuretics and ARBs | |
| **ACE-Inhibitors or ARBs & CCBs** | Benazepril/ Amlodipine (Lotrel®) | Refer to ACE-Inhibitors or ARBs and CCBs | Refer to ACE-Inhibitors or ARBs and CCBs | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Enalapril/ Felodipine (Lexxel®)<br><br>Trandolapril/ Verapamil (Tarka®)<br><br>Valsartan/ Amlodipine (Exforge®)<br>Perindopril arginine/ amlodipine (Prestalia®) | | | |
| **HCTZ/ARBs/CCBs** | Olmesartan/ HCTZ/ Amlodipine (Tribenzor®)<br><br>Valsartan/ Amlodipine/ HCTZ (Exforge HCT®) | Refer to diuretics, ARBs, and CCBs | Refer to diuretics, ARBs, and CCBs | |
| **HCTZ/ ß-blockers** | Atenolol/ HCTZ<br><br>Bisoprolol/ HCTZ Ziac®<br><br>Metoprolol/ HCTZ Lopressor HCT® | Continue without interruptions<br><br>Refer to HCTZ and ß-blockers | Resume postoperatively<br><br>Refer to HCTZ and ß – blockers | |
| **ARBs/Direct Renin** | Aliskiren/ | Refer to ARBs and direct | Refer to ARBs and direct | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| **Inhibitor** | Valsartan (Valturna®) | renin inhibitors | renin inhibitors | |
| **CCBs/Direct Renin Inhibitor** | Aliskiren/ Amlodipine (Tekamlo®)<br><br>Aliskiren/ Amlodipine/ HCTZ (Amturnide®) | Refer to CCBs and direct renin inhibitors | Refer to CCBs and direct renin inhibitors | |
| **ARB/ARNI** | Sacubitril/ Valsartan (Entresto®) | Refer to ARBs | Refer to ARBs | |
| **ANTI-INFECTIVE AGENTS** | | | | |
| **Aminoglycoside** | Plazomicin (Zemdri®) | Continue until the time of surgery | Resume postoperatively | May cause nephrotoxicity; monitor renal function closely<br><br>May cause neuromuscular blockade in patients receiving concomitant neuromuscular blocking agents and/or with underlying neuromuscular disorders |
| **Antileishmanial/ Antiparasitic Medications** | Miltefosine<br><br>Abametapir (Xeglyze®)<br><br>Artesunate | Continue until the time of surgery<br><br>Hold for two serum half-lives prior to surgery (~1.5 hours). | Resume when the patient's GI tract is functioning properly<br><br>Resume postoperatively<br><br>Restart after completed wound healing. | While there are no specific recommendations, antimalarials are generally continued perioperatively due to the low risk presented in surgery. The perioperative risk of treatment with biologics is still far from clear. |
| **Antiprotozoal and Anthelminthic** | Benznidazole<br><br>Moxidectin | Continue until time of surgery | Resume postoperatively<br><br>Tafenoquine: resume when | Continue medication for duration of therapy<br><br>Benznidazole: Bone marrow depression has |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Tafenoquine (Krintafel®)<br><br>Triclabendazole (Egaten®)<br><br>Nifurtimox (Lampit®) | Consult with infectious disease specialists<br><br>Monitor for anemia | GI tract is functioning properly<br><br>Nifurtimox: if vomiting occurs within 30 minutes of dose, repeat the same dose. If vomiting occurs within 30 to 60 minutes of dose, a half dose should be given. | been reported in post-marketing case reports, but frequency is not defined.<br>The mean plasma half-life is 13 hours.<br><br>Triclabendazole: Short course of therapy for fascioliasis - only 2 doses given 12 hours apart. |
| **Antifungal Agent, Azole Derivatives** | Isavuconazole (Cresemba®) | Continue until the time of surgery | Resume postoperatively | The mean plasma half-life of isavuconazole was 130 hours in trials. Based on this data, if the doses must be held for a short period of time pre- and post-operatively, this shouldn't affect overall patient exposure to the medication. |
| **Antitubercular** | Pretomanid | Continue until the time of surgery<br><br>Consult with infectious disease specialists. | Resume postoperatively | Non-formulary. Consult with infectious disease specialists prior to approval.<br><br>Taken in combination with bedaquiline and linezolid, which confers a risk of anemia and thrombocytopenia that may increase bleeding times. |
| **Carbapenem** | Imipenem, cilastatin, relebactam<br><br>(Recarbrio®) | Continue until the time of surgery | Resume postoperatively | Non-formulary. Consult with infectious disease specialists prior to approval. |
| **Pleuromutilin** | Lefamulin Xenleta® | Continue until the time of surgery and consult with infectious disease specialists | Resume postoperatively | The half-life of this medication is approximately 8 hours<br><br>Continue medication for duration of therapy |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | | | Non-formulary. Will have to be given as a patient own medication. |
| **Siderophore Cephalosporins** | Cefiderocol (Fetroja®) | Continue until the time of surgery | Resume postoperatively | The half-life of this medication is 2-3 hours.<br><br>Primarily excreted unchanged via the kidneys; monitor renal function. |
| **Tetracycline derivatives** | Seysara®<br>Nuzyra®<br>Xerava® | Continue until the time of surgery. | Resume postoperatively. | Non-formulary. Will have to be given as patient own medication |
| **Antiviral (herpesvirus nucleoside analog DNA polymerase inhibitor)** | Valacyclovir<br>Acyclovir | Continue until the time of surgery. | Resume postoperatively. | |
| **Antiviral (ribonucleotide analogue vRNA polymerase inhibitor)** | Remdesivir (Veklury®) | Consult ID specialist. | Resume postoperatively. | Known to cause bradycardia and increase in LFTs. |
| **Antiviral (monoclonal antibody)** | Altotivimab, maftivimab, and odesivimab (Inmazeb®)<br>Ansuvimab-zykl (Ebanga®) | Consult ID specialist. | Consult ID specialist. Typically dosed as a one-time infusion. | Typically dosed as a one-time infusion. Can cause infusion-related reactions, fever, and hypotension. Consider starting postoperatively if surgery cannot be delayed. |
| **ANTIMOTILITY AGENT** | | | | |
| **Sodium/Hydrogen Exchanger (NHE3) Inhibitor** | Tenapanor (Ibsrela®) | Medication can be taken up to the day of surgery | Resume when patient is hemodynamically stable | Medication is known to cause diarrhea and may cause dehydration among critically ill patients |
| **Osmotic Laxatives** | Lactitol (Pizensy®) | Recommend coordination of perioperative medication management plan with surgeon and prescribing providers. | Recommend coordination of perioperative medication management plan with surgeon and prescribing providers. | Lactitol may reduce the absorption of concomitantly administered oral medications. Administer oral medications at least 2 hours before or 2 hours after lactitol. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| **ANTIMUSCARINICS** | | | | |
| **Oral antimuscarinics for overactive bladder** | Oxybutynin<br>Mirabegron<br>Vibegron<br>(Gemtesa®) | May be continued prior to surgery. | May be continued when the patient is able to tolerate oral medications. | |
| **ANTINEOPLASTICS** | | | | |
| **Oral Chemotherapy Medications** | Afinitor®<br>Alecensa®<br>Asparlas®<br>Ayvakit®<br>Braftovi®<br>Calquence®<br>Copiktra®<br>Cotellic®<br>Cyclophos-phamide<br>Danyelza®<br>Daurismo®<br>Erleada®<br>Etoposide<br>Farydak®<br>Gavreto®<br>Gilotrif®<br>Gleevec®<br>Hydroxyurea<br>Ibrance®<br>Idhifa®<br>Inrebic®<br>Inqovi®<br>Imbruvica®<br>Lenvatinib<br>Lonsurf®<br>Lorbrena®<br>Lynparza®<br>Nerlynx®<br>Ninlaro®<br>Nubeqa®<br>Odomzo®<br>Orgovyx®<br>Piqray®<br>Pomalyst®<br>Polivy®<br>Qinlock®<br>Revlimid®<br>Retevmo®<br>Rolzytrek®<br>Rubraca®<br>Rydapt®<br>Sutent®<br>Tabrecta®<br>Tafinlar®<br>Tagrisso®<br>Talzenna®<br>Tarceva®<br>Tazverik ®<br>Tibsovo®<br>Turalio®<br>Varubi®<br>Verzenio®<br>Vitrakvi®<br>Vizimpro®<br>Xeloda® | Consult with patient's oncologist for all oral chemotherapy medications prior to surgery. | All medications confer a risk of thrombocytopenia which may increase bleeding times.<br><br>Each medication should be carefully reviewed for contraindications due to surgery complications by the oncologist, surgeon, and pharmacist post-operatively once the patient is stable.<br><br>Many injectable chemotherapy medications are given in cycles and/or regimens, and it may be reasonable to schedule surgery after the completion of a cycle/regimen. However, one must always consult the patient's oncologist to prevent interruption in the appropriate management of the patient's disease. Certain medications will need to be re-loaded if they are stopped. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Mekinist®<br>Mektovi®<br>Mercaptopurine | Xospata®<br>Zejula®<br>Zokinvy®<br>Zydelig®<br>Zykadia® | | |
| **Injectable Chemotherapy Medications** | Arzerra®<br>Blenrep®<br>Beleodaq®<br>Blincyto®<br>Darzalex®<br>Elzonris®<br>Lumoxiti®<br>Empliciti®<br>Entyvio®<br>Gazyva®<br>Imlygic®<br>Keytruda®<br>Libtayo®<br>Lumoxiti® | Lutathera®<br>Margenza®<br>Monjuvi®<br>Onivyde®<br>Opdivo®<br>Portrazza®<br>Poteligeo®<br>Sarclisa®<br>Tecentriq®<br>Trodelvy®<br>Unituxin®<br>Uplinza®<br>Xpovio®<br>Yondelis® | Consult with patient's oncologist for all injectable chemotherapy medications prior to surgery. | Many injectable chemotherapy medications are given in cycles and/or regimens, and it may be reasonable to schedule surgery after the completion of a cycle/regimen. However, one must always consult the patient's oncologist to prevent interruption in the appropriate management of the patient's disease. |
| **Topical antineoplastic** | Tirbanibulin (Klisyri®) | May be used prior to surgery. | Should not be applied to the treatment area until it has fully healed from surgery. | Must be applied to the face/scalp once daily for 5 consecutive days<br><br>Consider finishing full treatment prior to surgery (if the face/scalp will be affected). |
| **Ophthalmic Agent-Vascular Endothelial Growth Factor (VEGF) Inhibitor** | Brolucizumab (Beovu®) | Hold for at least 28 days before surgery | Hold for at least 28 days after surgery and the wound is fully healed. | VEGF medications have the potential for arterial thromboembolic events (5%). |
| **Antineoplastic / alkylating agent** | Lurbinectedin (Zepzelca®) | Consult with patient's oncologist prior to surgery. | Consult with patient's oncologist prior to surgery. | Zepzelca has risk of thrombocytopenia which may increase bleeding times, especially in patients > 65 years of age.<br><br>Medication should be carefully reviewed for contraindications due to surgery complications |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | | by the oncologist, surgeon, and pharmacist post-operatively once the patient is stable.<br><br>Zelpzelca is given once every 21-day treatment cycle. It may be reasonable to schedule surgery after the completion of a cycle/regimen. However, one must always consult the patient's oncologist to prevent interruption in the appropriate management of the patient's disease. |
