Kingston Hospital NHS
NHS Foundation Trust

GUIDELINES FOR PRE-OPERATIVE FASTING, AND DRUG ADMINISTRATION

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Discipline: Surgery/ Anaesthetics
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Rationale: To provide guidance to nursing and medical staff on the National fasting times for elective surgical patients and evidence based instructions on medications that require to be stopped pre-operatively.

Aims and Objectives: To safely prepare the elective surgical patient for their procedure.

Method of Guideline Development: Review of recommendations published after the last guideline review

Roles & Responsibilities:
Pre-assessment clinicians are responsible for advising patients for elective surgery on the national fasting times and medication that need to be stopped pre-operatively.

Equality Impact Assessment: This Guideline will ensure uniformity of treatment for all patients. It forms part of Kingston Hospital Foundation Trust's commitment to create a positive culture of respect for all individuals including staff, patients, their families and carers as well as community partners. The intention is to identify, remove or minimise discriminatory practice in the areas of race, disability, gender, sexual orientation, age, pregnancy, civil partnerships and 'religion, belief, faith and spirituality' as well as to promote positive practice and value the diversity of all individuals and communities.

Consultation: In consultation with Surgical and Anaesthetic clinicians

Implementation: via email communication, to be uploaded on the trust intranet

Training Plan: Induction programme for junior doctors.

Outcome Measurements and Audit Criteria: adherence to guidelines/ incident reporting

Assessment of Competence: N/A

1. Introduction

- The aim of this guidance is to standardise the care of the 'Preoperative Patient' throughout the trust with regard to Preoperative Fasting and Drug Administration.

- These guidelines will recommend preoperative fasting times as stated in the 'current national guidelines based on substantial evidence for the best practice published by the RCN (2006). These are supported by the royal College of Anaesthetists; Association of Paediatric Anaesthetists of Great Britain and Ireland; Royal College of Midwives; Pre-operative Association and the British Association of Day Surgery.

- The recommendations apply to all patient groups (Adults, Older people, Infants, Children and Young people) undergoing operations under general anaesthesia. This guideline does not cover patients undergoing procedures under sedation.

2. Preoperative fasting in healthy adults ('Healthy' defined as ASA 1-II without gastrointestinal disease or disorders')

- Intake of water up to two hours before induction of anaesthesia for elective surgery is safe in healthy adults, and improves patient well-being.

- Elective procedures in main theatres commence at 0800, therefore:
  For patients on the morning list, water can be given up till 6am.
  Patients on the afternoon list may drink water up until 11.00.

- The volume of administered fluids does not appear to have an impact on patients' residual gastric volume and gastric PH, when compared to a standard fasting regimen. Therefore, patients may have unlimited amounts of water up to two hours before induction of anaesthesia.

2.1 Patients on Enhanced Recovery programme

- Patients on the Enhanced recovery programme eg. Major colorectal surgery and some urology cases will be asked to drink 2 cartons of a pre-operative energy drink 2 hours before their planned procedure.
- This is a clear fluid and can be consumed 2 hours before the procedure.
- Patients with diabetes should avoid the energy drink.
- If indicated diabetic patients should be commenced on a VRIII as per peri-operative diabetic guidelines

2.2 The intake of solid foods during a restricted fasting period

- A minimum preoperative fasting time of six hours is recommended for food (solids & milk) Patients for elective surgery in main theatres can have as follows;
- **Morning list**: no solid foods or milk from midnight; may have water till 6am.
- **Afternoon list**: may have light breakfast i.e. tea and toast at 7am, and then water till 11am.
- **All day list:** No solid foods or milk from midnight may have water till 6am.
- Once the order of the list has been determined and confirmed on the day of surgery, it will be the responsibility of the surgeon and anaesthetist to inform the ward nurses if they wish patients on the latter part of the list to have water till 11am.

2.3 Chewing gum and sweets during a restricted fasting period

- Chewing gum may be permitted on the day of surgery.
- Sweets are solid food.
- A minimum preoperative fasting time of six hours is recommended for sweets

2.4 Concurrent Medications

- Regular medication taken orally should be continued pre-operatively unless there is advice to the contrary. Refer to Appendix 1: 'medication that may need stopping prior to surgery'
- Instructions for Diabetic patients can be accessed in the blue book available on PIMS.
- Instructions for Anti-coagulated patients are available in the blue book on PIMS.
- Up to 30mls water may be given orally to help patients take their medication within the restricted fasting period.

2.5 Delayed Operations

If an elective operation is delayed, consider giving the patient a drink of water to prevent excessive thirst and dehydration or commencing intravenous fluids.

