# Preoperative Administration of Medicines for Elective Surgery

## Contents



## Purpose

Surgery and anaesthesia present risks for all patients but particularly for those on medications for acute or chronic health conditions. Clearly documented medication advice allows both patients and medical staff to minimise risk of medication errors that can significantly impact a patient's care.

## Considerations

- Medications can directly influence the risks of surgery and anaesthesia. Equally the stress of surgery and anaesthesia results in physiological changes which may affect drug pharmacokinetics and consequently patients' pre-existing disease states.
- The unnecessary omission of regular drugs due to pre-operative fasting needs to be minimised. NBM means "nothing but medicines"
- Different routes of drug administration may need to be considered in view of patients' surgery and disease states.

## Scope

- Clinicians prescribing for patients presenting for ELECTIVE surgery.
- Nursing, midwifery and medical staff preparing adult patients for elective surgery.

- This document is NOT A PROTOCOL but a guideline and by preference individualised medication advice should be provided by the medical /surgical teams caring for patients.
- For acute surgical patients individualised medication advice should be provided by the surgical teams caring for that patient. Where there is doubt about a medication, specialist advice should be sought from the Duty Anaesthetist (pager 8120).
- The management of diabetic and anticoagulant / antiplatelet medication falls outside the scope of this document. Please refer to: Anticoagulation Peri-operative Management guideline (https://canterbury.communityhealthpathways.org/40619.htm).

## Management of elective surgical patients

- It is essential that a comprehensive medication history is performed, including details of adverse drug reactions (such as allergies) and herbal/complementary medicines.
- Instructions given to patients concerning the continuation or withholding of medicines prior to surgery should be clearly documented on the bottom of the anaesthetic assessment form (C117002B)
- Patients who attend outpatient preoperative assessment at Burwood and Christchurch Public Hospitals will be provided with written instructions also.
- Patients should be instructed to bring all their medications / medical devices (e.g. CPAP) with them when arriving for surgery. This allows for prompt administration of any medications /therapy that the patient has been instructed to withhold, but the medical team deems necessary

## Withhold table

Unless documented otherwise, nursing staff to withhold the following medicines the day of surgery (or you can refer to quick reference guide in Appendix A.)

**Refer to next page**

## Withhold table

(Unless documented otherwise, nursing staff to withhold the following medicines the day of surgery)