| **ANTIPARKINSON AGENTS** | | | | |
| **Adenosine Receptor Antagonist** | Istradefylline (Nourianz®) | Medication can be taken up to the day of surgery | May resume when patient is able to take oral medication | Monitor for potential increase in serum glucose (1-2%) |
| **Dopamine Precursor** | Carbidopa/ Levodopa (Sinemet®) | Continue during the perioperative period, discontinuation may cause parkinsonian crisis, no IV form available | Resume medications at same doses as soon as possible. If a patient has a nasogastric tube, a levodopa/carbidopa solution can be delivered to the duodenum via a weighted feeding tube.<br>Otherwise, for patients who are NPO, there are few effective alternatives that may be given IV/IM:<br>- trihexyphenidyl<br>- benztropine<br>- diphenhydramine | Without treatment, muscle rigidity increases which may complicate medical care<br><br>Carbidopa/levodopa interacts with many drugs used in anesthesia, increasing the risk for arrhythmias – but the benefits of continued therapy outweigh the risks |
| **Dopamine Agonists** | Bromocriptine Pramipexole Ropinirole | Dopamine agonists should be discontinued the evening before surgery to avoid postural hypotension in the perioperative periods | May be restarted when the patient resumes oral intake | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | | |
| **Dopamine Antagonist** | Amisulpride (Barhemsys®) | May be administered prior to surgery at the time of induction of anesthesia | Can be intravenously administered immediately after surgery | Causes dose- and concentration-dependent QT prolongation. Recommended to avoid with other drugs known to prolong the QT interval (e.g. ondansetron). |
| **Monoamine Oxidase Inhibitor (MAOIs) used in Parkinson's** | Selegiline (Eldepryl®)<br><br>Pargyline<br><br>Phenelzine<br><br>Safinamide (Xadago®) | Consult anesthesiologist<br><br>FLAG CHARTS to alert that patient is on an MAOI and place stickers on chart *cautioning against the use of meperidine and indirect sympathomimetics (i.e. ephedrine)* | | MAO inhibition becomes non-selective in doses greater than 10 mg/day<br><br>AVOID meperidine and indirect sympathomimetics (i.e. ephedrine), as these drugs may cause neuroleptic malignant syndrome**.** (Doak GH)<br><br>Increased risk of serotonin syndrome in patients who receive methylene blue intraoperatively. Combination should be avoided unless benefit outweighs risk.<br><br>Patients should not be forced to discontinue these agents. If discontinuation is warranted, taper off slowly over 2 weeks; but still follow recommended precautions above since discontinuation does not guarantee complete elimination |
| **COMT Inhibitors** | Entacapone (Comtan®)<br>Opicapone (Ongentys®)<br>Tolcapone (Tasmar®) | Continue up to the time of surgery | For patients who are NPO, there are few effective alternatives that may be given IV/IM:<br>- trihexyphenidyl (Artane®)<br>- benztropine (Cogentin®) | Work by extending the duration of action of levodopa<br><br>No specific contraindications regarding their use perioperatively<br><br>Abrupt withdrawal can cause a syndrome similar to neuroleptic malignant syndrome (as |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | - diphenhydramine (Benadryl®) | can carbidopa/levodopa) |
| **ANTIPLATELET AGENTS** | | | | |
| **Salicylates** | Aspirin (ASA) | Preoperative decision regarding discontinuation of aspirin administered for antiplatelet effects should be individualized and based upon conversation between patient's surgeon, PCP, neurologist, or cardiologist. For patients at high risk for cardiovascular events (e.g. cardiac stents, CAD, DM, CHF, renal insufficiency, cerebrovascular disease) and those requiring CABG surgery it is recommended that ASA be continued through the operative period.<br><br>Stop 5-10 days prior to surgery. | Resume ~24 hours after surgery (next morning) assuming risk of bleeding has diminished<br><br>Prompt resumption of ASA should be considered for patients with or at high risk for atherosclerosis | Aspirin is continued preferentially in many cardiac surgeries because of its positive effects on mortality and cardiac morbidity<br><br>Widely published experience exists regarding the safety of aspirin and NSAID use in the setting of regional anesthesia<br><br>*Recommend continuing dual antiplatelet therapy perioperatively in patients with coronary stents if surgery is required within 30-90 days of bare metal stent placement or within 12 months of drug-eluting stent placement. Elective surgery should not be performed during these critical periods. Patients with bare metal stents older than 30-90 days or drug-eluting stents older than 12 months should continue ASA therapy perioperatively with the exception of intracranial, ophthalmic and intermedullary spinal cord surgery when the risk of bleeding exceeds the risk of major cardiac event from in stent rethrombosis.* |
| **Other Antiplatelet Drugs** | Vorapaxar (Zontivity®) | Preoperative decision regarding discontinuation of antiplatelet agent should be individualized and based upon conversation between patient's surgeon, PCP, neurologist, or cardiologist. | Resume ~24 hours after surgery, when hemostasis is secured | Vorapaxar is typically taken in combination with aspirin and/or clopidogrel in patients with diabetes and a history of MI. (Circulation. 2015;131(12):1047-53.)<br><br>Contraindicated in patient with history of stroke, TIA, ICH, or active pathological bleeding. The |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | Significant inhibition of platelet aggregation remains **4 weeks** after discontinuation due to long half-life of parent drug and active metabolite (T ½ 72-96 hours; terminal T ½ 5-13 days) | | risk of bleeding is proportional to the patient's underlying bleeding risk. |
| | Ticagrelor (Brilinta®) | Preoperative decision regarding discontinuation of antiplatelet agent should be individualized and based upon conversation between patient's surgeon, PCP, neurologist, or cardiologist.<br><br>Discontinue 5 days before surgery | Resume ~24 hours after surgery, when hemostasis is secured | Do not start in patients planned to undergo urgent CABG.<br><br>Maintenance doses of aspirin above 100mg reduce the effectiveness of ticagrelor<br><br>*Recommend continuing dual antiplatelet therapy perioperatively in patients with coronary stents if surgery is required within 30-90 days of bare metal stent placement or within 12 months of drug-eluting stent placement. Elective surgery should not be performed during these critical periods. Patients with bare metal stents older than 30-90 days or drug-eluting stents older than 12 months should continue ASA therapy perioperatively with the exception of intracranial, ophthalmic and intermedulary spinal cord surgery when the risk of bleeding exceeds the risk of major cardiac event from in stent rethrombosis.* |
| | Clopidogrel (Plavix®) | Preoperative decision regarding discontinuation of antiplatelet agent should be individualized and based upon conversation between | Resume ~24 hours after surgery (next morning), when hemostasis is secured | Neuraxial anesthesia is relatively *contraindicated* if these antiplatelet agents are not discontinued 7-10 days preoperatively<br><br>Consider discussing with surgeon and |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | patient's surgeon, PCP, neurologist, or cardiologist.<br><br>Discontinue *at least* 5-10 days before surgery | | cardiologist about whether or not a loading dose of clopidogrel should be given at the time of resumption, since reinitiation of maintenance dose would take 5-10 days to attain maximal platelet function inhibition<br><br>*Recommend continuing dual antiplatelet therapy perioperatively in patients with coronary stents if surgery is required within 30-90 days of bare metal stent placement or within 12 months of drug-eluting stent placement. Elective surgeries should not be performed during these critical periods. Patients with bare metal stents older than 30-90 days or drug-eluting stents older than 12 months should continue ASA therapy perioperatively.* |
| | Prasugrel (Effient®) | Preoperative decision regarding discontinuation of antiplatelet agent should be individualized and based upon conversation between patient's surgeon, PCP, neurologist, or cardiologist.<br><br>Discontinue at least 7 days before surgery | Resume ~24 hours after surgery, when hemostasis is secured | |
| | Ticlopdipine (Ticlid®) | Preoperative decision regarding discontinuation of antiplatelet agent should be individualized and based upon conversation between patient's surgeon, PCP, neurologist, or cardiologist.<br><br>Discontinue 10 days before surgery | Resume ~24 hours after surgery (next morning), when hemostasis is secured | |
| **Combination Drugs** | Aspirin/ dipyridamole (Aggrenox®) | Stop 7-10 days before surgery | Resume after procedure or surgery when the risk of bleeding has diminished | |
| **Phosphodiesterase Inhibitor** | Cilostazol (Pletal®) | Stop at least 5 days before surgery<br><br>**In patients who cannot discontinue 7-10 days in advance, stopping 3 days in* | Resume after procedure | Antiplatelet actions and vasodilatory effects<br><br>When stopped, claudication symptoms may recur; symptoms should subside once cilostazol is reinitiated post-op. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | *advance may be acceptable* | | |
| **BENZODIAZEPINES** | | | | |
| | Lorazepam<br>Diazepam<br>Alprazolam<br>Temazepam<br>Chlordiazepoxide | Continue with minimal interruption in the perioperative period<br><br>IV preparations are available if needed | Resume when patient is hemodynamically stable<br><br>If patient NPO, parenteral diazepam and lorazepam are available | May cause delirium in elderly patients<br><br>Abrupt withdrawal can result in agitation, hypertension, delirium, and seizures |
| **CARDIOVASCULAR MEDICATIONS** | | | | |
