

Pre-Operative Assessment Guidelines - **FOR DERBY USE ONLY**

Reference no.: CG-ANAES/2018/012

1. Summary guideline

The following guideline contains the following:

Introduction and purpose of Guidelines

Owners and responsibilities

Standards and practice

Monitoring and Document Control

Appendices

[Appendix 1: Criteria for Consideration for Anaesthetic Consultant Review.](#)

Including Day Surgery Considerations

[Appendix 2: Guidance for Pre-operative Investigations.](#)

Including guidance for Chronic multisystem Disease

[Appendix 3: Pre-operative Haemoglobin Optimisation for Elective Surgery.](#)

Includes attachments for patient information, pathway for anaemia investigation, referral and patient information letters, information on IV iron therapy

[Appendix 4: Guidelines for Pre-operative Echocardiogram](#)

[Appendix 5: Management of Patients with Hypertension Attending Pre-operative Assessment Clinic](#)

Includes Joint guidelines form AAGBI and British hypertension society, Letter for GP

[Appendix 6: Assessment of Ischaemic Heart Disease](#)

[Appendix 7: Guidelines on the Perioperative Management of Anticoagulant and Antiplatelet Drugs in elective Surgical Patients in Pre-operative Assessment](#)

[Appendix 8: Management of Patients who have undergone Percutaneous Coronary Intervention \(PCI\) who present for Surgery](#)

[Appendix 9: Diabetic Management](#)

Includes Appx A: Minor/Intermediate surgery and adjustment of non-insulin medication

Appx B: minor/intermediate surgery and adjustment of Insulin Treatment

Appx C: Major Surgery and All Diabetes medications

Appx D: Diabetic patients for Day Surgery

[Appendix 10: Guidance on which Medicines should be Continued or Omitted Prior to Surgery. An Alphabetical List](#)

Includes Rheumatology advice on biological immunological agents peri-operatively.

[Appendix 11: Herbal Medicine with Potential Peri-operative Complications](#)

[Appendix 12: Guidelines for Pre-operative Assessment of Elective Surgical Patients with Cardiac Implantable Electronic Devices](#)

[Appendix 13: Major Surgical Procedures – Valid Group and Save Sample Required on Admission](#)

[Appendix 14: Pre-operative Testing Matrices](#)

2. Introduction

Good pre-assessment prior to elective surgery has many benefits, which include:

- Accurate patient assessment, documentation and dissemination of information
- Accurate patient risk assessment for specific surgery according to ASA grades
- Improved patient safety and satisfaction
- Increase the quality of patients hospital experience
- Decreased cancellation rates on the day of surgery
- The facilitation of Day Of Surgery admissions
- Decreased bed days
- Improved theatre scheduling and utilisation
- Facilitation of the routine pre-operative tests for elective surgery including the MRSA screening process according to NICE guidelines
- Determine and streamline the Pre-Operative assessment pathway

These guidelines have been created to ensure pre-assessment practice for elective surgery is underpinned by evidence-based guidance and provides the framework for the scope of practice.

3. Aim and Purpose

The purpose of this document is to provide staff with clear guidelines for pre-assessment practice for patients attending the pre-assessment units in the Royal Derby Hospitals (DTHFT).

The development of pre-assessment practice is intended to provide patients with a quick and efficient assessment process, respond to patient needs and to make best use of the non- medical health care practitioner skills.

These guidelines will enable appropriate assessment, tailored to the individual patient requirements and provide the patient with the information that they require to make an informed choice. It will facilitate the process to involve the appropriate members of the inter-professional team, put mechanisms in place to optimise health and to minimise patient cancellations on the day of surgery.

4. Definitions

Terms stated in full in document

5. Ownership and Responsibilities

This document applies to all staff regardless of grade or profession who conducts patient pre-assessment for elective surgery.

The document provides non-medical health care practitioners with a clear framework for safe and effective practice relating to pre-assessment and sets out the standards and competencies expected when performing this role.

The aim is for all elective patients to be pre-assessed either face to face, or by Telephone and within a timely manner. Complex cases will be reviewed and/or seen by a consultant anaesthetist in the anaesthetic clinic as identified necessary.

The Trust, as an employer, will assume ownership of the trust-wide guidelines with vicarious liability for the actions of non-medical practitioners authorised to work in the pre-assessment clinics providing that:

- They have undergone the preparation
- They are deemed competent to undertake the role, by their line manager
- The practice for pre-assessment has been followed as set in this document has been followed at all times and that the member of staff has been fully authorised by the Trust to undertake the role.

Role of the Managers

The process for pre-assessment for elective surgery must be written into clinical area operational policies and local records maintained of staff authorised to practice.

Managers are responsible for ensuring that operational procedures are in place and up to date. These documents must have gone through the consultation process before going through the divisional governance arrangements and ratified by the individual who has been given formal authorisation.

The Lead Nurse and Senior Sister are responsible for ensuring all appropriate training is readily available for staff undertaking this role.

Role of Individual Staff

Registered Practitioners have a professional obligation to provide a “duty of care” to their patients (NMC, 2016, HPC, 2016). Each practitioner must work within the scope of this and local operational policies and remain responsible for his or her individual practice. Registered practitioners undertaking this role must ensure they have received sufficient training and are competent. This includes undertaking regular reviews of their practice in accordance with clinical governance activities. Practitioners must be able to recognise when a situation remains outside their level of competence and defer practice to a senior clinician.

Duty of care cannot be delegated at any time and registered practitioners, who choose to delegate any part of the task of caring for the patient within the pre-operative assessment environment, to non-registered staff, retain professional accountability for the appropriateness of the delegation of that task. Registered practitioners will not be accountable for the decisions and actions taken by the delegated person, however, will be responsible for the overall management of the person in their care. The registered practitioner will also be accountable for the decision to delegate.