2.6 Preoperative fasting in higher- risk groups

- Higher- risk patients i.e. those with gastro-oesophageal reflux, diabetes and the obese, should follow the same preoperative fasting regime as healthy adults, unless contraindicated.
- Consideration should also be given to adults with special needs and/or learning disabilities. Liaise with the community learning disability team.
- Individual fasting times may be appropriate to improve their comfort and reduce their anxiety and stress.
- It is important that the elderly, those who have undergone bowel preparation, sick patients and breast-feeding mothers should not be left for long periods without hydration. They may require intravenous fluids prior to surgery.
- Adults undergoing emergency surgery should be treated as if they have a full stomach. If possible, the patient should follow normal fasting guidance to allow gastric emptying.

2.7 Postoperative resumption of oral intake in healthy adults

When ready to drink, the patients should be encouraged to do so, providing there are no medical, surgical or nursing contraindications.

3. Preoperative fasting in healthy children

- Intake of water and other clear fluid up to two hours before induction of anaesthesia for elective surgery is safe in healthy children, and improves patient well-being.

- Elective surgery commences at 08.00, therefore:

Patients on the morning list may drink water up till 6am, and breast milk up till 4am. Patients on the afternoon list must be encouraged drink water up till 11am and breast milk up till 9am.

- Children may have unlimited amounts of water up to two hours before induction of anaesthesia.

{The volume of administered fluids does not appear to have an impact on patients' residual gastric volume and gastric PH, when compared to a standard fasting regimen.}

3.1 The intake of milk during a restricted fasting period

- Breast milk may be given up to four hours before induction of anaesthesia.
- Formula milk or cows' milk may be given up to six hours before induction of anaesthesia.

3.2 The intake of solid foods during a restricted period

A minimum preoperative fasting time of six hours is recommended for food.

3.3 Chewing gum and sweets during restricted fasting periods

- Chewing gum may be permitted on the day of surgery.
- Sweets are solid food.
- A minimum preoperative fasting time of six hours is recommended for sweets

3.4 Concurrent Medications

- Regular medication taken orally should be continued preoperatively unless there is advice to the contrary.
- Up to 0.5 ml/kg (up to 30 ml) of water may be given orally to help children take their medication within the fasting period.

3.5 Delayed Operations

- If an elective operation is delayed, the fasting period will be reviewed by the nurse and anaesthetist and consideration will be given to giving the child a drink of water to prevent excessive thirst or dehydration.
- If it is confirmed by the anaesthetist and/or surgeon that a delay is likely to be longer than two hours, water or other clear fluid should be given.

3.6 Excessive Fasting

If a child admitted for surgery has undergone excessive fasting, consideration will be given to offering them a drink and scheduling their operation slightly later in the operating list.

3.7 Higher risk patients

- Higher- risk patients i.e. those with gastro-oesophageal reflux, diabetes and the obese, should follow the same preoperative fasting regime as healthy children, unless contraindicated.
- Consideration will also be given to children with special needs and/or learning disabilities.
- Individual fasting times may be appropriate to improve their comfort and reduce their anxiety and stress.
- Children undergoing emergency surgery should be treated as if they have a full stomach. If possible, the child should follow normal fasting guidance to allow for gastric emptying.

3.8 Postoperative Resumption of oral intake in healthy children

- Oral fluids can be offered to healthy children when they are fully awake following anaesthesia, providing there are no medical, surgical or nursing contraindications.
- Clinicians should consider giving clear fluids or breast milk before introducing other oral intake.

4. Emergency Patients

Should be starved from the time they are placed on the emergency list. Prolonged fasting may require an intravenous infusion to prevent dehydration.

5. All Elective Patients

- Should be **encouraged** to dink clear fluids up until 2 hours prior to their surgery.
- If there is a clinical need or evidence to deviate from the guidance it will be the anaesthetist's responsibility to inform the nurse in charge of the patient's care of any deviations from the above guidance and document the change in the patient's medical notes.

6. Implementation

- The guidance disseminated and teaching will be supported by the practice development team.
- The role of Consultant Surgeons, Anaesthetists Ward Sisters and Charge Nurses is pivotal to the implementation of these guidelines.
- The guidelines will be included in the Induction Programme for all junior doctors and nurses joining the Trust.
- All staff are expected to comply with these guidelines.

7. Review of the guidelines

- Guidelines will be audited as needed.
- The guidelines will be reviewed every two years or earlier if there are changes in National Guidelines.