| **Antianginal Medications** | Nitrates<br>$Ca^{2+}$ Channel blockers (CCBs)<br>B blockers<br>Ivabradine (Corlanor®) | *All* antianginal medications should be *continued* in the perioperative period<br><br>Ivabradine is used for angina as an off-label indication | Nitrates: Once-daily oral and transdermal nitrate formulations available<br><br>CCBs: IV verapamil and diltiazem available<br><br>ß-blockers: IV form available<br><br>**Continue IV preparation until patient can resume regular PO medications** | *Nitrates***:** Transdermal nitrates may lose effectiveness if skin perfusion decreases during or after surgery<br><br>*Calcium channel blockers* should be continued because there have been no major adverse reactions reported in the perioperative period – they appear safe and have theoretical benefit<br><br>ß *blockers* should be continued to avoid withdrawal effects; use of β-blockers has been shown to reduce cardiovascular morbidity and mortality postoperatively in some patient populations |
| **Cardiac Glycoside** | Digoxin (Lanoxin® Digitek®) | Continue perioperatively to provide stability, especially for arrhythmias<br><br>Check serum digoxin and potassium levels preoperatively if clinically indicated | Due to long half-life of digoxin, it is permissible to miss one dose<br><br>If patient is unable to resume oral intake of medications, it is acceptable to give IV digoxin<br><br>**When switching a patient from intravenous to oral | Patient is at risk for digoxin toxicity due mainly to physiologic stress effects, particularly acidosis, electrolyte abnormalities (especially hypokalemia), hypoxia and increased catecholamines<br><br>If a pressing reason exists *or* if the physiologic status of the patient is significantly altered, a serum digoxin level should be measured preoperatively and/or postoperatively |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | digoxin, allowances must be made for differences in bioavailability (digoxin tablets are ~60-80% bioavailable) | |
| **Antiarrhythmics** | Amiodarone<br>Sotalol<br>Procainamide<br>Diltiazem<br>Verapamil<br>Dofetilide | Continue all antiarrhythmic agents | Cardiologist should be consulted if patient is taking an antiarrhythmic that has no alternative preparation, other than oral, and will be NPO for some time<br><br>Multiple IV preparations available (i.e. amiodarone, diltiazem, etc.) | Given the relative risk of therapy vs. that of rhythm disturbances, these drugs are usually prescribed for significant arrhythmias<br><br>Hypokalemia, hypomagnesemia, and hypocalcemia can all increase risk of dangerous dysrhythmias with certain antiarrhythmic agents |
| **Alpha-/Beta-Agonist** | Droxidopa | Can be continued at physician's discretion. However, it is recommended that patients be evaluated for supine hypertension while on the medication. If supine hypertension persists and surgery requires supine positioning, droxidopa can be held approximately 8 hours prior to surgery. | Resume postoperatively. | US Black Box Warning: Droxidopa may cause or exacerbate supine hypertension.<br><br>Patients who are being treated for *neurogenic orthostatic hypotension* are sensitive to catecholamines secondary to up-regulation of catecholamine receptors<br><br>Short-term supine hypertension can be managed with transdermal nitrates if no contraindications exist. |
| **Neprilysin Inhibitor/ARB** | Sacubitril / valsartan (Entresto) | Refer to ARBs section above | | |
| **Transthyretin Stabilizer** | Tafamidis (Vyndamax®)<br><br>Tafamidis | Continue until time of surgery | Resume postoperatively when patient is stable and able to swallow the capsule whole | Vyndamax and Vyndaqel have not been thoroughly studied during perioperative and postoperative phases of care but does not appear to affect wound healing. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | meglumine (Vyndaqel®) | | | |
| **CORTICOSTEROIDS** | | | | |
| | Prednisone<br><br>Methyl-prednisolone<br><br>Hydrocortisone | Can be held at physician's discretion; however, it is recommended that patients continue their usual dose through the day of surgery.<br><br>Suggested perioperative stress corticosteroid coverage for suppressed HPA axis patients:<br><br>Minor procedures or surgery under local anesthesia (eg, inguinal hernia repair): take usual morning steroid dose<br>Moderate surgical stress (eg, lower extremity revascularization, total joint replacement): Give 50 mg hydrocortisone IV right before surgery followed by 25 mg IV every 8 hours for 24 hours<br><br>Major surgical stress (eg, esophagogastrectomy, total proctocolectomy, open heart surgery): Take usual morning steroid dose. Give 100 mg hydrocortisone IV | Minor to moderate surgical stress: resume home dose<br><br>Major surgical stress: decrease prednisone dose by 50% per day to the usual daily dose | *If a patient is taking ≥20 mg/day of prednisone or equivalent steroid for more than three weeks or on steroids for Cushing's Syndrome, perioperative coverage with hydrocortisone is necessary in accordance with magnitude of the stress.*<br><br>*If a patient is taking doses of 5-20 mg/day or higher of prednisone or equivalent steroid, perioperative coverage with hydrocortisone may be necessary due to variability in HPA axis suppression.*<br><br>*Suggested that the following groups do not need additional glucocorticoid coverage because of they do not have suppression of their HPA axis:*<br>• *On glucocorticoid for less than 3 weeks*<br>• *Morning doses of <5mg/day of prednisone or its equivalent for any length of time*<br>• *Doses of <10mg/day of prednisone or its equivalent every other day*<br><br>*For patients currently off glucocorticoids but history of use in the past year, it is suggested to preoperatively assess the HPA axis beginning with checking a morning serum cortisol. Clinicians may consider withholding steroids, watching BP, and administering a dose of hydrocortisone if the patient develops hypotension.* |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | before induction of anesthesia followed by 50 mg IV every 8 hours for 24 hours. | | Steroid equivalencies:<br>Prednisone 5 mg = Methylprednisolone 4 mg = hydrocortisone 20 mg = dexamethasone 0.75 mg |
| **COSMETIC MEDICATIONS** | | | | |
| **Neuromuscular Blocking Agent/Acetylcholine Release Inhibitor** | Prabotulinum-toxin A-xvfs (Jeuveau®) | Given as a one-time IM injection for glabellar lines.<br><br>Do not administer on same day as surgery | Patients may receive injection after recovery from procedure | Effects may spread from the area of injection to produce symptoms consistent with botulinum toxin effects. These symptoms have been reported hours to weeks after injection. Swallowing and breathing difficulties can be life threatening and there have been reports of death. |
| **DIABETIC MEDICATIONS** | | | | |
| **Biguanide** | Metformin (Glucophage®**)** | Hold the morning of surgery.<br><br>Temporarily discontinue for 48 hours following the administration of iodine contrast media **only** in patients with acute kidney injury, severe chronic kidney disease (stage IV/V, eGFR <30) or in those undergoing arterial studies.<br><br>Withhold metformin for cardiac cases and cases in which significant blood loss is expected. | May restart drug after procedure once patient resumes a normal diet and it is certain that no acute renal dysfunction has developed (e.g. eGFR >30); until then utilize insulin. In high-risk patients undergoing radiology procedures using contrast, wait 48 hours before resuming.<br><br>Preferred inpatient treatment is insulin-only management. | Calculate eGFR; discontinue immediately or do not resume therapy if eGFR is <30 mL/min/1.73 $m^2$. Assess the benefit of continuing metformin treatment in patients whose eGFR falls below 45 mL/min/1.73$m^2$.<br><br>Metformin does not typically cause hypoglycemia unless combined with a sulfonylurea.<br><br>Risk factors for developing lactic acidosis:<br>- Renal impairment<br>- CHF<br>- Inadequate renal perfusion/hypovolemia |
| **Sulfonylureas** | *Short-acting*:<br>Glyburide<br>Glipizide<br>Glimepiride | *Short-acting:* Hold the day of surgery | Do NOT restart until patient resumes a normal diet; until then utilize insulin | Potential for hypoglycemia<br><br>It is imperative that patient eats regular meals when this medication is resumed |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | *Long-acting:* Chlorpropamide (rarely used) | *Long-acting:* Stop 72 hours before surgery | Preferred inpatient treatment is insulin-only management | A step-up approach can be used for patients on high dose sulfonylureas, starting at low doses and adjusting them until the usual dose is reached |
| **Thiazolidinedione**<br><br>**"Glitazones"** | Rosiglitazone (Avandia®)<br>Pioglitazone (Actos®) | Discontinue on the morning of surgery | Continue once patient can tolerate oral medications<br><br>Preferred inpatient treatment is insulin-only management | Will not cause hypoglycemia when used as monotherapy; improves insulin sensitivity at peripheral sites and in the liver, but does not stimulate insulin release<br><br>Avoid use if patients develop congestive heart failure or problematic fluid retention, or if there are liver function abnormalities |
| **Glucagon-like Peptide (GLP-1) analogs** | Exenatide (Byetta®, Bydureon®)<br>Liraglutide (Victoza®)<br>Dulaglutide (Trulicity®)<br>Albiglutide (Tanzeum®)<br>Lixisenatide (Adlyxin®) | Discontinue on the morning of surgery | Do NOT restart until patient resumes a normal diet; until then utilize insulin<br><br>Preferred inpatient treatment is insulin-only management | May cause hypoglycemia when combined with a sulfonylurea<br><br>It is imperative that patient eats regular meals when this medication is resumed<br><br>May alter gastrointestinal (GI) motility and worsen postoperative state |
| **Dipeptidyl Peptidase-4 Inhibitor** | Sitagliptin (Januvia®)<br>Saxagliptin (Onglyza®)<br>Alogliptin (Nesina®)<br>Linagliptin (Tradjenta®) | Discontinue on the morning of surgery | Do NOT restart until patient resumes a normal diet; until then utilize insulin<br><br>Preferred inpatient treatment is insulin-only management | May alter gastrointestinal (GI) motility and worsen postoperative state |