The registered practitioner delegating any task must ensure that the person who receives the delegation has the knowledge and skills to carry out this task, and that they are properly supervised.

Registered practitioners have a duty to ensure that records completed by nonregistered staff or pre-registered students under supervision are clearly written, accurate and appropriate.

STANDARDS AND PRACTICE

Inclusion Criteria

All patients attending DTHFT pre-assessment clinics will be assessed by the preoperative practitioner who is authorised and competent in undertaking the assessment.

Alternatively some patients will be suitable for a telephone consultation. There is also a group of patients, who are fit, well and booked for a minor procedure, who do not require formal assessment. (NICE guidelines 2016 <https://www.nice.org.uk/guidance/ng45>)

Patients for **local anaesthetic** procedures only **do not** require formal assessment, but advice may be sought if there are specific concerns (anticoagulation for example). However, those patients requiring formal sedation will require assessment.

If the registered practitioner has **any** doubt about the patient's suitability for non-medical pre- assessment then further medical review must be arranged.

Pre-assessment clinics are available at Royal Derby Hospital. A consultant anaesthetist will be available for face to face consultations, note review and advice each session.

The general principles of pre-operative assessment in day surgery are the same as for any pre-operative assessment. However suitability also depends on whether this patient will be safe overnight at home after their operation?

This means that no specific monitoring is needed, no intravenous drugs or analgesics are needed and no oxygen is required. Also it is essential to find out that they have a carer who can take them home and stay with them for 24 hours after surgery. This applies after GA, spinal anaesthesia or sedation. Without care at home they cannot be day surgery patients.

If there is any doubt about suitability for day surgery the patient should be discussed with a consultant anaesthetist or referred for review.

More patients may need discussion but this leads to fewer cancellations on the day. Ideally the consultant would be doing the list for that patient or running a pre-operative day surgery clinic.

The anaesthetic rota (available on Flo) will determine the availability of the anaesthetist required for specific theatre lists, or to trouble shoot as necessary.

Criteria for Anaesthetic Consultant review

Pre-Operative assessment is an important part of patient care; it establishes that the patient is fully informed of risks and benefits and consents to undergo the procedure, and is as fit as possible for the surgery and anaesthetic.

Good pre-operative assessment and screening enable identification of all essential resources and obstacles to discharge for patients, and thereby minimise late cancellation of operations, assisting overall patient care and efficiency of operating lists.

Business planning by Trusts and anaesthetic departments should ensure that necessary time and resources are directly targeted towards pre-operative assessment.

Pre-operative consultation with an anaesthetist is essential for the medical assessment of a patient before anaesthesia for surgery or any other procedure. Nursing and other trained staff play an essential role when, by working to agreed protocols, they screen patients for fitness for anaesthesia and surgery.

The range of patients for whom referral for an anaesthetic opinion would be appropriate is provided in [Appendix 1](#). This is not exhaustive list and some patients who do not meet these specific criteria may still merit a specialist assessment. Additionally, not all patients require a formal clinic appointment and many will be suitable for discussion or review of the notes and Staff should use their discretion. Referral may come direct from surgical consultants or pre-operative assessment nursing staff, however, the referral process should follow the Pre-op pathway and an electronic booking form is required in order for it to be processed and actioned.

Pre-Operative Investigations

Full guidance for Pre-operative investigations are provided in the attached matrices. Staff must ensure all appropriate investigations are requested and completed. Staff must record any abnormal result and document appropriate follow-up arrangements.

Investigations include:

- Guidance for pre-operative investigations ([Appendix 2](#))
- Pre-operative haemoglobin optimisation ([Appendix 3](#))
- Pre-operative echocardiogram ([Appendix 4](#))
- List in order speciality investigations;
 - [Bariatric](#)
 - [Breast](#)
 - [Colorectal](#)
 - [ENT/OMF inc. Head & Neck](#)
 - [General Surgery](#)
 - [Hepatobiliary](#)
 - [Upper GI](#)
 - [Urology](#)
 - [Vascular](#)

Specific Patient Management

Patients attending pre-assessment clinic may present with underlying medical conditions and staff must adhere to appropriate assessment guidelines, investigations, management and referral processes as outlined in the following appendices:

- Criteria for consideration for Anaesthetic Consultant review (face to face or note review) ([Appendix 1](#))
- Guidance for pre-operative investigations ([Appendix 2](#))
- Pre-operative haemoglobin optimisation for elective surgery ([Appendix 3](#))
- Guidelines for pre-operative echocardiogram ([Appendix 4](#))
- Management of patients with hypertension attending pre-op assessment clinic ([Appendix 5](#))
- Assessment of ischaemic heart disease ([Appendix 6](#))
- Guidelines on the preoperative management of anticoagulant and antiplatelet drugs in elective surgical patients in the pre-operative assessment clinic ([Appendix 7](#))
- Management of patients who have undergone PCI who present for surgery ([Appendix 8](#))
- Diabetic management ([Appendix 9](#))

- Guidance on which medicines should be continued or omitted prior to surgery ([Appendix 10](#))
- Herbal medicine with potential peri-operative complications ([Appendix 11](#))
- Guidelines for pre-operative assessment of elective surgical patients with cardiac implantable electronic devices ([Appendix 12](#))
- Major Surgical Procedures - Valid sample required on admission ([Appendix 13](#))
- Test matrices ([Appendix 14](#))

Drug Therapy

Staff working in pre-operative assessment areas must provide patients attending with accurate and appropriate information regarding their drug therapy. Staff must seek advice from the relevant anaesthetist if concerns or doubts arise during a patient assessment. Essential guidance is outlined in:

- Pre-operative management of anticoagulant and antiplatelet drugs ([Appendix 7](#))
- Drug therapy and guidance on medicines to discontinue / omit prior to surgery ([Appendix 10](#))
- Herbal Medicines with potential peri-operative complications ([Appendix 11](#))

All staff are responsible for ensuring that information provided to patients conforms to above guidance and should be used in conjunction with the DTHFT policy on pre-operative fasting.