| **Cardiovascular medication** | **Medication** | | |
|---|---|---|---|
| ACE inhibitors<br>(alone or in combination with diuretics) | Captopril<br>Cilazapril | Enalapril<br>Lisinopril | Quinapril |
| Angiotensin II antagonists/blockers | Candesartan<br>Losartan | | |
| Anticoagulants<br>(These medicines should always be discussed with a doctor prior to surgery)<br>(refer to 'Antithrombotic Drugs and Surgery or Other Procedures') | Apixaban<br>Dabigatran<br>Rivaroxaban | Warfarin<br>LMWH – (Enoxaparin) | |
| Antiplatelet drugs<br>(These medicines should always be discussed with a doctor prior to surgery)<br>(refer to 'Antithrombotic Drugs and Surgery or Other Procedures') | Aspirin<br>Clopidogrel<br>Dipyridamole | Prasugrel<br>Ticagrelor<br>Ticlopidine | |
| PDE inhibitors | Sildenafil (Viagra) (omit if used for erectile dysfunction) See main text below. | | |
| **Gastro-intestinal medication** | **Medication** | | |
| Diet pills | Phentermine (Duromine) | | Orlistat (Xenical) |
| Digestive supplements | Pancreatin (Pancrex, Creon) | | Ursodeoxycholic acid |
| **CNS medication** | **Medication** | | |
| Stimulants | Methylphenidate | | |
| Reversible MAOI (MonoAmine Oxidase Inhibitor) | Moclobemide | | |
| **Rheumatoid & immune suppressant** | **Medication** | | |
| Biological DMARDS<br>(Disease Modifying AntiRheumatic Drugs) | Adalimumab<br>Anakinra<br>Etanercept | Infliximab<br>Rituximab<br>Tocilizumab | |
| **Analgesics and related drugs** | **Medication** | | |
| Non-steroidal anti-inflammatory drugs (NSAIDs) including Selective COX2 inhibitors ("Coxibs") | Diclofenac<br>Ibuprofen<br>Indomethacin<br>Ketoprofen | Mefenamic acid<br>Naproxen<br>Etoricoxib<br>Celecoxib<br>Meloxicam/ Piroxicam/ Tenoxicam | |
| Oral Naltrexone | Withhold oral naltrexone 72 hrs pre-op | | |
| **Diabetic Medication** | **Medication** | | |
| Oral hypoglycaemic agents<br>Insulin<br>Continuous Subcutaneous Insulin (CSI) pumps<br>These drug should always be discussed with a doctor prior to surgery<br>Refer to current Peri-procedural Management of Diabetes guideline | **Insulins and injectable medications**<br>NovoRapid, Humalog, Apidra, Actrapid, Humulin, Protaphane,<br>Glargine (Lantus), Levemir (Detemir)<br>Exenatide injection | **Oral diabetic medications**<br>Metformin<br>Sulfonylureas<br>Gliclazide<br>Glipizide<br>Glibenclamide<br>Pioglitazone | Vildagliptin<br>Sitagliptin<br>Saxagliptin<br>Acarbose<br>Canagliflozin<br>Dapagliflozin<br>Empagliflozin |
| **Non-prescription, Herbal & Complementary medicines** | **Medication** | | |
| **Should be withheld for 2 weeks pre-op as they may have unpredictable effects, such as clotting abnormalities and interactions with anesthetics.**<br><br>Non-prescription vitamins<br>Dietary and exercise supplements<br>Herbal and complementary medicines<br>Rongoā Māori<br>(https://bpac.org.nz/BPJ/2008/May/rongoa.aspx#plant)<br><br>Chinese traditional medicines<br>erectile dysfunction medicines<br><br>Please refer to:<br>https://naturalmedicines.therapeuticresearch.com/# | **Examples include, but are not limited to:**<br>Arnica<br>Ayurvedic medicines<br>Colloidal silver<br>Echinacea<br>Ephedra (Ma Huang)<br>Garlic capsules<br>Ginger<br>Gingko biloba<br>Ginseng<br>Glucosamine/chondroitin<br>Grape seed extract | Kava<br>Magnesium<br>Milk thistle extract<br>Omega-3 oil (fish/krill/linseed)<br>Resveratrol<br>Saw palmetto (dwarf palm)<br>St John's Wort<br>Valerian<br>Viagra - sildenafil | |

## Medicines and preoperative fasting

'It is preferable that oral medications are given more than 2 hours pre op with a glass of water. If medications are given less than 2 hours pre op, they should be given with up to 50ml of water.'

## Guidance on specific drugs and drug classes

These guidelines concerning the management of specific medicines listed below are offered in the hope that they cover the majority of cases found in practice. Nonetheless, it is still the responsibility of the clinician to determine the applicability of these guidelines for any given case. If a drug is not listed here seek specialist advice from list Anaesthetist / Duty Anaesthetist or the prescriber of that drug.

- The management of diabetic and anticoagulant / antiplatelet drugs falls outside the scope of this document. Please refer to the relevant guidelines (links in relevant section).
- Anticoagulant /antiplatelet drugs should always be discussed with a doctor pre-operatively
- In the case of specialist or unusual medications (for example; immune modulators, chemotherapy drugs etc), please initiate discussions with the anaesthetic team early to allow time for multi-speciality discussion to take place if necessary.