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Appendix 1

Medication That May Need Stopping Prior To Surgery

The guidance given below is partly based on evidence and partly on local hospital guidance. It is an appendix to the Guidance for Pre-Operative Fasting and Drug Administration. Please note that this list is by no means comprehensive. Please refer to anaesthetist / surgeon / pharmacist for advice if in doubt.

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
ACE Inhibitors (***ending with …ril***) e.g. Captopril Enalapril Fosinopril Lisinopril Perindopril Quinopril Ramipril Trandolapril	Omit on morning of surgery if indicated for hypertension [2, 5, 17, 21, 26] **Monitor BP pre-op** and if BP high on admission, give usual dose before op	Continuation increases risk of profound hypotension with anaesthesia (conflicting evidence on benefit/risk)	Continue for PM surgery Continue if indicated for heart failure or post MI unless baseline BP is low [26]
Angiotensin-II receptor antagonists (***ending with……sartan***) e.g. Candesartan Irbesartan Losartan Olmesartan Telmisartan Valsartan	Omit on morning of surgery if indicated for hypertension [2, 5, 17, 21, 26] **Monitor BP pre-op** and if BP high on admission, give usual dose before op	Continuation increases risk of profound hypotension with anaesthesia (conflicting evidence on benefit/ risk)	Continue for PM surgery Continue if indicated for heart failure or post MI unless baseline BP is low [26]
Renin Inhibitors e.g. aliskiren	Omit on morning of surgery [2, 26]	Continuation increases risk of profound hypotension with anaesthesia	

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Anticonvulsants e.g. phenytoin, carbamazepine, lamotrigine, sodium valproate, levetiracetam	Continue	Tramadol- caution in epilepsy, may lower seizure threshold. There is an increased risk of seizures in patients taking concomitant medications which lower the seizure threshold	If stopped, the patient is at risk of having convulsions.
Anti-depressants **MAOIs:** e.g. Isocarboxazid Phenelzine Tranycypromine	Continue and ensure anaesthetist aware. **AVOID** using dextromethorphan, pethidine & other interacting drugs e.g. epinephrine & norepinephrine during anaesthesia [3, 4, 10, 17, 20, 23]	Important to continue to prevent risk of psychiatric relapse. (If to be stopped, withhold for 14 days prior to procedure and restart 48hrs after procedure)	**Use MAOI safe anaesthetic**
Reversible MAOI Moclobemide	Omit on morning of surgery **OR** Continue & **ensure anaesthetist aware** [4, 20, 23]	Caution due to risk of hypertensive crisis with interacting drugs used during anaesthesia.	**Use MAOI safe anaesthetic**
SSRIs e.g. fluoxetine, sertraline	Continue perioperatively [24]	Caution with pethidine and tramadol in patients who are also taking SSRI antidepressants (increases risk of developing serotonin syndrome). Risk of hypertensive crisis if conventional vasopressors used	
TCAs e.g. Amitriptyline Imipramine Lofepramine	Continue and ensure anaesthetist aware [24]	Risk of hypertensive crisis if conventional vasopressors used	

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Anti-platelets Aspirin	***For primary prevention:*** Stop 7 days pre-op for all surgery [13, 14]	Continuation increases risk of bleeding	Regional Blocks Not required to stop[30]
	For secondary prevention (post MI, ACS, stroke, stent, peripheral arterial disease): Continue Aspirin on all surgery except intracranial surgery, intramedullary spinal surgery & posterior chamber eye surgery [14, 15, 16, 21] Continue Aspirin for all angiogram/plasty [2]	Discontinuation may increase the risk of vascular complications	
Clopidogrel Prasugrel Tricagrelor	**Delay surgery for High Risk pts unless vital** (***High risk***: <6 weeks post MI, PCI, bare metal stent, stroke, and <12 months after drug eluting stent or multiple stents) Discuss with cardiologists prior to stopping antiplatelets [14, 15, 16, 21]		Stop for 7 days before regional block, can restart 6hrs after removal of catheter[30]
	For Low Risk pts: Stop Clopidogrel, Prasugrel or Ticagrelor 7 days pre-op, but CONTNUE Aspirin. Discuss all pts with stents with Cardiologists prior to stopping antiplatelets. (***Low risk***: >3 months after bare metal stent, stroke, uncomplicated MI, PCI without stenting) [14, 15, 16, 21]		