6. Training and Communication

This document will be implemented and disseminated through the Trust immediately following ratification and will be published on Flo. Access will be open to all.

7. Monitoring

Review of compliance to practice remains the responsibility of Theatres and Anaesthetics Business Unit.

Element to be monitored	Clinical and process outcomes
Lead	Theatres & Anaesthetics General Manager ACD Lead Pre Op Nurse
Tool	<ul style="list-style-type: none"> • Reduced DNA Figures for pre op appointments • Reduction in the number of patients not pre op'd • Reduced number of cancellations for procedures • Increase in number of patients ready for surgery • Reduction in duplicate testing
Frequency	Theatres utilisation meetings Divisional Days

8. References

- ASA (American Society of Anaesthetists)
Physical Status Classifications and Examples 2016
http://www.anesthesiologynews.com/aimages/2016/AN0116_026_table_a.jpg
- NICE (National Institute for Health and Care Excellence)
- i. Routine preoperative tests for elective surgery NG45 April 2016
<https://www.nice.org.uk/guidance/ng45>
 - ii. Recommendations for specific surgery and ASA grades
<https://www.nice.org.uk/guidance/ng45/chapter/Recommendations>
- NMC (Nursing Midwifery Council)
The Code – Professional standards of practice and behaviour for nurses and midwives <https://www.nmc.org.uk/standards/code/read-the-code-online/>
- RCoA (Royal College of Anaesthetists)
Guidelines for the Provision of Anaesthesia Services for Pre-operative Assessment and Preparation 2017 <http://www.rcoa.ac.uk/system/files/GPAS-2017-02-PREOP.pdf>

9. Documentation Controls

The document review process is managed via the document library. Document review will be every three years unless best practice dictates otherwise. The author remains responsible for policy document review. Should they no longer work in the Trust or in the relevant practice area then an appropriate practitioner will be nominated to undertake the document review.

Where the revisions to the document are significant the author will ensure revision activity is recorded in the Version Control Table as part of the document control process and the revised document taken through the standard consultation, approval and dissemination processes.

Development of Guideline:	Angela Gent, Senior Sister Heather Clarke, Transfusion Practitioner Dr Richard Elliott, Dr Rachel Tibble, Dr Tim Wood, Dr James Low Consultant Anaesthetists.
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Review Date:	October 2021 – Extended to April 2024

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10. Appendices

- Criteria for consideration for Anaesthetic Consultant review (face to face or note review) ([Appendix 1](#))
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Appendix 1. Criteria for Consideration for Anaesthetic Consultant Review (face to face or note review)

Previous anaesthetic problems / difficult airway / anaphylaxis	<ul style="list-style-type: none"> • History of major anaesthetic related complication. • Documented difficult intubation. • Anticipated difficult intubation. • Family history of malignant hyperthermia / atypical cholinesterase (scoline apnoea) / porphyria. • History of genuine anaphylaxis.
Cardiovascular Disease	<ul style="list-style-type: none"> • Patients with heart failure that is not optimally controlled or who are scheduled for major surgery. (Ejection fraction less than 50%) • Patients with unstable coronary artery disease. • Patients unable to climb a set of stairs without symptoms. • Patients who have had coronary artery stents in the past year or PCI and angioplasty in the past 6 months. • All patients with known or suspected severe or symptomatic aortic stenosis or mitral stenosis. • All patients on clopidogrel for a cardiac indication especially coronary stents. • Patients with other congenital or valvular heart disease with functional limitation. • Patients with a new previously undiagnosed cardiac murmur warrant discussion with a view to an echocardiogram. Symptomatic or poorly controlled dysrhythmia. • Complete heart block, Mobitz type 2 heart block, Trifascicular block on pre op ECG • Patients with poor blood pressure control see separate guideline • Patients with documented pulmonary hypertension. • Patients with cardiomyopathy • Patients with a pacemaker or ICD
Respiratory disease	<ul style="list-style-type: none"> • Patients with incapacitating respiratory symptoms (breathless at rest or on minimal exertion) • Patients with signs of active respiratory infection or wheeze warrant discussion. • Patients with COPD recently hospitalised for an acute exacerbation. • Patients with a PEFr < 200 L/min or SpO₂ on air of less than 93% • Patients on home oxygen. • Brittle asthmatics (eg >1 hospital admission with severe asthma in past year) • Patients with documented pulmonary hypertension. • Patients with moderate or severe obstructive sleep apnoea