| **α-Glucosidase Inhibitors** | Acarbose | Discontinue on the morning | Do NOT restart until patient | MUST be taken with meals for efficacy. |

<table>
<tr><th>Drug Class</th><th>Examples</th><th>Preoperative Recommendations</th><th>Postoperative Recommendations</th><th>Considerations & Caveats</th></tr>
<tr><td></td><td>(Precose®)<br>Miglitol<br>(Glyset®)</td><td>of surgery</td><td>resumes a normal diet; until then utilize insulin<br><br>Preferred inpatient treatment is insulin-only management</td><td></td></tr>
<tr><td>Amylin Analog</td><td>Symlin<br>(Pramlintide®)</td><td>Discontinue on the morning of surgery</td><td>Do NOT restart until patient resumes a normal diet; until then utilize insulin<br><br>Preferred inpatient treatment is insulin-only management</td><td></td></tr>
<tr><td>Sodium-Glucose Co-Transporter 2 (SGLT2) Inhibitor<br><br>“gliflozin”</td><td>Dapagliflozin<br>(Farxiga®)<br>Canaglifozin<br>(Invokana®)<br>Empagliflozin<br>(Jardiance®)<br><br>Ertugliflozin<br>(Steglatro®)</td><td>Discontinue at least three days before scheduled surgery<br><br>Discontinue at least four days before scheduled surgery</td><td>Do NOT restart until patient resumes a normal diet; until then utilize insulin<br><br>Preferred inpatient treatment is insulin-only management</td><td>Monitor renal function postoperatively. If patient’s eGFR <45, therapy should be held.<br><br>Not recommended in volume-depleted patients.</td></tr>
<tr><td>Insulin</td><td colspan="4">The following recommendations are for basic overview of insulin management perioperatively and do not represent comprehensive blood glucose management guidelines due to the wide variability of diabetic pathology and insulin responsiveness.<br>• Ideally consult anesthesiologist, endocrinologist, pharmacist or internist. May refer to CHI Franciscan Health Perioperative Glycemic Control Guidelines for more specific recommendations<br>• <u>Short procedure (for procedures less than two hours):</u><br><br>
<table>
<tr><th>Day</th><th></th><th colspan="2">Glargine<br>Detemir<br>Degludec</th><th colspan="2">70/30<br>70/25</th><th colspan="2">NPH or U-500</th><th colspan="2">Lispro<br>Aspart<br>Glulisine<br>Regular</th><th>Insulin Pump</th></tr>
<tr><td colspan="2"></td><td>AM Dose</td><td>PM Dose</td><td>AM Dose</td><td>PM Dose</td><td>AM Dose</td><td>PM Dose</td><td>AM Dose</td><td>PM Dose</td><td>All Day</td></tr>
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<table>
<tr><th>Drug Class</th><th>Examples</th><th>Preoperative Recommendations</th><th>Postoperative Recommendations</th><th>Considerations & Caveats</th></tr>
<tr><td></td><td>
<table>
<tr><td>Day before surgery</td><td></td><td>Usual Dose</td><td>80%</td><td>Usual Dose</td><td>Usual Dose</td><td>Usual Dose</td><td><u>Dinner:</u> Usual dose <u>Bedtime:</u> 50%</td><td>Usual Dose</td><td>Usual Dose</td><td>Usual basal rate and boluses for carbs</td></tr>
<tr><td rowspan="2">Day of surgery</td><td>Type 1 DM</td><td colspan="8">Give AM basal insulin dose as follows:<br>• NPH or U-500 insulin: 50% of usual AM dose at home<br>• Glargine/detemir/degludec: 75% of usual AM dose at home<br>• Mixed insulin: 50% of usual AM dose at home<br>• Short acting: HOLD any meal bolus doses<br><br>If correction scale: treat any BG > 180 mg/dl</td><td rowspan="2">Usual basal rate no boluses.<br><br>Check blood sugar q4h or sooner if you experience symptoms of hypoglycemia</td></tr>
<tr><td>Type 2 DM</td><td colspan="8">Give AM basal insulin dose as follows:<br>• If on basal insulin and oral diabetes medications—give 50% dose of basal (NPH, U-500, glargine/detemir/degludec insulin).<br>• If on basal insulin and meal-time insulin (with or without oral medications)—give 75% of basal insulin and hold prandial insulin.<br>• Pre-mixed insulin: 30% of usual AM dose at home<br><br>If on correction scale, treat any BG > 180 mg/dl</td></tr>
</table>
<ul>
<li><u>Complex procedure (e.g., open heart, complex bowel surgery) or major surgery lasting greater than two hours</u>:<ul><li>Hold previous insulin regimens. Continuous insulin infusion is recommended.</li></ul></li>
<li><u>Other:</u><ul><li>For Type 1 diabetics an insulin infusion should be strongly considered.</li><li>It is recommended to start dextrose containing IV fluids while patients are NPO</li><li>For DM patients on nutritional or meal-bolus insulin, hold this insulin until after surgery; may resume when eating well.</li><li>After surgery evaluate resuming basal insulin. If NPO, it is recommended to resume only 50% of total daily dose of insulin as basal. If on an insulin mix (e.g. 70/30), patients need to be eating well to resume. If not, convert them to a different basal insulin in the interim.</li><li>As diet resumes, consider nutritional insulin when appropriate</li></ul></li>
</ul>
</td><td></td><td></td><td></td></tr>
<tr><td colspan="5">DIURETICS</td></tr>
<tr><td>Potassium-sparing diuretics</td><td>Triamterene<br>Amiloride<br>Spironolactone</td><td>May continue without interruptions if clinically appropriate</td><td>Oral diuretics should be restarted if needed for control of hypertension, volume overload or when a normal diet is resumed.</td><td>The conversion from oral diuretics to IV diuretics is not equal (example: furosemide 80 mg PO daily = furosemide 40 mg IV daily)<br><br>Consider refraining from taking diuretics the</td></tr>
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| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | | | IV diuretics are good option until oral intake is adequate | morning due to concern of hypovolemia or hypokalemia. Quick diuresis can be obtained via IV route if the need is discovered during surgery. |
| **Thiazide diuretics** | HCTZ<br>Metolazone | May continue without interruptions if clinically appropriate | | |
| **Loop diuretics** | Furosemide (Lasix®)<br><br>Torsemide (Demadex®)<br><br>Bumetanide (Bumex®)<br><br>Ethacrynic Acid (Edecrin®) | Continue without interruption if patient is on potassium supplement | | Hypokalemia, caused by select diuretics, can theoretically increase the risk of perioperative arrhythmia, potentiate the effects of muscle relaxants, or provoke paralytic ileus. |
| **ELECTROLYTES** | | | | |
| | Potassium supplements | Consider checking potassium level<br><br>Continue the day of surgery | Restart when patient on oral liquids<br><br>May use IV riders to correct electrolyte disturbances if patient is unable to tolerate PO intake | Hypokalemia can theoretically increase the risk of perioperative arrhythmia, potentiate the effects of muscle relaxants, or provoke paralytic ileus.<br><br>Discontinue on the day of surgery if potassium-wasting diuretics are held (i.e. furosemide, HCTZ, torsemide, budesonide, chlorthalidone, indapamide, ethacrynic acid) |
| **HEMATOLOGIC AGENTS** | | | | |
| **Aminolevulinate Synthase 1-Directed Small Interfering Ribonucleic Acid (siRNA)** | Givosiran (Givlaari®) | Discuss with prescribing provider | Discuss with prescribing provider | Given monthly as a subcutaneous injection by healthcare provider. It is not recommended to miss monthly doses. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | | Elevated ALT levels (3-5x ULN) have been observed within the first 3-5 months of initiating therapy. Monitor for hepatic toxicity.<br><br>Monitor for signs and symptoms of anaphylaxis. |
| **Hemoglobin S polymerization inhibitor** | Voxelotor (Oxbryta®) | Continue until time of surgery | Resume postoperatively | Patients with sickle cell disease should be assessed for serum hemoglobin levels prior to surgery.<br>Half-life of this drug is 35.5 hours, so minor interruptions in therapy will not impact treatment.<br><br>Voxelotor may interfere with high-performance liquid chromatography measurement of Hb subtypes (HbS, HbF, HbA). |
| **Monoclonal antibody; Anti-P-selectin** | Crizanlizumab (Adakveo®) | Can continue up to the month of surgery | Resume postoperatively on regularly scheduled administration day | This drug is administered IV over 30 minutes once a month, so surgeries should ideally be planned around infusion days.<br>Crizanlizumab may falsely decrease platelet counts, particularly when collected in tubes with ethylenediaminetetraacetic acid (EDTA). Collect blood samples in citrate-containing tubes and run samples within 4 hours of collection.<br>Half-life of drug is 7.6 days. |
| **HEMATOPOIETIC AGENTS** | | | | |
| **Activin Receptor Ligand Trap** | Luspatercept (Reblozyl®) | Consult with hematology specialists. | Resume postoperatively | Non-formulary. Thromboembolism risk – use with caution in patients with known thrombotic risk. Monitor closely. |
| **Anti-Von Willebrand Factor; Monoclonal Antibody** | Caplacizumab (Cablivi®) | Hold for 7 days prior to invasive procedure, dental procedures and elective surgeries. | Resume postoperatively after risk of surgical bleeding has resolved. | Caplacizumab increases the risk of bleeding; bleeding events are common. Severe bleeding events (epistaxis, gingival bleeding, UGIB, metrorrhagia) were reported in clinical trials. Monitor closely for signs and symptoms of |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | | bleeding if caplacizumab is restarted. |
| **Colony-Stimulating Factors** | Lusutrombopag (Mulpleta®) | Begin medication 8 – 14 days prior to scheduled procedure.<br>**3 mg daily for 7 days** | Not indicated postoperatively | Do not use to normalize platelet counts in patients with chronic liver disease.<br>Obtain platelet count prior to therapy administration and no more than 2 days before procedure<br>Thromboembolism risk – use with caution in patients with known thrombotic risk and patients with chronic liver disease. Monitor closely. |
| **Oral Iron Replacement** | Ferric maltol (Accrufer®) | Continue during perioperative period | Continue during postoperative period | If patient is NPO, can consider IV iron formulations, if necessary for iron deficiency anemia and concerns for surgery recovery:<br>• Ferric carboymaltose<br>• Ferric gluconate<br>• Iron sucrose |
| **Tyrosine Kinase Inhibitor** | Fostamatinib (Tavalisse®) | Continue during perioperative period | Continue during perioperative period | Fostamatinib is utilized for chronic immune thrombocytopenia. Monitor CBC and ensure patient's platelet levels are adequate to proceed with surgery. |