## Withhold or Continue table

| Cardiovascular medicines | | |
|---|---|---|
| **Drug/Class** | **Withhold or Continue** | **Comments** |
| **Alpha-blockers** (e.g. doxazosin, prazosin, tamsulosin, terazosin) | Continue | Unless having cataract surgery.<br>Risk intraoperative floppy iris syndrome. |
| **Anti-arrhythmics** (e.g. Amiodarone/ Flecainide) | Continue | Unless having an electrophysiological procedure where arrhythmia induction maybe required. Discuss with cardiology.<br>Patients taking anti-arrhythmics must have an ECG pre op to check rhythm and QTc. |
| **Angiotensin II antagonists/blockers -** (e.g. candesartan, losartan) | Withhold | Continuing may increase peri-op hypotension. Withhold but discuss with list anaesthetist on day of surgery |
| **ACE inhibitors** – ACEIs (e.g. captopril, cilazapril, celiproloenalapril, lisinopril, quinapril) | Withhold | Continuing may increase peri-op hypotension. Withhold but discuss with list anaesthetist on day of surgery<br>ACE-I and ARBs may both be prescribed for LV dysfunction but the protective effect should last for greater than 24 hours thus withholding on day of surgery is acceptable. |
| **Beta-blockers** (e.g. atenolol, bisoprolol, carvedilol, metoprolol, nadalol, pindolol, sotalol) | Continue | Withdrawal may increase risk of myocardial ischaemia if used for IHD<br>Seek specialist advice if patient bradycardic/ hypotensive or if IV beta-blocker use is required<br>Do not start prior to elective surgery. |
| **Calcium Channel Blockers** (e.g. amlodipine, diltiazem, felodipine, nifedipine, verapamil) | Continue | Seek specialist advice if patient bradycardic or hypotensive |
| **Centrally acting anti-hypertensives** (e.g. clonidine, methyldopa) | Continue | Seek specialist advice if patient bradycardic or hypotensive.<br>It is not recommended to start these medicines in the perioperative period.<br>Consider use of clonidine transdermal patches if oral/enteral route is unavailable (withdrawal HTN may occur). Discuss with the list anaesthetist before starting. |
| **Digoxin** (anti-arrhythmic and positive inotrope) | Continue | Monitor digoxin levels if there is a change in renal function or hyperkalaemia |

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| **Diuretics**(e.g. bendrofluazide, chlorthalidone, frusemide, hydrochlorothiazide, metolazone, spironolactone, bumetanide, eplerenone, amiloride, , acetazolamide) | Continue / withhold for some local (awake) procedures | Check renal function and electrolytes. Correct as required.<br>Some patients may prefer to withhold morning dose to avoid urinary urgency and will take after the procedure e.g. am session eye patients having procedures under local anesthetic (patients on high dose may have to take regardless for control of symptoms) |
| **Nitrates**<br>(e.g. glyceryl trinitrate, isosorbide mononitrate) | Continue | GTN transdermal patches can be used if the oral/enteral route is unavailable.<br>Discuss with list anesthetist before changing route of administration. |
| **Phosphodiesterase inhibitors** (e.g. sildenafil, tadalafil, vardenafil) | Continue / withhold | Continue if prescribed for pulmonary HTN<br>Withhold two weeks pre-op if prescribed for erectile dysfunction (possible link to Anterior Ischaemic Optic Neuropathy) |
| **Statins** (e.g**.** atorvastatin, simvastatin, pravastatin, rosuvastatin) | Continue | Hepatic or renal impairment may increase risk of myopathy |
| **Other Cholesterol lowering agents**<br>(e.g. ezetimibe, bezafibrate, nicotinic acid) | Continue | |

## Gastrointestinal Medicines

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| **H2-receptor antagonists**<br>(e.g. cimetidine, ranitidine) | Continue | Prevents stress related ulceration<br>May reduce risk of aspiration pneumonia |
| **Proton pump inhibitors**<br>(e.g. omeprazole, pantoprazole) | Continue | Prevents stress related ulceration<br>May reduce risk of aspiration pneumonia |
| Pro-kinetic agents<br>(e.g. domperidone, metoclopramide) | Continue | |

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| 5-HT3 antagonists (e.g. granisetron, ondansetron) | Continue | |
| Diet pills and dietary supplements | Withhold | Phentermine / Orlistat – stop two weeks pre-op<br>Orlistat – check coagulation screen as reduces vitamin ADEK absorption<br>Pancreatin e.g. Pancrex/Creon & Ursodeoxycholic acid – omit day of surgery (DOS) |
| **Medicines for Inflammatory Bowel Disease** (e.g. Mesalazine preparations (Rowasa/Pentasa/Asacol) and Sulfasalazine) | Continue | |