Endocrine disease	<p>Diabetes: All concerns with IDDM should be referred to the Trust diabetic team. For advice during the peri-operative period, see Trust guidance or contact Inpatient diabetes nurse team. New diagnoses should be referred back to the GP, as should poorly controlled NIDDM.</p> <p>Other endocrine conditions:</p> <ol style="list-style-type: none"> 1) Abnormal thyroid function warrants discussion. 2) Pheochromocytoma patients should all be seen. <p><u>See separate guideline</u></p> <p>Management of Adults with Diabetes Undergoing Elective Surgery https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792</p>
Renal disease / abnormal biochemistry	<ul style="list-style-type: none"> • All patients requiring dialysis for renal failure. (discuss with Anaesthetist) • Patients with deranged renal function (severe renal impairment creatinine >177) (discuss with Anaesthetist) • Patients with significant electrolyte abnormalities. (Na < 125, K >6, Ca > 3 mmol/l) (discuss with Anaesthetist)
Haematological problems	<ul style="list-style-type: none"> • Anaemic patients (Hb < 12), especially those scheduled for major surgery, should be optimized pre operatively. Consider either oral iron, IVI iron and/or erythropoietin. Blood transfusion may be considered, depending on the urgency of surgery. Please contact Heather Rankin. • All patients with known haemoglobinopathy • Patients with known or suspected bleeding disorder • Jehovah's Witnesses for major surgery (bleeding risk). • Patients on 2 or more antiplatelet and anticoagulant drugs <p><u>See separate Trust policy</u></p> <p>Trust Policy and Procedures for Managing Requests of Exclusion from Treatment with Blood Components/Products. Managing Requests of Exclusion https://derby.koha-ptfs.co.uk/cgi-bin/koha/opacdetail.pl?biblionumber=1716&query_desc=kw%2Cwrdl%3A%20026</p>
Rheumatoid / Neuro-muscular / CNS disease	<ul style="list-style-type: none"> • Stroke or TIA within preceding 3 months. • Patients with severe arthritis involving cervical spine or jaw which significantly limits mouth opening or neck extension. • Patients with myasthenia gravis. • Patients with muscular dystrophy. • Unstable epilepsy with frequent fits despite Rx • Patients with hereditary neuropathy or myopathy
Major surgery	<ul style="list-style-type: none"> • All patients undergoing complex major surgical procedures are appropriate for discussion with an anaesthetist, particularly those who may require post-operative high dependency care. All open colorectal and open AAA repairs should see a consultant anaesthetist. • Major surgery includes, for example, aortic and major vascular surgery, abdominal surgery and gut resections. It also includes prolonged surgical procedures, and those in which there are large fluid shifts, significant blood loss or unstable

	haemodynamic situations.
Morbid Obesity / Multiple co-morbidities.	<ul style="list-style-type: none"> • Morbidly obese patients with a BMI > 45 warrant discussion with anaesthetist who is scheduled to do the list. • Obese patients BMI >35 with other co-morbidities (diabetes, IHD, CCF) or poor mobility, also warrant discussion • (see link to Bariatric Matrix)
Consider Lung Function test in those you suspect lung pathology and an echo if you suspect ventricular dysfunction.	
Scoring hyperlinks	<ul style="list-style-type: none"> • RISK SORT SCORE http://www.sortsurgery.com/ • ASA SCORE https://www.asahq.org/resources/clinical-information/asa-physical-status-classification-system

Day Surgery considerations for consultant review

In the same way as usual day surgery POA determines the fitness of a patient for anaesthetic and surgery, whether they are optimised and whether further tests need to be done to investigate new or severe symptoms.

However some co-morbidities have a greater importance in the patient whom we wish to send home the same day.

Obstructive sleep apnoea (OSA) - If undiagnosed and patients sent home with opiate analgesics can result in fatalities. Thus for day surgery, if a patient has a high BMI >35, a large neck size or gives a history of snoring with or without apnoea they should have a STOP BANG score done by the pre-operative nurse. A score of 5 or greater means they should have overnight oximetry performed before surgery through clinical assessment.
Link: www.stopbang.ca/osa/screening.php

Patients with moderate or severe obstructive sleep apnoea even if on CPAP treatment should warrant a consultant anaesthetist review, especially if related to a difficult airway or high BMI. Those for tonsillectomy or laparoscopic cholecystectomy with OSA are probably not suitable for day surgery.

Difficult airways (known or predicted using airway assessment tools) – This can present as a problem for day surgery patients too. Manipulation within a difficult airway can lead to oedema and difficulty breathing after surgery so these cases should be discussed with an anaesthetist. The difficulty may be related to specific co-morbidities such as ankylosing spondylitis, rheumatoid arthritis or simply anatomical. Consultant anaesthetist review is advised, especially if combined with BMI >35 or OSA.

Chronic pain - Any patient with chronic pain, especially if they are on multiple or opiate medications, should be discussed with a consultant anaesthetist as it may be very difficult to manage their pain post operatively, so success with day surgery may be unlikely.

Neuromuscular disorders - eg multiple sclerosis, motor neurone disease, myasthenia gravis or the congenital neuropathies or myopathies should be reviewed by a consultant as weakness in respiratory muscles can delay post-operative recovery. Consider pulmonary function tests in this group to delineate whether respiratory muscle weakness is a feature of their illness.

Pacemakers or internal cardiac defibrillators - These are often complex patients that need a consultant review in consideration of suitability for day surgery.

Diabetes mellitus - Patients with poor control or multiple hypoglycaemic episodes may not be suitable for day surgery. The Trust guidelines recommend a limit for the HbA1C as 69mmol/mol. Greater than this should be referred back to the GP for review of treatment or proceed with overnight stay if urgent surgery or diabetic management already optimised.

Poor exercise tolerance - Patients who are symptomatic with breathlessness or angina at less than 100 yds or cannot walk a flight of stairs may be suitable for day surgery if the surgery and anaesthetic technique is appropriate, as long as the cause is known and anaesthetist has reviewed the patient or patient notes. Otherwise as for all POA, consider an ECHO or pulmonary function tests to check cardiorespiratory function.