| **Thrombopoietin receptor agonist** | Avatrombopag (Doptelet®) | Begin therapy 10 to 13 days prior to the scheduled procedure. Patients should undergo procedure 5 to 8 days after the last dose. | | Platelet count should be obtained prior to therapy initiation and on the day of the procedure. |
| **HERBAL SUPPLEMENTS** | | | | |
| **Echinacea** | | No data on discontinuation | | Echinacea is associated with allergic reactions and immune stimulation.<br>There is potential to decrease metabolism of certain perioperative medications such as cyclosporine, midazolam, lidocaine, and CCBs. |
| **Ephedra (ma huang)** | | Discontinue at least 24 hours before surgery | | Ephedra may increase the risk of heart attack and stroke |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| **Garlic** | | Discontinue at least 7 days before surgery | Herbal supplements are not part of hospital formulary. Patients must bring their own supply if continuation after surgery is indicated. | Garlic irreversibly inhibits platelet aggregation in a dose-dependent manner, which may increase risk of bleeding<br><br>Garlic may lower blood pressure |
| **Ginkgo** | | Discontinue at least 36 hours before surgery | | **Ginkgo may cause inhibition of platelet-activating factor, which increases risk of bleeding after surgery** |
| **Ginseng** | American Ginseng<br><br>Asian Ginseng | Discontinue at least 7 days before surgery | | **Ginseng may cause hypoglycemia**, tachycardia, and hypertension. It may also irreversibly inhibit platelet aggregation. |
| **Kava** | | Discontinue at least 24 hours before surgery | | Kava may increase sedative effect of anesthetics by potentiating GABA inhibitory neurotransmission |
| **St. John's Wort** | | Discontinue at least 5 days before surgery | | St. John's Wort is known to cause an increase in metabolism of certain perioperative medications such as cyclosporine, midazolam, lidocaine, and CCB |
| **Valerian** | | Ideally tapered weeks before surgery; if not withdrawal is treated with benzodiazepines | | Valerian may increase the sedative effect of anesthetics and can be associated with benzodiazepine-like withdrawal |
| **All other unlisted herbals and Vitamin E supplements** | Black Cohosh<br>Chamomile<br>CoQ10<br>Feverfew<br>Ginger<br>Goldenseal<br>Saw Palmetto | Discontinue at least 14 days prior to surgery | | Various coagulation disorders, sedation, hemodynamic changes, electrolyte disturbances, and other unknown complications |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| **HEPATITIS C MEDICATIONS** | | | | |
| **NS3/4A Protease Inhibitors (PIs)** | Sofosbuvir (Sovaldi®)<br>Simeprevir (Olysio®)<br>Ledipasvir/ Sofosbuvir (Harvoni®)<br>Ombitasvir/ Paritaprevir/ Ritonavir/ Dasabuvir (Viekira Pak®)<br>Glecaprevir/ pibrentasivir (Mavyret™)<br>Sofosbuvir/ velpatasvir/ voxilaprevir (Vosevi®) | Discuss with prescribing provider.<br><br>If DAA therapy needs to be withheld, all components of the regimen should be stopped. | Discuss with prescribing provider.<br><br>If DAA therapy was withheld, resume all drugs together in full doses when the patient's GI tract is functioning properly | Prevention of drug resistance is paramount and irregular dosing should be avoided<br><br>Elective surgeries should not be performed on patients with active HCV medications, indicating active HCV<br><br>There is potential for fatal drug interactions between steroids and other CYP3A4-metabolized drugs; consult pharmacist if concomitant use |
| **Pegylated Interferon Alfa** | Pegasys® | Discuss with prescribing provider. | Discuss with prescribing provider. | Elective surgeries should not be performed on patients with active HCV medications indicating active HCV |
| **Nucleoside Analogs** | Ribavirin | Discuss with prescribing provider. | Discuss with prescribing provider. | Elective surgeries should not be performed on patients with active HCV medications indicating active HCV |
| **HIV MEDICATIONS** | | | | |
| **Antiretrovirals** | Abacavir<br>Bictegravir<br>Emtricitabine<br>Didanosine<br>Dolutegravir<br>Doravirine | Continue through perioperative period with as little interruption as possible.<br><br>For patients who are not | Resume all drugs together, in full doses, when the patient's GI tract is functioning properly | Prevention of drug-resistance is paramount and irregular dosing should be avoided. It is crucial to continue ART, particularly in patients who are co-infected and being actively treated with ART for hepatitis B virus (HBV). |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | Lamivudine<br>Stavudine<br>Tenofovir<br>Zidovudine<br>Fostemsavir (Rukobia®) | able to receive medications orally, a temporary period of holding ART will be necessary. If ART needs to be withheld, all components of the regimen should be stopped. | | CYP3A4 inhibitors/inducers may affect the metabolism of both ART and commonly used anesthetic drugs. This can lead to increased or decreased drug concentrations allowing for potential ART drug resistance.<br><br>Prolonged midazolam effects have been observed with some antiretroviral medications.<br><br>Protease inhibitors (E.g., atazanavir, darunavir, indinavir, ritonavir) decrease midazolam metabolism, leading to prolonged sedation and respiratory depression |
| **HORMONES** | | | | |
| **Oral Contraceptives (OCs)** | Estrogen<br>Progestin | **Final decision should be based upon the clinical judgment of the anesthesiologist, consulting surgeon, or prescribing physician.**<br><br><u>Low to moderate risk of VTE:</u> May continue up to and including the day of surgery for procedures with low to moderate risk of venous thromboembolism.<br><br><u>High risk of VTE:</u> Discontinue 4 to 6 weeks before surgery for procedures with high risk of venous thromboembolism. | If decision is *not* to discontinue OCs, then continue perioperatively without interruption; however, patient must bring own OCs (hospital will not supply OCs)<br><br>If OCs were discontinued preoperatively, resume when the period of elevated risk or postoperative immobility has passed and patient experiences first menstruation cycle. Some OC manufacturer package inserts recommend restarting 2 weeks after major surgery. | The risk of thrombosis increases within four months of initiation and decreases to previous levels within three months of stopping treatment. Therefore, it may be wise to stop OCs at least 4-6 weeks before surgery – especially for high-risk surgeries (such as major orthopedic surgeries).<br><br>**Instruct on alternate forms of contraception and obtain serum pregnancy test immediately before surgery if OC is held.**<br><br>The medical risks of unanticipated pregnancy may outweigh the increased protection of VTE. Estrogen is the major hormonal risk for the increased risk of VTE, but progestin may also play a role.<br><br>Oral contraceptives with greater estrogen |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | Instruct on alternate forms of contraception and obtain serum pregnancy test immediately before surgery if OC is held.<br><br>Consider DVT prophylaxis for major/high-risk surgery<br><br>If the plan is to continue OC therapy during hospital stay, then patient must bring their own, since hospital will not provide OCs | | content (≥35 mcg) have a higher risk of thromboembolism compared with those with lower estrogen content (≤30 mcg). |
| **Hormone Replacement Therapy (HRT)** | Alora®<br>Angeliq®<br>Climara®<br>Climara Pro®<br>Combipatch®<br>Delestrogen®<br>Duavee®<br>Estraderm®<br>Estrasorb®<br>Femring®<br>Osphena®<br>Prefest®<br>Prempro®<br>Premarin®<br>Vivelle® | **Final decision should be based upon the clinical judgment of the anesthesiologist, consulting surgeon, or prescribing physician.**<br>Continue up to and including the day of surgery for procedures with low to moderate risk of venous thromboembolism.<br><br>When possible, discontinue 4 to 6 weeks before surgery for procedures with high risk for thromboembolism.<br><br>Consider DVT prophylaxis for major/high-risk surgery | Resume when tolerating oral medications and the period of elevated risk or postoperative immobility has passed. | Major concern related to the perioperative period is for increasing the risk of venous thromboembolism (VTE).<br><br>It is most prudent to discontinue HRT since the risks of stopping therapy are very small, however, comfort issues can exist if HRT is discontinued preoperatively.<br><br>May consider discontinuing therapy *at least* 4 weeks or more before any major surgery if patient is at high-risk for VTE.<br><br>The Heart and Estrogen/progestin Replacement Study (HERS) convincingly demonstrated that hormone replacement therapy increases risk of VTE.<br><br>Risks increase with lower-extremity fractures, inpatient surgery and non-surgical hospitalizations (increased risk for up to 90 |

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| | | | | days). |
| **Alpha-Melanocyte Stimulating Hormone Analog** | Afamelanotide (Scenesse) | Do not administer on the same day of surgery | Patients may receive injection after recovery from procedure | Adamelanotide is administered as an implant every 2 months. Apparent half-life is 15 hours and may undergo hydrolysis, however its metabolic profile has not been fully characterized. |
| **Growth hormone** | Somapacitan-beco (Sogroya®) | Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider. | Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider. | Somapacitan-beco is contraindicated in acute critical illness after open-heart surgery, abdominal surgery or multiple accidental trauma, or those with acute respiratory failure because of the risk of increased mortality with use of pharmacologic dose of somapacitan-beco. |
| **Melanocortin receptor antagonist** | Setmelanotide (Imcivree®) | Can continue preoperatively | Resume postoperatively when appropriate | If a dose is missed, resume the once daily regimen as prescribed with the next scheduled dose. |
| **SMALL MOLECULES** | | | | |
| **Hydroxyacid oxidase 1 (HAO1)-directed small interfering ribonucleic acid (siRNA)** | Lumasiran (Oxlumo®) | Can continue preoperatively | Resume postoperatively when appropriate | If a dose is delayed or missed, administer as soon as possible. Resume prescribed monthly or quarterly dosing from the most recently administered dose. |