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Dipyridamole Cilostazol (for intermittent claudication)	Continue Stop 5 days pre-op[18]		
<u>Anti-psychotics</u>			
Clozapine	Withhold 12 hours pre-op (contact pharmacy or manufacturer for advice) Restart ASAP to avoid rebound psychosis (if stopping >48hrs need to retitrate at starting dose) [9]	Continuation increases risk of hypotension with general anaesthesia	Ensure anaesthetist aware
Lithium	Stop 24-48 hours pre-op for major surgery [3, 4, 20, 24] Continue for minor surgery	Level may be affected by fluid / electrolyte imbalances (narrow therapeutic / toxic index)	Monitor fluid balance , U&E's post op
Other antipsychotics (olanzapine, risperidone etc)	Continue perioperatively [23]	Abrupt withdrawal increases risk of postoperative delirium/psychosis	

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Anti-Parkinsonian drugs Dopamine agonists (levodopa, carbidopa, co-careldopa etc) Selegiline	Continue perioperatively [23] Omit on morning of surgery [22]	If oral access is proving problematic, possible options are: Rotigotine patch Apomorphine injection, however this is reserved for specialist use as associated with severe nausea, therefore the patient will need to take an antiemetic (usually domeperidone) prior to commencing an apomorphine infusion.[35] Interacts with medication such as opioids(pethidine, tramadol) and SSRI antidepressants to cause serotonin syndrome	Dose interruption leads to exacerbation of symptoms.
Anti-spasmodics Hyoscine N-Butylbromide	Continue	Caution: may increase risk of paralytic ileus post-op	
Bisphosphonates Alendronate Risedronate	Continue, but omit if dose due on morning of surgery [2] Restart when patient can sit upright & swallow tablet with a full glass of water	Risk of oesophageal irritation with restricted fluid intake	
Diuretics (Potassium-Sparing) Amiloride Spironolactone	Omit on morning of surgery [3] **Unless indicated for heart failure** [26]	Continuation increases risk of hyperkalaemia with reduced kidney perfusion	

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
DMARDs and Immunosuppressants for RA e.g. methotrexate	Continue for all surgery. Consider stopping 1 week preoperatively if renal insufficiency present or evidence of previous poor wound healing[25]	Continuation may increase risk of post-op infection & impaired wound healing. Discontinuation may increase risk of disease flare.	Monitor FBC and U&Es (inconclusive evidence on risk/benefit).
Leflunomide	Continue for minor surgery. Stop 2weeks prior to major procedures where large postoperative wounds anticipated [25]	Continuation may increase risk of infection and sepsis. Monitor FBC and U&Es	
Hydroxychloroquine	Continue perioperatively[25]		
Anti TNF-α[35]			
Adalimumab	If to stop, withhold 8 weeks prior to procedure	**Pre – assessment practitioner to discuss with the consultant prescribing the monoclonal antibody whether therapy to stop after consideration of the risks and benefits of stopping/continuing therapy.** **The potential benefit of preventing postoperative infections by stopping monoclonal antibody treatment should be balanced against the risk of peri-operative flare up of rheumatoid arthritis[35]**	If monoclonal antibody therapy is to stop before surgery, it should be noted that it takes 3-5 half-lives to clear the system Monoclonal antibodies should not be restarted post-surgery until there is good wound healing and no signs of infection
Certolizumab	If to stop, withhold 6 weeks prior to procedure		
Infliximab	If to stop, withhold 4 weeks prior to procedure		
Etanercept	If to stop, withhold 2 weeks prior to procedure		
Other Biologics			
Abatacept	If to stop, withhold 8 weeks prior to procedure		
Rituximab	If to stop, withhold 12 weeks prior to procedure		
Tociluzimab	If to stop, withhold 6 weeks prior to procedure		

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Purine analogues 6-mercaptopurine Azathioprine	Continue perioperatively[25]		
Aminosalicylates Mesalazine Sulfasalazine	Continue perioperatively[25]	May not be needed post-op if procedure is to remove bowel	
Drugs for Dementia			
Donepezil	Continue Donepezil [3, 4]	Ensure anaesthetist aware	**Avoid suxamethonium**, (can prolong neuromuscular blockade)
Galantamine Rivastigmine	Stop 24 hours pre-op [3]	Ensure anaesthetist aware Monitor neuromuscular blockade	May potentiate muscle relaxation during anaesthesia
Memantine	Continue perioperatively	**Ensure anaesthetist aware**	Structurally related to ketamine so may be hallucinogenic