Appendix 2. Guidance for Pre-Operative Investigations

<p>Guidance for Pre-Operative Investigations Blood tests and ECGs less than 3 months old do not routinely need repeating as long as there have been no changes in symptoms or medications and no new acute events during that time. ALL PATIENTS OVER 60 YEARS OLD REQUIRE A MINIMUM OF: FBC, U+E and ECG (a B.P. should also be taken if these investigations are done at the GP). Other tests may be required in patient/operative specific circumstances.</p>	
<p>Full blood count (FBC)</p>	<p>All patients for major surgery Patients for intermediate surgery if they:</p> <ol style="list-style-type: none"> 1. Have a history of anaemia or are taking anaemia medications (or females with menorrhagia) 2. Are ASA ¾ with chronic disease (cardiovascular, renal or multisystem) 3. Have a history of leukaemia or bone marrow disease 4. Are taking antiplatelet medication (including NSAIDs)
<p>Urea and Electrolytes (U&Es)</p>	<p>All patients over 60 All those undergoing intermediate and major surgery All patients on any antihypertensive medication They are also essential in patients with:</p> <ol style="list-style-type: none"> 1. Known or suspected renal disease 2. Hepatic failure 3. Cardiovascular disease 4. Hypertension 5. Diabetes 6. Liver disease 7. Advanced malignancy 8. Cardiac pacemaker 9. Disturbed fluid balance, dehydration, vomiting or diarrhoea <p>Or in patients taking any of the following medications:</p> <ol style="list-style-type: none"> 1. Digoxin or other anti-dysrhythmics 2. Diuretics 3. ACE inhibitors or other anti hypertensives 4. Lithium 5. Systemic steroids
<p>Coagulation studies</p>	<p>All patients on long-term warfarin need their INR checked on admission. All patients scheduled for:</p> <ol style="list-style-type: none"> 1. Bowel resection 2. Vascular arterial reconstruction <p>All patients with inherited factor deficiencies and/or history of abnormal bleeding. Coagulation studies are also required in patients with:</p> <ol style="list-style-type: none"> 1. Known or suspected liver disease 2. Chronic renal impairment 3. Advanced malignancy 4. IV contrast procedures (angio and retrogrades) <p><u>See separate Clinical Guideline</u> Venous Thromboembolism (VTE) Prophylaxis - Surgical - Clinical Guidelines;</p>

	https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=1874&query_desc=kw%2Cwrdl%3A%20CGT%2F2011%2F077b
Group & Screen X-match	<p>Blood should be taken for group and screen at pre- assessment clinic for all those undergoing major surgery and other listed operations (see Trust guidelines). ..\All Matrix\Matix.xls</p> <p>A further sample will need to be taken on the day of admission (ELAD) if it is predicted that blood may need to be ordered for Surgery ie All moderate or major surgery. Labelling of blood samples must be meticulous and needs 4 point identification.</p> <p>Blood bank will make suitable arrangements should a sample taken at pre-assessment show antibodies.</p>
Liver function tests (LFTs)	<p>All patients listed for cholecystectomy.</p> <p>Otherwise they should be checked in patients with:</p> <ol style="list-style-type: none"> 1. Known or suspected liver disease 2. Inflammatory bowel disease (ulcerative colitis, Crohn's disease) 3. A history of excess alcohol intake 4. Advanced malignancy 5. Cachexia due to malnourishment or chronic disease <p>Note: coagulation studies should always be included as part of the measurement of liver function, if liver damage is suspected. Coagulation studies to be done routinely for cholecystectomy.</p>
Sickle cell screen	<p>Patients of Afro-Caribbean, Afro-American or West/Central African origin should routinely have their sickle cell status (and Hb) checked pre-operatively.</p> <p><u>See separate guideline</u></p> <p><i>Sickle Cell Disease – Surgery – Clinical Guideline</i></p> <p>Trust Policies Procedures & Guidelines catalog > Details for: Sickle Cell Disease - Surgery - Clinical Guidelines</p>
HbA1C (and Blood Glucose)	<ol style="list-style-type: none"> 1. History of diabetes, polydipsia (excessive thirst), polyuria and if sugar has not been checked recently. 2. Medication including steroids if random Blood glucose >11mmol/l. 3. BMI >35 and random Blood Glucose>11mmol/l, do HbA1C.
Thyroid Function Tests Calcium	<ul style="list-style-type: none"> • History of hypo or hyperthyroidism • History of thyroidectomy • Patients having parathyroidectomy
Arterial Blood gases (ABGs)	<p>Arterial blood gas analysis can be very useful for the assessment of patients with chronic lung disease. Arterial blood samples must be taken by a doctor, usually after consultation with the anaesthetist.</p>
Chest X-Ray (CXR)	<p>CXR is not a routine pre-operative investigation. It should be confined to patients with:</p> <p>Significant cardio-pulmonary disease and unstable symptoms, Recent onset of significant respiratory signs or symptoms, Recent exposure to tuberculosis.</p> <p>As part of the surgical work up for many cancers to exclude metastases. Patients scheduled for critical care.</p>