## CNS medication

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| **Acetylcholinesterase inhibitors**<br>Peripheral acting: used in myasthenia gravis (e.g. pyridostigmine) | Continue | Consider IV preparations if the oral/enteral route is unavailable post op.<br>Rivastigmine is available as a patch<br>May prolong response to suxamethonium |
| **Acetylcholinesterase inhibitors**<br>Centrally acting: used in Parkinson's (e.g. galantamine/ donepezil/rivastigmine) | Continue | Consider IV preparations if the oral/enteral route is unavailable post op.<br>Rivastigmine is available as a patch<br>May prolong response to suxamethonium<br>May antagonize non depolarizing muscle relaxants |
| **Anticonvulsants** (e.g. carbamazepine, clobazam, gabapentin, lamotrigine, levetiracetam, phenobarbital, phenytoin, primidone, sodium valproate, topiramate) | Continue | Consider using IV preparations when oral/enteral route in unavailable |
| **Antipsychotics and Lithium** (e.g. aripiprazole, chlorpromazine, clozapine, haloperidol, | Continue | Renal function, fluid status and serum drug levels should be closely monitored for patients taking lithium |

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| lithium carbonate, olanzapine, quetiapine, zuclopenthixol) | | |
| **Anxiolytics/Hypnotics** (e.g. diazepam, lorazepam, temazepam, clobazam, clonazepam, triazolam, zopiclone) | Continue | Patients who take significant amounts of benzodiazepines may require less medication for anaesthesia induction and maintenance<br>Abrupt cessation of benzodiazepines after chronic use can cause withdrawal syndrome in <24 hours and so should be continued in a modest dose peri-operatively<br>Chronic benzodiazepine use may lead to higher requirements for postoperative opiates |
| **Baclofen** | Continue | Sudden withdrawal may result in hallucinations, spasticity and rarely rhabdomyolysis |
| **Drugs used in Parkinson's disease** (e.g. entacapone, tolcapone, levodopa, Madopar®, selegiline, Sinemet®,) | Continue | LFTs should be monitored closely in patients taking entacapone or tolcapone<br>Avoid pethidine with selegiline<br>Avoid antidopaminergic anti-emetics and atropine in Parkinson's |
| **Anticholinergic drugs** (Oral e.g. benztropine, procyclidine, oxybutynin) (For Inhaled anticholinergics e.g. ipratropium/ tiotropium see respiratory drugs)s | Continue | Abrupt discontinuation may result in rebound parkinsonian symptoms<br>Anticholinergic drugs may increase the risk of post-operative delirium<br>Consider advice from Older Persons' Health |
| **CNS Stimulants** (e.g. Methylphenidate: Ritalin® or Rubifen®) | Withhold | Abrupt withdrawal is usually well tolerated<br>May precipitate tachycardia, hypertension and arrhythmias during surgery<br>Most patients should cope with missing 12-24 hours. Restart as soon as feasible. Patient's taking high doses merit discussion with psychiatry. |
| **Noradrenergic and specific serotonergic antidepressant** (e. g. Mirtazapine) | Continue | Continuation may alleviate postoperative insomnia, anxiety, nausea and vomiting<br>Abrupt withdrawal generally well tolerated |
| **Irreversible Monoamine Oxidase Inhibitors** (e.g. phenelzine, isocarboxazid, tranylcypromine) | Continue | At Risk of hypertensive crises<br>Options include:<br>**1.** Ensure MAOI-safe anaesthetic techniques are employed including avoidance of ketamine, indirect acting vasopressors and vasopressors in local anaesthetics. |

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| | | **2.** Irreversible MAOIs can be withheld 2 weeks prior to surgery to resume normal catecholamine metabolism. 3. Consider switching to a reversible MAOI (e.g. moclobemide)<br><br>Any benefits of withholding /switching need to be weighed against the worsening of depression with potential suicidality and self-harm. Always discuss with GP and consultant psychiatrist if you intend to alter these medications.<br><br>**3.** At Risk of serotonin syndrome<br>("type 1 reaction")<br>Avoid pethidine, tramadol and dextromethorphan.<br>Use fentanyl with caution<br>C. Other risks<br>CNS depression with opioids<br>("type 2 reaction")<br>Seizures with tramadol<br>Suxamethonium prolongation with phenelzine via inhibition plasma cholinesterase |
| **Reversible monoamine oxidase inhibitors**<br>(e.g. moclobemide) | Withhold | Withhold day of surgery<br>Avoid pethidine |
| **Selective Serotonin Reuptake Inhibitors (SSRIs)**<br>and<br>**Serotonin and Noradrenaline Reuptake Inhibitors (**SNRIs)<br><br>(e.g. fluoxetine, paroxetine, sertraline, venlafaxine) | Continue | Abrupt discontinuation of SSRIs/SNRIs risk development of withdrawal syndrome<br>Discontinuation should be considered if patient has a known problem with haemostasis or is bleeding. Consult haematologist and psychiatrist for advice.<br>Risk serotoninergic syndrome in combination with tramadol and pethidine. There are also multiple case reports of this occurring with fentanyl.<br>Risk SIADH in elderly |
| **Tricyclic antidepressants**<br>(e.g. amitriptyline, clomipramine, imipramine, nortriptyline) | Continue | Abrupt discontinuation may lead to transient dizziness, nausea, headache, sweating, insomnia and malaise |
| **Eye drops** | Continue | |