| **HYPNOTICS & SLEEP AIDS** | | | | |
| **Benzodiazepines (Short Acting)** | Temazepam<br>Triazolam | If taken more than 8 hours prior to anesthesia or used chronically, patient may have a dose the night before surgery<br><br>If elderly (greater than 65 years old) consult physician or anesthesiologist | Resume when patient is hemodynamically stable postoperatively | Abrupt withdrawal of chronic benzodiazepines may lead to consequences such as agitation, hypertension, delirium, and seizures; must evaluate risk vs. benefit in individual patients.<br><br>Since hypnotics are sometimes dosed prior to surgery, anesthesiologist should be informed if patient has taken hypnotic the night before |
| **Benzodiazepines (Long Acting)** | Estazolam<br>Flurazepam<br>Quazepam | | | |
| **Non-Benzodiazepine Hypnotics** | Eszopiclone<br>Zolpidem<br>Zopiclone<br>Zaleplon | | | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| **Melatonin and Melatonin Receptor Agonists** | Melatonin<br>Bremelanotide (Vyleesi ®)<br>Ramelteon (Rozerem®)<br>Tasimelteon (Hetlioz®) | IV alternatives for benzodiazepines may be available if patient is NPO | | |
| **Orexin Receptor Antagonist** | Suvorexant (Belsomra®) | Not enough data to support use prior to surgery. Recommend holding bedtime dose the night prior to operation | | Medication has a half-life of up to 12 hours and residual levels of drug can remain in the blood well after waking |
| **LONG-CHAIN FATTY ACID OXIDATION DISORDER MEDICATION** | | | | |
| **Anaplerotic agent; nutritional supplement** | Triheptanoin (Dojolvi®) | Not enough data to support use prior to surgery. Recommend consulting prescribing doctor to devise a perioperative plan. | Not enough data to support use prior to surgery. Recommend consulting prescribing doctor to devise a perioperative plan | Pancreatic insufficiency: Avoid use in patients with pancreatic insufficiency; reduced absorption leading to insufficient supplementation of medium-chain fatty acids may occur.<br><br>Do not use DOJOLVI in feeding tubes made of polyvinyl chloride (PVC). Monitor the feeding tube to make sure it is working properly. |
| **MULTIPLE SCLEROSIS MEDICATIONS** | | | | |
| **Disease Modifying Agents** | Aubagio®<br>Avonex®<br>Betaseron®<br>Copaxone®<br>Extavia®<br>Fingolimod (Gilenya®)<br>Glatopa®<br>Interferon (Rebif®)<br>Lemtrada® | Consult prescribing doctor to devise a perioperative plan. | Consult prescribing doctor to devise a postoperative plan. | Cardiotoxicity and hepatotoxicity are possible side effects with Gilenya®, Novantrone® (mitoxantrone), and Zeposia®. Preoperative EKG is recommended.<br><br>Novantrone® (mitoxantrone), Rebif®, Tysabri®, and Zinbryta®: monitor closely surrounding surgery. Preoperative clinical examination is recommended.<br><br>Lemtrada® can cause severe, life-threatening |

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| | Mitoxantrone® (Novantrone®)<br>Ocrevus®<br>Ozanimod (Zeposia®)<br>Plegridy®<br>Siponimod (Mayzent®)<br>Tecfidera®<br>Tysabri®<br>Zinbryta® | | | autoimmune conditions, such as immune thrombocytopenia and anti-glomerular basement membrane disease. Monitor CBC with differential and SCr closely.<br><br>Respiratory function decreases have been reported with Gilenya®, Mayzent®, and Zeposia®. Careful preoperative lung auscultation examination is recommended.<br><br>***All drugs decrease immune function and increase risk for infections***<br><br>***Agents are typically recommended to be stopped 1 – 2 weeks before a procedure and resumed 1 – 2 weeks after surgery to lower the risk of surgical site infections; consult with orthopedics and rheumatology regarding specific medications*** |
| **MUSCULAR DYSTROPHY** | | | | |
| **Antisense Oligonucleotide** | Golodirsen (Vyondys 53)<br><br>Viltolarsen (Viltepso®) | Administered as an injection once weekly.<br><br>Recommend to not administer on the same day of surgery due to risk of injection site reactions and ability to heal.<br><br>Recommend coordination of perioperative medication management plan with surgeon, anesthesiologist, and prescribing provider. | No specific contraindications related to resuming postoperatively. Recommend to avoid injection in surgical site. | Golodirsen has an accelerated approval in December 2019 for Duchenne muscular dystrophy. There have not been adequate studies to assess the use of golodirsen or viltolarsen preoperatively and postoperatively. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| **Survival of Motor Neuron 2 (SMN2)-Directed RNA Splicing Modifier** | Risdiplam (Evrysdi®) | Administer at same time as home dosing. Must administer ≤6 hours from home dosing; therefore, if surgery is required, schedule dosing around surgery if possible.<br><br>If patient is unable to swallow, dose may be administered through a nasogastric or gastrostomy tube. Flush tube with water following administration. | May resume after surgery. | There have not been adequate studies to assess its use preoperatively and postoperatively. |
| **MYASTHENIA GRAVIS (MG) MEDICATIONS** | | | | |
| **Acetylcholinesterase Inhibitors** | Pyridostigmine (Mestnion®)<br><br>Neostigmine (Prostigmin®) | Continue the morning of surgery to prevent muscle weakness that could impair weaning from mechanical ventilation and surgical recovery | Intravenous preparations of these drugs at 1/30 the oral dose are given every 4 to 6 hours when surgery begins and are continued until the patient resumes oral intake | Note: response to neuromuscular blocking agents (NMBAs) may be variable in such patients |
| **Glucocorticoids** | Prednisone<br>Dexamethasone<br>Prednisolone | Continue regimen if: any dose <3 weeks, morning prednisone <5 mg (or equivalent) for any duration, or <10 mg prednisone (or equivalent) every other day are not at risk for HPA suppression<br><br>Stress-dose glucocorticoids should be administered prior to induction for patients who have been | | Patients whose treatment for MG includes glucocorticoids may be at risk for hypothalamic pituitary axis suppression (HPA) and adrenal insufficiency in the perioperative period, and may require administration of stress-dose glucocorticoids, depending on the surgical procedure |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | taking prednisone 20 mg or greater (or equivalent) for >3 weeks | | |
| **Immunotherapy** | Azathioprine<br>Cyclophos-phamide<br>Cyclosporine<br>Methotrexate<br>Mycophenolate<br>Rituximab<br>Tacrolimus<br>Voclosporin (Lupkynis®) | No published data<br><br>Consult patient's neurologist<br><br>IV cyclosporine and azathioprine are available<br><br>Perioperative therapy interruptions are not likely to have significant symptomatic effect for this indication | Consult patient's neurologist | Voclosporin is newly approved as of January 2021; currently no data to recommend perioperative management. |
| **OSTEOPOROSIS AGENTS** | | | | |
| **Selective Estrogen Receptor Modulators** | Tamoxifen<br><br>Raloxifene (Evista®) | Stop at least 4 weeks before surgery, UNLESS these drugs are being used to treat breast cancer, if so – contact oncologist.<br>May be continued for low-risk surgeries. | Resume when period of postoperative immobilization has passed (non-oncologic surgeries) | Have either estrogen receptor agonist or antagonist effects, depending on the tissue in which they are acting<br><br>Both quantitatively increase the risk of VTE, similar to estrogen |
| **Bisphosphonates** | Alendronate (Fosamax®)<br><br>Ibandronate (Boniva®) | Discontinue at least 7 days before surgery<br><br>Discontinue agents for 3 months before elective | Recommendation to hold this medication postoperatively | Given the difficulty for hospitalized patients to comply with the requirement to remain upright for 30 min and take with a full glass of water, it is more practical to withhold this medication |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | Risedronate (Actonel®) | dental surgery, if bisphosphonate treatment exceeds 3 years or if glucocorticoids are used | | |
| **Calcitonin** | Miacalcin® (nasal spray) | May be continued before surgery | No specific contraindications or interactions to using this drug in the perioperative period | |
| **Monoclonal Antibody** | Romosozumab (Evenity®) Denosumab (Prolia®) | Osteoporosis agents are generally recommended to be discontinued pre-operatively due to the increased risk for perioperative adverse outcomes. | | Administered subcutaneously once monthly for 12 months; anabolic effects wane after 12 months of use. |
| **PHARMACOLOGIC CHAPERONE** | | | | |
| **Fabry's Disease** | Migalastat (Galafold®) | Discuss with prescribing provider | Discuss with prescribing provider | |
| **PSORIASIS MEDICATIONS** | | | | |
| **DMARDs, PDE-4 Inhibitors** | Otezla® (apremilast) | May be continued before surgery | May restart when patient is tolerating oral medications | |
| **Topical Corticosteroid** | Calcipotriene and betamethasone dipropionate (Enstilar®) | May be continued before surgery | No specific contraindications or interactions to using this drug in the perioperative period. Avoid surgery site. | |
| **IgG monoclonal antibody** | Brodalumab (Siliq®) Guselkumab (Tremfaya®) Risankizumab (Skyrizi®) Secukinumab (Cosentyx®) | Biologic agents are commonly recommended to be STOPPED prior to surgery and recommended that surgery is scheduled at the end of the dosing cycle. | Discuss with prescribing provider. | Most are given weekly to monthly and can likely be held and given post-operatively when the patient is stable.<br><br>Risankizumab may increase risk of infections (22% of patients experienced infection in clinical trials). |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Tildrakizumab (Ilumya®)<br>Ustekinumab (Stelara®) | | | RESUME medications ≥4 days after surgery as long as the patient is not experiencing wound healing problems, surgical site infection(s), or systemic infection. |
| **Please see Rheumatoid Arthritis section for other medications used for psoriasis** | | | | |
| **PSYCHIATRIC MEDICATIONS** | | | | |