	<p>Patients with well-controlled cardiopulmonary disease do not routinely need a CXR.</p> <p>Age alone is not an indication for CXR.</p>
Midstream urine (MSU)	<p>Urology: All patients having endoscopic surgery. Send 7-10 days pre-op. Result must be chased and +ve results treated. >10(3)/ml or 10(4)/ml white cells. Retest dipstix pre-op. If +ves, resend MSU. If MSU still +ves, Postpone (discuss with Consultant).</p> <p><u>See separate guideline</u></p> <p>Hepatitis C – DISH - Clinical Guideline</p> <p>Trust Policies Procedures & Guidelines catalog › Details for: Hepatitis C – DISH - Summary Clinical Guideline</p>
Pregnancy Test	<p>Pregnancy test must be considered for women of child bearing age undergoing any general anaesthetic.</p> <p>A Urine pregnancy test should be done on the day of surgery, prior to the operation on any woman of child bearing age (12-55) undergoing a general anaesthetic. Exceptions to this are:</p> <ul style="list-style-type: none"> women who have had a hysterectomy women known to be pregnant and having an operation related to their pregnancy (e.g. ERPC / TOP). <p>Women known to be pregnant and have been fully counselled about the possible risks of general anaesthetic on their pregnancy.</p> <p><u>See separate guideline</u></p> <p>https://www.nice.org.uk/guidance/ng45/chapter/Recommendations#pregnancy-tests</p>
Pacemaker check	<p>Patients with implanted pacemakers may need a pre- operative pacemaker check.</p> <p>If the device has had a satisfactory check within the last 3 months and the patient is asymptomatic this may be omitted.</p> <p>In Pacemakers with an ICD (shocking) function this function is turned off by the pacing technician immediately prior to surgery and then reactivated in theatre recovery.</p> <p>If in any doubt contact the pacing clinic in cardiology for advice and/or the anaesthetic pre assessment clinic.</p>
Echocardiography	<p><u>See separate guideline</u></p> <p>Pre-operative Echocardiogram - Clinical Guideline</p> <p>https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=897&query_desc=kw%2Cwrdl%3A%20Echocardiography</p>
Cervical Spine XR	<p>Patients with severe rheumatoid arthritis involving the cervical spine or Down's Syndrome merit a lateral flexion/extension cervical spine XR to exclude atlanto-occipital or subaxial subluxation.</p> <p>As these films may be difficult to interpret they should be reported well before the day of surgery.</p>
Peak expiratory flow rate (PEFR)	<p>Patients with asthma or COPD should routinely have their PEFR measured. Interpretation of PEFR is not straightforward.</p> <p>However a fall of 20% from a previous reading implies an acute exacerbation for which surgery may need to be deferred. A genuine reading of < 200 l/min indicates severe airway obstruction and should prompt you to alert the anaesthetist.</p>

Guide to Pre-operative testing for Patients with Chronic Multisystem diseases

1. Diabetes mellitus

FBC anaemia of chronic disease

U+E complication poor renal function

HbA1C shows control for last 3 months

ECG complication ischemic heart disease, silent ischaemia

Sources - College of Diabetologists, AAGBI guidelines

2. Hypertension

U+ E complication poor renal function

ECG increased risk of cardiac disease, LVH

3. Rheumatoid arthritis (also psoriatic arthritis and ankylosing spondylitis)

FBC anaemia associated, drugs suppress bone marrow

U+E complication of disease, drug side effects

LFTs If on disease modifying drugs especially Methotrexate

ECG increased risk of coronary disease

PFTs respiratory disease associated

Cervical spine Xray Flexion and extension views checking for subluxation especially atlanto-axial may be required.

Consider ECHO if poor effort tolerance

Sources - Rheumatology journal, Anaesthesia UK, BJA education supplement

4. Neuromuscular disease

Hereditary Charcot Marie Tooth, Friedrichs ataxia, Muscular dystrophies (Duchennes, Beckers) , Myotonias (Myotonic dystrophy, Myotonia congenita)

Acquired motor neurone disease, multiple sclerosis, Guillan Barre, peripheral neuropathies , Myasthenia Gravis, Eaton Lambert syndrome, critical illness myopathies

FBC Anaemia associated

U+E Renal disease

Creatinine Kinase discuss with anaesthetist if needed

ECG Increase risk of heart disease, arrhythmias, cardiomyopathy

ECHO Increased risk cardiomyopathy

PFTs respiratory muscle weakness risk of ventilator failure postop.

Sources - BJA Education,

5. Connective tissue disorders

Hereditary Marfans, Ehlers Danlos syndrome

Acquired SLE, Sjogrens, Systemic sclerosis, Vasculitides (Takayusus arteritis, Wegeners granulomatosis or GPA),

FBC associated platelet dysfunction or decreased levels, anaemia

U+E renal involvement

LFTs if on DMARDs especially methotrexate

Coagulation discuss with anaesthetist fi LFTs abnormal

ECG vasculitis and increased risk cardiac involvement

ECHO associated valvular disease and pulmonary hypertension

PFTs lung involvement

Sources - BJA educational supplement 2016

6. Thyroid disease

FBC low platelets with hyperthyroidism, anaemia assoc

U+E associated autoimmune disease

Serum calcium

TFTs Euthyroid patient before surgery is important

ECG increased risk of IHD, AF and cardiac failure

CT/ CXR If retrosternal goitre discuss with anaesthetist

Source - BJA educational supplement. Anaesthesia UK

7. Sarcoidosis

FBC anaemia, leukopenia or medication causes marrow suppression

U+ E Renal involvement, nephrocalcinosis

LFTs if taking methotrexate

Serum calcium hypercalcaemia

ECG cardiac involvement SVT, AF, prolonged QT, RBBB

ECHO consider if RBBB on ECG

PFTs 90% pulmonary involvement

CT scan/CXR discuss with anaesthetist. Hilar lymphadenopathy

Source - BJA educational supplement

Abbreviations:

FBC Full blood Count

U+E Urea and Electrolytes

LFT Liver Function tests

Ca serum calcium (free and adjusted for Albumin)

ECG Electrocardiogram

PFT Pulmonary Function Tests

ECHO Echocardiogram

CXR Chest X Ray

CT Computerised Tomography scan

Appendix 3. Pre-operative haemoglobin optimisation for elective surgery

See link to trust guidelines:

[Patient Blood Management of Anaemia prior to Elective Surgery](#)

<p>£145 cost of the 20ml [1g] vial = £174.09 DTHFT price (Dec 2017)</p>

Appendix 4. Guidelines for Pre-Operative Echocardiogram

A resting echocardiogram in pre-operative test should be requested when:

<p>Suspected Valvular pathology, especially aortic stenosis and mitral stenosis</p>	<p>The severity of these may not correlate with clinical findings and have significant potential for perioperative morbidity. <u>See separate guideline</u> Pre-operative Echocardiogram https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=897</p>
<p>Left ventricular (LV) function needs to be established in patients with proven or suspected LV failure</p>	<ul style="list-style-type: none"> • The echo will give some indication of LV and RV function but this does not always correlate well with functional capacity or outcome. • An ejection fraction of less than 50% is abnormal and compatible with a diagnosis of systolic heart failure. However, 2/3 of patients over age 80 with heart failure will have diastolic dysfunction and a normal LV ejection fraction. • Patients who have had chemotherapy for cancer in the last 12 months may have sustained myocardial damage. Unless exercise tolerance is excellent, consider performing an echocardiogram • Heart failure (either systolic or diastolic dysfunction) is a major perioperative risk factor. The presence of heart failure doubles the risk of dying after major surgery. • If LV function alone is a question, clinicians should consider a MUGA scan.
<p>Suspected Pulmonary hypertension needs to be demonstrated and quantified.</p>	<p>Therefore the following patients should have echocardiography considered:</p> <ol style="list-style-type: none"> 1. New murmur Especially if: <ol style="list-style-type: none"> a. Poor functional capacity b. Syncope or dizzy spells c. Angina d. LVH or ST changes on ECG e. Major Surgery 2. Known aortic stenosis or mitral stenosis with no recent imaging (12 months) or deterioration in symptoms 3. Patients with suspected heart failure who are short of breath climbing a flight of stairs 4. Patients with known heart failure with no recent echo and/or a change in symptoms 5. Known ischaemic heart disease in whom LV function has not formally been assessed and have symptoms of shortness of breath 6. Patients having had chemotherapy in the last 12 months

The following patients should not routinely have resting echos:

1. Angina / Ishaemic Heart Disease
2. Mild and moderate regurgitant lesions with normal LV and no change in symptoms, if last echo is within the last 18 months.
3. Complex congenital disease or previous cardiac surgery – need discussion with their Cardiologist

Please always discuss echo requests with a Consultant Anaesthetist wherever possible.

Appendix 5. Management of Patients with Hypertension Attending Pre-Operative Assessment Clinic

Approximately 15% of patients are hypertensive, with both systolic and diastolic hypertension being important. NICE defines hypertension as a diastolic BP >90mmHG or a systolic BP > 140mmHg. But the overall risk to the patient is determined by the average out of hospital blood pressure. A blood pressure record from the GP is more useful than a single pressure taken in the clinic.

- Patients who have high blood pressure may get exaggerated intra-operative swings in BP that can result in myocardial ischaemia.
- However, making surgery safer for these patients is not just a question of bringing their BP down. Treatment started in a hurry can make them even more prone to swings (mainly low BP) during surgery. Their overall risk can only be brought down by months or years of stable lower blood pressure.
- Studies suggest that the risk of a significant peri-operative event (MI, cardiac death, CVA or renal failure) does not rise until the systolic BP > 180 and/or diastolic BP >110 (grade III and IV HTN).

Taking a history:

- Duration: the longer the hypertension has been present, the more likely there is to be damage to blood vessels in the heart, kidney or brain.
- Number of tablets currently taken to control BP: gives an indication of severity.
- Other risks: IHD, CVD, CCF, DM, FHx., smoking, PVD, renal failure, age – in the presence of hypertension increase the risks of adverse events compared to isolated hypertension.
- Control: How well controlled is the BP with current medication? Ask about readings taken in the GP surgery.

In Clinic

Measure BP in POA clinic

If >180SBP and/or >100DBP; call GP practice to obtain measurements from within the last 3 months; ideally 3 results if possible.

See table below:

	Surgery has urgency e.g. all cancer surgery	Surgery not urgent e.g. hernia repair, joint replacement
Systolic >181 Diastolic >111	Notes for anaesthetist review for decision to defer case, with BP results and ECG	Send Medical problems in POA letter to GP and cc. surgeon Problems = severe HTN Request – investigate and treat Desired endpoint – grade II or less HTN Timeframe – remove from WL
Systolic 160-180 Diastolic 100-110	Accept, surgery can proceed without Rx. Tell patient that BP control is not optimal but surgery can proceed. They may want to see GP for further	Notes for anaesthetist review, with blood results and ECG

	ix. Send BP letter to GP	
Systolic <160 Diastolic <100	Accept	Accept

1. Type and nature of surgery
2. Underlying risk factors: favouring treatment
E.g. IDH, CVD, Renal failure, family history, DM, age
3. Underlying factors which may preclude tight BP treatment:
E.g. CCF, PVD, frailty

The measurement of adult blood pressure and management of hypertension before elective surgery

This has recently been updated by and published as

- “Joint Guidelines from the Association of Anaesthetists of Great Britain and Ireland and the British Hypertension Society”