## Medicines used in rheumatoid/autoimmune diseases

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| Azathioprine | Continue | Seek specialist advice if sepsis occurs.<br>Maybe discontinued one week prior for non severe SLE to reduce infection risk – obtain specialist advice |
| Biological DMARD's (e.g. anakinra, etanercept, abatacept infliximab, adalimumab, rituximab, tocilizumab) | Withhold according to dosing schedule | Withhold during the perioperative period or schedule elective surgery around DMARD dosing eg. if dosing q4 weeks, schedule surgery for 5 weeks after last dose<br>Cease drug 2 weeks pre-op and do not restart till minimum 2 weeks post op (assuming wound healing) |
| Ciclosporin/Cyclosporin | Continue | Consult the prescribing team prior to surgery.<br>Maybe discontinued one week prior for non severe SLE to reduce infection risk – obtain specialist advice |
| Corticosteroids (e.g. fludrocortisone, hydrocortisone, prednisone) | Continue | Please refer to HealthPathways – Corticosteroid Management in Inpatients (see Perioperative section)<br>Continue at stable dose peri-operatively (consideration should be made to delay surgery if recent dose increase as this may represent inadequately controlled disease)<br>Every patient should have a clear plan documented for the day of surgery<br>Some patients will require a higher-than-normal dose to cover the stresses of surgery<br>Use intravenous corticosteroids if required<br>Do not withhold oral steroids because patient is fasting |
| Gold (e.g. sodium aurothiomalate, auranofin) | Continue | Seek specialist advice if sepsis occurs |
| Drugs used for gout (e.g. allopurinol, colchicine) | Continue | Abrupt withdrawal may precipitate acute gout attacks (as does surgery)<br>Risk renal toxicity with allopurinol /colchicine if renal impairment related to surgery |
| Hydroxychloroquine | Continue | Seek specialist advice if sepsis occurs |
| Leflunomide (Arava®) | Continue | Seek specialist advice if sepsis occurs |

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| Mesalazine/Sulfasalazine | Continue | May need to withhold postoperatively until normal renal and bowel function resumes |

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| Methotrexate | Continue | Seek specialist advice if sepsis occurs |
| Mycophenolate | Continue | Consult rheumatology team prior to surgery<br>Maybe discontinued one week prior for non-severe SLE to reduce infection risk – obtain specialist advice |
| Tacrolimus | Continue | Consult the prescribing team prior to surgery<br>Maybe discontinued one week prior for non-severe SLE to reduce infection risk – obtain specialist advice |

## Analgesics

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| **Paracetamol** | Continue | |
| **Non-selective Non-steroidal Anti-inflammatory Drugs** (e.g. diclofenac, ibuprofen, naproxen) | Withhold | Discontinue for 7 days prior to neurosurgery<br>Consider discontinuing 3 days before other types of surgery, especially if concerned with a deterioration of renal function / fracture non union / GI anastamosis<br>In patients with a chronic inflammatory disorder (e.g. rheumatoid arthritis), consider risk of worsening symptoms if NSAIDs are stopped. |
| **Selective COX II inhibitors** (e.g. celecoxib, etoricoxib) | Withhold | Negligible effect on platelet /GIT function<br>Consider discontinuing 3 days before surgery, especially if concerned with a deterioration of renal function / fracture non union<br>In patients with a chronic inflammatory disorder (e.g. rheumatoid arthritis), consider risk of worsening symptoms if NSAIDs are stopped.<br>Consider discontinuing for 7 days prior to neurosurgery |
| **Opioids** (e.g. codeine, methadone, morphine, oxycodone) | Continue | Abrupt discontinuation risks development of withdrawal syndrome. Consider oral to appropriate IV conversion if NBM. Use opioid conversion calculator (ref 17,18) and contact Acute Pain Management Service if you are unsure how to proceed. |