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
<u>Hypoglycaemics</u> **INSULINS** [1] **ORALs** and **Injectable GLP-1 agents** e.g. Exenatide Liraglutide, Lixisenatide	*see current Blue Book guidelines on management of diabetes during surgery* **<u>Surgery requiring a short starvation period</u>** (no more than 1 missed meal) ▪Ensure on morning list if possible **AM List** - Give morning dose of Metformin (not if for angiogram/angioplasty) and Pioglitazone, but OMIT all other hypoglycaemics and injectable Exenatide, liraglutide & lixisenatide **PM List** - **<u>if eating breakfast</u>**, give morning dose of metfomin, acarbose, pioglitzaone, repaglinide & nateglinide, but OMIT all others (e.g. alogliptin, canagliflozin, dapagliflozin, empagliflozin, gliclazide, glipizide, glimepiride & glibenclamide, linagliptin, sitagliptin, saxagliptin, vildagliptin, & injectable Exenatide, liraglutide & Lixisenatide) for BOTH the morning and evening doses. If on metformin three times a day omit the lunch dose but give the evening dose if eating. **<u>Surgery requiring a long starvation period</u>** (2 or more missed meals) ▪ Omit morning dose of all oral hypoglycaemics & injectable GLP-1 agents Start VRIII. (see Blue Book)		Continuation may increase risk of hypoglycaemia during fasting period for all listed drugs. Risk of lactic acidosis when renal function is impaired
<u>HRT</u>	*Stop 4 weeks prior to elective surgery, but warn of possible menopausal-like side effects if withdrawn, which may be considerable.* **<u>OR</u>** *Continue but use thromboprophylaxis with dalteparin & TEDS* [3, 4, 17, 19, 28] Restart post-op after full mobilisation ***Continue for minor surgery*** [3, 4, 17, 19 28]	Continuation increases risk of thromboembolism	

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Non-Steroidal Anti-inflammatory Drugs (NSAIDs)	Omit on morning of surgery [2, 27]	Continuation increases risk of bleeding & GI upset on empty stomach	
Strong opioids (long term) **e.g.** Oramorph, MST, Fentanyl (patch), Buprenorphine (patch)	Continue strong opioids perioperatively [24, 29]	Abrupt discontinuation can lead to withdrawal and exacerbate chronic pain Tramadol- caution in epilepsy, may lower seizure threshold	Ask for further advice from pain team
Oral Contraceptives Combined (containing oestrogens)	***Continue Progestogen-only pill for all surgery*** [3, 4, 17, 19, 28] ***Stop 4 weeks before major surgery or surgery to legs.*** Restart post-op at 1st menses 2 weeks after full mobilisation. ***Offer advice*** on alternative safe contraception such as progestogen-only pill or depot injection from GP	Continuation increases risk of thromboembolism	

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
Oral Anticoagulants [1] ***Warfarin*** (see current Blue Book guidelines for the interruption of anticoagulation for surgery) **Acenocoumarol** (Nicoumalone) (treat as for warfarin) **NOACs** Rivaroxaban Dabigatran Apixaban **Thrombolytic Drugs** Alteplase, Streptokinase **Heparins** Unfractionated heparin	***Stop 4 days pre-op, but 5 days if on 2mg or less*** May need Dalteparin for bridging after 2 days if clinically indicated [1, 5, 10] **CHECK INR ON ADMISSION** Restart post-op when haemostasis is secured & all drains removed. Use Dalteparin or Unfractionated Heparin while reloading with oral anticoagulants until INR therapeutic if clinically indicated Please refer to Blue Book	Continuation increases risk of bleeding Discontinuation increases risk of thromboembolism and vascular complications	Regional blocks Wait until INR <1.5 Do not restart till epidural catheter is removed Acceptable time after block performance or removal of catheter 6 hours for all NOACs Do not give block if drugs given 10 days prior Stop 4 hours before surgery/restart 4 hrs after if APTR normal

CLASS OF DRUG	RECOMMENDED STRATEGY	CLINICAL CONSIDERATIONS	SPECIAL CONSIDERATIONS
LMWH SC prophylaxis *LMWH SC treatment* ***Heparin Alternatives*** *Danaparoid* Fondaparinux *Prophylaxis* *Treatment* *Argatroban*	Stop on the day of surgery Stop on the day of surgery		12 hours should elapse prior to neuraxial block 24hours should elapse prior to neuraxial block Avoid neuraxial blocks (Consider anti Xa levels) 36-48 hours should elapse before neuraxial block *consider anti Xa levels* Avoid neuraxial blocks 4hours should elapse before neuraxial block 6 hours should elapse before next dose
<u>Herbal Medications</u> Valerian Kava Garlic Ginkgo Ginseng St. John's Wort	Hold ALL herbal medications 1 week preoperatively [22, 24]	Possible increased sedation perioperatively Possible increased bleeding risk Cytochrome P450 inducer – enhances metabolism of other drugs	

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