| **$GABA_A$ Receptor Positive Modulator** | Brexanolone (Zulresso®) | No compelling reason to avoid brexanolone within a certain timeframe of surgery.<br><br>Postpone surgery until continuous infusion is complete.<br><br>Can interrupt infusion if needed and resume later. Lack of data on how long "interruption" can be. | May give brexanolone after surgery. | Brexanolone is given as a continuous IV infusion over 60 hours for postpartum depression.<br><br>REMS program associated with use.<br><br>Major side effects:<br>Excessive sedation and hypoxia. Monitor patients closely. |
| **Anorexiants** | Bupropion/ naltrexone (Contrave®) | Hold Contrave for at least 24 hours prior to surgery (due to naltrexone's 5-hour half-life) but ideally for up to 48 hours prior to surgery to allow for complete cessation of opioid antagonism | Resume Contrave 7 days after cessation of opioid therapy | Continue the bupropion component of Contrave during the perioperative period.<br><br>Naltrexone component is an opioid antagonist and there are case reports of patients on Contrave having inadequate pain control post-operatively. If Contrave is not held >24 hours prior to surgery, monitor patient's response to opioids and be prepared to decrease opioid doses once naltrexone is eliminated from body/opioid antagonism is overcome. |
| **Tricyclic Antidepressants (TCAs)** | Amitriptyline<br>Nortriptyline<br>Imipramine<br>Desipramine | May be continued preoperatively with caution<br>Continue therapy up to and including day of surgery for | May restart when patient is tolerating oral medications | **If hypotension is encountered, and a vasopressor is needed, the response to therapy may be difficult to predict** |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | patients on high doses. Patients on low doses and in whom perioperative arrhythmia is a concern should discontinue for 7 days prior to surgery. | | Most authors recommend cautious continuation of these agents through the perioperative period, since serious perioperative problems attributed to TCAs are rare.<br><br>Increased risk of serotonin syndrome in patients who receive methylene blue intraoperatively. Combination should be avoided unless benefit outweighs risk.<br><br>Continuation may increase the potential for arrhythmias. Abrupt withdrawal can lead to insomnia, nausea, headache, increased salivation, and increased sweating. |
| **SSRIs (including agents with partial SSRI activity), SNRIs** | Fluoxetine (Prozac®)<br>Escitalopram<br>Sertraline<br>Paroxetine (Paxil®)<br>Venlafaxine<br>Duloxetine<br>Vortioxetine (Trintellix®) | No compelling indications to withhold SSRIs perioperatively<br><br>Discontinue therapy 3 weeks prior to surgery in patients undergoing high bleed risk procedures (such as certain CNS procedures) | Restart once patient can take oral meds – mainly agents that may result in a withdrawal syndrome after discontinuation (i.e., paroxetine and venlafaxine)<br><br>Recommend alternative therapy if patient requires antiplatelet agents as secondary prevention | There have been reports of serotonin syndrome after concurrent use with other serotonergic agents such as tramadol (Ultram®); may also increase INR if patients are on warfarin<br><br>Increased risk of serotonin syndrome in patients who receive methylene blue intraoperatively. Combination should be avoided unless benefit outweighs risk. |
| **Monoamine Oxidase Inhibitor (MAOIs)** | Selegiline (Eldepryl®)<br><br>Pargyline<br><br>Phenelzine | Consult anesthesiologist<br><br>FLAG CHARTS to alert that patient is on an MAOI and place stickers on chart *cautioning against the use of meperidine and indirect sympathomimetics (i.e. ephedrine)*<br><br>Make every effort to continue perioperatively since patients on MAOIs tend to have severe depression refractory to other agents | | MAO inhibition becomes non-selective in doses greater than 10 mg/day<br><br>AVOID meperidine and indirect sympathomimetics (i.e. ephedrine) may cause neuroleptic malignant syndrome and severe hypertensive crisis**.** (Doak GH)<br><br>Patients should not be forced to discontinue |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | In patients with severe, life-threatening depression, in whom the risk of suicide with discontinuation of MAOIs is significant, consideration should be given to continuing MAOI therapy perioperatively combined with an appropriate anesthetic technique | | these agents<br><br>If discontinuation is warranted, taper off slowly over 2 weeks; but still follow recommended precautions above since discontinuation does not guarantee complete elimination<br><br>Increased risk of serotonin syndrome in patients who receive methylene blue intraoperatively. Combination should be avoided unless benefit outweighs risk. |
| **Antipsychotics** | Olanzapine (Zyprexa®)<br>Ziprasidone (Geodon®)<br>Risperidone (Risperdal®) | May continue perioperatively if QTc remains stable.<br><br>May need to consider holding dose or utilizing agents with shorter half-life if medications that can prolong QTc are used during or after surgery. | Make sure to restart medication once patient is able to take oral medications<br><br>Parenteral formulations are available for haloperidol, chlorpromazine, aripiprazole, olanzapine, and ziprasidone if therapy is needed but patient is NPO. | Alpha-adrenergic blockade with risperidone can be significant<br><br>There have been reports of IV use of antipsychotics increasing risk of sedation, hypotension, or QTc prolongation.<br><br>Atypical antipsychotics may increase risk of tachycardia<br><br>Avoid ketamine use as this may decrease the seizure threshold |
| **Mood Stabilizer** | Lithium (Lithobid®)<br><br>Valproate (Depakote®**)** | May be continued preoperatively. If patient undergoing major surgery, consider discontinuation 2-3 days before If medically indicated. If serum levels are not in toxic range, renal function is normal and fluid/electrolyte levels are stable, lithium may be continued before minor surgery. | Serum drug levels should be monitored before and after surgery and any time that renal clearance may be affected | Lithium may potentiate the effect of depolarizing and competitive neuromuscular blocking agents<br><br>Assess risk vs benefit of holding medication in patients with a history of psychosis. If patient stable, may disrupt mental state<br><br>Lithium may require increased monitoring of fluid, electrolyte, and thyroid hormone levels |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| **Other Commonly Used Antidepressants** | Bupropion (Wellbutrin®)<br><br>Venlafaxine (Effexor®) | No compelling indications to withhold preoperatively | Restart once patient can take oral medications | These agents do not have any known interactions with anesthetic agents<br><br>Venlafaxine is associated with withdrawal syndromes and should be restarted once patient is able to tolerate |
| **Stimulants** | Phentermine (Adipex-P®) | Hold medication 7 days prior to surgery | Restart when patient can take oral medications and is clinically stable | Phentermine may be associated with hypotension perioperatively due to catecholamine depletion.<br><br>Hypertension was observed in patients using phentermine during the induction phase intraoperatively. Monitor blood pressure and body temperature for any autonomic impairment |
| **PULMONARY MEDICATIONS** | | | | |
| **PDE Inhibitor - Nonselective** | Theophylline TheoDur® | Discontinue evening before surgery. Use nebulized or inhaled beta agonists or anticholinergics | Resume with PO intake. | There is no data indicating whether continuation of theophylline in the perioperative period decreases pulmonary complications. Theophylline has the potential to cause arrhythmias and neurotoxicity at a level beyond the therapeutic range, and theophylline metabolism is affected by many common perioperative medications. No known adverse effects but very narrow range between therapeutic and toxic level. |
| **Inhaled Medications** | Albuterol Duoneb® QVAR® Pulmicort® Symbicort® | Continue until surgery<br><br>PLEASE have patient bring their inhalers (MDIs) to the holding area. | Continue through perioperative period<br><br>May substitute nebulized treatments (i.e. albuterol and | PLEASE have patient bring their inhalers (MDIs) to the holding area<br><br>**Some patients may require an increase in their steroid dose for 1-2 weeks preoperatively |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Breo Ellipta®<br>Anoro Ellipta®<br>Incruse Ellipta®<br>Arnuity Ellipta®<br>Flovent®<br>Xopenex®<br>Asmanex®<br>Dulera®<br>Serevent®<br>Advair®<br>Spiriva®<br>Alvesco®<br>Striverdi Respimat®<br>Stiolto Respimat®<br>Utibron Neohaler®<br>Trelegy Ellipta®<br>Yupelri® | | ipratropium) until patient can resume inhalers | |
| **Cystic Fibrosis Transmembrane Conductance Regulator Corrector** | Symdeko®<br><br>Trikafta® | Continue until time of surgery<br><br>Consult with infectious disease specialists | Resume postoperatively | If a dose is missed ≤6 hours of the usual time it is taken, take the dose as soon as possible; if >6 hours has passed since the missed dose, skip the missed dose and resume the normal dosing schedule. |
| **Oral Medications** | Zafirlukast (Accolate®)<br>Montelukast (Singulair®)<br>Zileuton (Zyflo®)<br>Pirfenidone | Consider continuing through the morning of surgery | May be started after surgery following the patient's normal schedule for taking these drugs | Little is known about the implications of stopping treatment and there are no known drug interactions between these agents and anesthetics |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | (Esbriet®)<br>Nintedanib<br>(Ofev®)<br>Roflumilast<br>(Daliresp®) | | | |
| **PULMONARY HYPERTENSION & ERECTILE DYSFUNCTION MEDICATIONS** | | | | |
| **PDE-5 Inhibitors** | Sildenafil<br>(Viagra®)<br>(Revatio®)<br>Tadalafil<br>(Cialis®,<br>Adcirca®)<br>Vardenafil<br>(Levitra®,<br>Staxyn®) | Erectile dysfunction: discontinue at least 7 days before surgery<br><br>Pulmonary Hypertension: continue during the perioperative period as discontinuation may be fatal.<br><br>Benign prostatic hyperplasia (BPH): Coordinate use with anesthesiologist, surgeon, and prescribing provider preoperatively. | | PDE-5 Inhibitors increase concentration and half-life of cGMP, which leads to relaxation of pulmonary arterial smooth muscle, and subsequently decrease pulmonary pressure<br><br>PDE-5 Inhibitors are vasodilators, when combined with other vasodilators can result in life-threatening hypotension<br><br>Patients with PAH are at high risk of complications and death when undergoing anesthesia, mechanical ventilation, and major surgery. There is not a clear standard but in general PAH medications should be continued without interruption. |