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| **Gabapentinoids** (e.g.gabapentin, pregabalin) | Continue | |
| **Naltrexone** | Oral Withhold 72 hours pre-op<br><br>IM withhold 1 month (switch to oral) | Used for alcohol and opiate dependence<br>Competitive antagonist at opioid receptors<br>Liaison with community alcohol and drug services and APS recommended |
| **Buprenorphine** | Continue | Sublingual ("Subutex" or "Suboxone" when combined with naloxone) or patch formulation.<br>Partial mu agonist with high receptor affinity and very long half-life (up to 70 hours).<br>In practice it tends to work in synergistic fashion with other opioids.<br>Because of long half -life it needs to be stopped early if sedation risk increasing and consider naloxone infusion.<br>Maximize non-opioid analgesics and consider regional techniques<br>Treat acute pain with IV opioids |
| **Tramadol** | Continue | Convert oral dose to intravenous if NBM for sustained period of time. |

## Medications used for Diabetes

Refer to the perioperative diabetic protocol (add in link here)

## Endocrine and Hormonal medications

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| Aromatase Inhibitors (e.g.anastrozole, exemestane, letrozole) | Continue | Continue peri-operatively alongside antithrombotic measures (e.g. TED stocking, prophylactic heparin/LMWH) where appropriate<br>Considered less thrombogenic than the SERMs |
| Combined Oral Contraceptive/Progestogen- | Continue/ withhold | Continue peri-operatively alongside antithrombotic measures (e.g. TED stocking, prophylactic heparin/LMWH) where appropriate |

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| only contraception ('Mini-pill')<br>(e.g. Premarin®) | | If patient at high risk of VTE (previous VTE or operation with high thrombotic risk) discuss possible cessation with haematology and patient but consider possibility of unexpected pregnancy.<br>Discuss alternative contraception |
| Hormone Replacement Therapy | Continue/ withhold | Continue peri-operatively alongside antithrombotic measures (e.g. TED stocking, prophylactic heparin/LMWH) where appropriate<br>If patient at high risk of VTE (previous VTE or operation with high thrombotic risk) discuss possible cessation with haematology and patient but consider return of menopausal symptoms. |
| Selective Estrogen Receptor Modulators (SERMs)<br>(e.g. clomifene, raloxifene, tamoxifen) | Continue/ withhold | Continue peri-operatively alongside antithrombotic measures (e.g. TED stocking, prophylactic heparin/LMWH) where appropriate<br>Discontinue 4-6 weeks prior to surgery in patients with prior VTE / high risk of VTE.<br>Consult oncologist before discontinuing if being used for cancer treatment |
| Finasteride | Continue | |
| Thyroid/Anti-thyroid drugs (e.g. thyroxine /carbimazole / propylthiouracil) | Continue | Consider checking thyroid function preoperatively<br>Ensure beta-blockers are continued if prescribed |

## Respiratory Medicines

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| Inhaled bronchodilators (e.g. eformoterol, ipratropium, salbutamol, salmeterol, terbutaline, tiotropium) | Continue | Reduces incidence of postoperative respiratory complications |
| Inhaled corticosteroids (e.g. beclomethasone, budesonide, fluticasone) | Continue | |
| Montelukast | Continue | |
| Theophylline | Continue | If concerned check theophylline levels pre-op |

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**Antibiotics**

| Drug/Class | Withhold or Continue | Comments |
|---|---|---|
| Antibiotics | Continue | Ensure Surgical/Anaesthetic team aware<br><br>Linezolid (Non-selective, reversible antibacterial used in MRSA treatment) must be omitted on the Day of Surgery. |
| Antivirals (e.g. Aciclovir) | Continue | |
| Anti-retrovirals | Continue | Beware protease inhibitors potentiate midazolam and have potential for many drug-drug interactions |
| Antifungals (e.g. fluconazole, ketoconazole, itraconazole | Continue | CYP2C9 and CYP3A4 inhibitors increase serum concentration of opioids, benzodiazepines and NSAIDs "Azoles" may prolong QT interval |

## References and Acknowledgement

This document has been kindly supplied and adapted for purpose from The Department of Anaesthesia and Peri-operative Medicine at Waitamata District Health Board.


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