| **Endothelin Receptor Antagonist** | Bosentan<br>(Tracleer®)<br>Ambrisentan<br>(Letairis®)<br>Macitentan<br>(Opsumit®) | Should be continued during perioperative period | Should be continued during the postoperative period | Patients with PAH are at high risk of complications and death when undergoing anesthesia, mechanical ventilation, and major surgery. There is not a clear standard but in general PAH medications should be continued without interruption. |
| **Soluble Guanylate Cyclase Stimulator** | Riociguat<br>(Adempas®) | Discuss alternative treatment options to | Discuss with prescribing provider | Phase 4 trials showed increase rates of non-surgical bleeds with possibility of fatal outcome. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | manage pulmonary hypertension preoperatively. | | Risk versus benefit and alternative therapy preoperatively should be considered. |
| **Prostacyclin receptor agonist (selective)** | Selexipag (Uptravi®) | Continue during perioperative period | Continue during the postoperative period | Current adverse events do not show increased bleeding or hypotension with use. Does not appear to have drug interactions with typical anesthetic agents. |
| **RADIOACTIVE DIAGNOSTIC AGENT** | | | | |
| **Radioactive diagnostic agent** | Fluoroestradiol F-18 (Cerianna®)<br><br>Tauvid® (Flortaucipir F-18)<br>Detectnet® (copper Cu 64 dotatate) | Discuss with prescribing provider. | Discuss with prescribing provider. | Of note, at 20 minutes after injection, approximately 20% of circulating radioactivity in the plasma is in the form of non-metabolized fluoroestradiol F-18. At 2 hours after injection, circulating fluoroestradiol F-18 levels are less than 5% of peak concentration, so unlikely that it will interfere with surgery.<br><br>Flortaucipir F-18 and Detectnet® are not expected to impact surgery. |
| **REVERSAL/ANTIDOTES** | | | | |
| **Potassium Antidote** | Lokelma® Patiromer (Veltassa®) Sodium polystyrene sulfonate (Kayexalate®) | May continue through day before surgery if clinically appropriate | Resume on outpatient basis as clinically appropriate | Oral medications should not be administered 2 hours before or after Lokelma<br><br>Oral medications should not be administered 6 hours before or 6 hours after Veltassa®<br><br>Avoid use in patients with abnormal post-operative bowel motility disorders. |
| **Alpha$_2$-Adrenergic Agonist** | Lofexidine (Lucemyra®) | Discuss with prescribing provider | Discuss with prescribing provider. | *Discontinuation of therapy:* Decrease dose gradually over 2 to 4 days. Abrupt |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | | | | discontinuation may cause marked rise in blood pressure, anxiety, chills, and diarrhea.<br><br>Patients who have been treated with lofexidine may respond to lower opioid doses than previously used. |
| **Monoclonal antibody** | Lanadelumab-flyo (Takhzyro®) | Discuss with prescribing provider. | Discuss with prescribing provider. | It is critical to develop definitive perioperative plans for angioedema prophylaxis, intraoperative management, and rescue if indicated for patients with hereditary angioedema (HAE) or acquired angioedema (AAE).<br><br>Takhzyro is dosed every 2 weeks to every 4 weeks. Other agents can be dosed as frequent as every other day or twice weekly and have short-term/pre-procedural prophylaxis dosing. |
| **RHEUMATOID ARTHRITIS MEDICATIONS** | | | | |
| **Antimetabolite** | Methotrexate (MTX) | Recommended to continue perioperatively in patients with normal renal function and held for 2 weeks preoperatively in patients with renal impairment, infection, or bone marrow suppression<br><br>**Contact patient's rheumatologist | Physician's discretion whether to continue or not– check serum creatinine<br><br>Some physicians hold MTX for 2 weeks postoperatively to ensure appropriate wound healing<br><br>Some physicians restart MTX ASAP after surgery to avoid a rebound flare in arthritis | Concerns exist regarding the effect of MTX on wound healing. Recent data suggests that MTX did not cause significant problems with wound healing |
| **Antirheumatic (dihydroorotate** | Leflunomide (Arava®) | Some physicians recommend stopping 2-3 | Some physicians recommend holding leflunomide for 2 | Use caution in patients with renal failure or sepsis |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| **dehydrogenase inhibitor)** | | weeks before surgery given the long half-life, however lack of known risk increase suggests it is reasonable to continue the drug up until surgery<br><br>Contact patient's rheumatologist | weeks after surgery | Studies have shown leflunomide to be associated with an increased risk of post-operative wound complications |
| **Disease Modifying Agents** | Upadacitinib Rinvoq® | Consult prescribing doctor to devise a perioperative plan | Consult prescribing doctor to devise a postoperative plan | The half-life of this medication is 8-14 hours.<br><br>Upadacitinib can decrease immune function thereby increase risk for infections and increase risk of thromboembolism. |
| **TNF-alpha inhibitors** | Etanercept (Enbrel®) Infliximab (Remicade®) Adalimumab (Humira®) | Recommend holding at least 1 week before surgery<br><br>Contact patient's rheumatologist | Recommend holding 1 week after surgery<br><br>Consider resuming once the wound is fully healed.<br><br>Contact patient's rheumatologist | |
| **Antirheumatic** | Sulfasalazine, azathioprine | Some physicians recommend continuing during the perioperative period and holding it the day of surgery.<br><br>Contact patient's rheumatologist | Resume after surgery | |
| | Hydroxy-chloroquine | Continue without interruption | May continue when able to tolerate oral medications | |
| | Colchicine, gold, cyclo- | Discontinue the night before surgery | | |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | phosphamide | | | |
| **Interleukin-6 Antagonist** | Satralizumab-mwge (Enspryng®) Tocilizumab (Actemra®) | Recommend coordinating interleukin-6 blocker perioperative medication management plan with surgeon and prescribing provider | Recommend coordinating interleukin-6 blocker perioperative medication management plan with surgeon and prescribing provider | IL-6 antagonists may affect postoperative wound healing due to modulation of the immune system. Consult with specialist prior to use. |
| **STIMULANTS or ANTI-NARCOLEPTICS** | | | | |
| **Central Nervous System Stimulant** | Pitolisant (Wakix®) | It has been reported that central nervous system stimulants can be used safely during the preoperative period. | | Pitolisant is primarily used to increase wakefulness in patients with narcolepsy.<br><br>Relevant adverse effects include prolonged QT interval and tachycardia. |
| **Dopamine and Norepinephrine Reuptake Inhibitor** | Solriamfetol (Sunosi®) | No compelling reason not to take up to the day of surgery. | No compelling reason not to resume the day after surgery if desired.<br>Risk/benefit discussion should be had with patient; patient may be able to withhold drug while inpatient and can resume once recovered from surgery. | May cause dose-dependent increases in BP and heart rate. |
| **ADRENAL MEDICATIONS** | | | | |
| **Cortisol Synthesis Inhibitor** | Osilodrostat (Isturisa®) | Consult endocrinologist or prescribing provider to devise a perioperative plan. | Consult endocrinologist or prescribing provider to devise a perioperative plan. | May cause adrenocortical insufficiency resulting in hypoglycemia, hyponatremia, hypotension, nausea, vomiting, weakness<br><br>QTc prolongation may occur due to electrolyte imbalances. |
| **THYROID MEDICATIONS** | | | | |
| **Thyroid Products** | Levothyroxine Synthroid® | Continue medications during the perioperative | Resume patient's usual schedule | Levothyroxine has a long half-life (6-7 days), missing several doses is unlikely to adversely |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
|---|---|---|---|---|
| | Levothroid®<br>Levoxyl®<br><br>Liothyronine (Cytomel®) | period | If NPO status is prolonged greater than 5 days, intravenous L-thyroxine may be administered | affect patient's thyroid status<br><br>For patients with predicted NPO post-operatively may give a full week of PO levothyroxine as one dose the day prior to surgery. |
| **Antithyroid Medications** | Propylthiouracil<br><br>Methimazole (Tapazole®) | Continue medications during the perioperative period | Resume patient's usual schedule<br><br>May be given via the nasogastric tube, if necessary, during the perioperative period | Maintaining control of hyperthyroidism is necessary for safe surgery and recovery<br><br>Methimazole has a longer duration of action and may be given once a day, making it preferable for patients undergoing long surgery<br><br>ß-blockers may be used to control the effects of hyperthyroidism<br><br>**In patients who exhibit thyroid storm, propranolol should only be administered with caution due to possibility of cardiovascular collapse** |
| **Insulin-like growth factor-1 receptor inhibitor** | Teprotumumab-trbw (Tepezza®) | Contact prescribing physician | Contact prescribing physician | This medication is dosed every 3 weeks and has a long half-life of 20 days<br><br>Infusion related reactions including hypertension, tachycardia, dyspnea, feeling hot, headache, and muscular pain have been reported with this medication. |
| **Parathyroid** | Recombinant human parathyroid hormone | Continue medications during perioperative period | Continue during postoperative period | The manufacturer of Natpara recommends avoiding abrupt interruption or discontinuation. |

| Drug Class | Examples | Preoperative Recommendations | Postoperative Recommendations | Considerations & Caveats |
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| | Natpara® | | | |

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