A. Hartle, T. McCormack, J. Carlisle, S. Anderson, A. Pichel, N. Beckett, T. Woodcock, A. Heagerty

First published: 17 January 2016

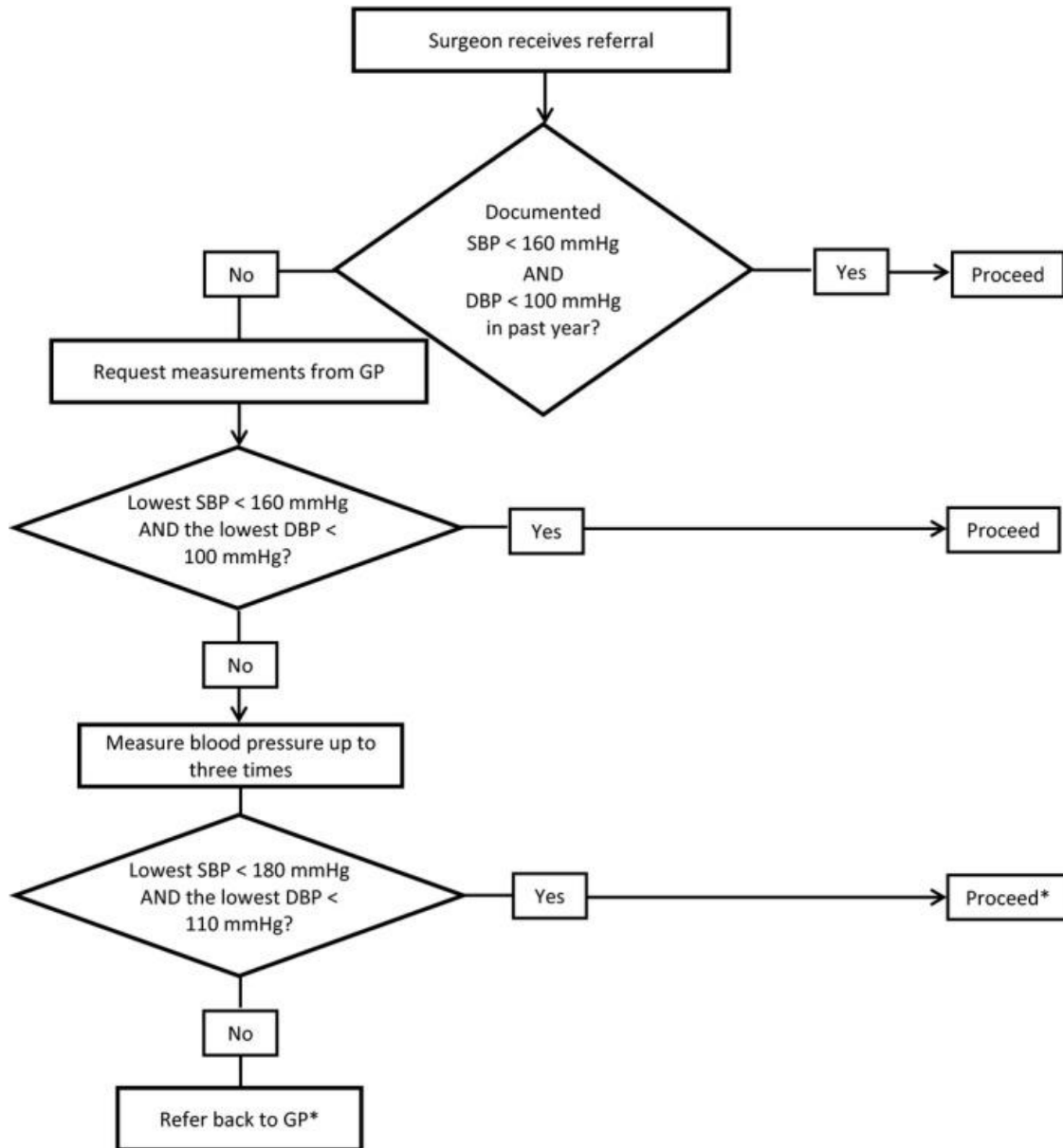
<https://www.ncbi.nlm.nih.gov/pubmed/26776052>

Hypertension is normally a chronic disease with long term risks. High blood pressure in a pre-operative hospital setting is often a normal stress response and should not delay surgery unless the blood pressure is very high which is now defined as above 180/110.

The main points of the guideline are :-

- This guideline aims to ensure that patients admitted to hospital for elective surgery are known to have blood pressures below 160 mmHg systolic and 100 mmHg diastolic in primary care.
- **The objective for primary care** is to fulfil this criterion before referral to secondary care for elective surgery.
- The objective for secondary care is to avoid spurious hypertensive measurements.
- Secondary care should not attempt to diagnose hypertension in patients who are normotensive in primary care.
- Patients who present to pre-operative assessment clinics without documented primary care blood pressures should proceed to elective surgery if clinic blood pressures are below 180 mmHg systolic and 110 mmHg diastolic.

- General practitioners should refer patients for elective surgery with mean blood pressures in primary care in the past 12 months less than 160 mmHg systolic and less than 100 mmHg diastolic.
- Secondary care should accept referrals that document blood pressures below 160 mmHg systolic and below 100 mmHg diastolic in the past 12 months.
- Pre-operative assessment clinics need not measure the blood pressure of patients being prepared for elective surgery whose systolic and diastolic blood pressures are documented below 160/100 mmHg in the referral letter
- Surgeons should ask general practitioners to supply primary care blood pressure readings from the last 12 months if they are undocumented in the referral letter from primary care
- Pre-operative assessment staff should measure the blood pressure of patients who attend clinic without evidence of blood pressures less than 160 mmHg systolic and 100 mmHg diastolic being documented by primary care in the preceding 12 months.
- Elective surgery should proceed for patients who attend the pre-operative assessment clinic without documentation of normotension in primary care if their blood pressure is less than 180 mmHg systolic and 110 mmHg diastolic when measured in clinic



This has recently been updated by and published as

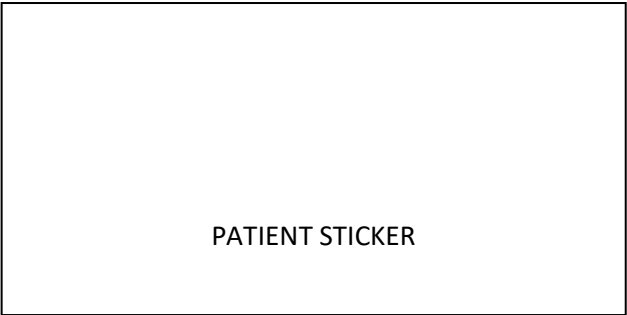
- “Joint Guidelines from the Association of Anaesthetists of Great Britain and Ireland and the British Hypertension Society”

A. Hartle, T. McCormack, J. Carlisle, S. Anderson, A. Pichel, N. Beckett, T. Woodcock, A. Heagerty

First published: 17 January 2016

<https://www.ncbi.nlm.nih.gov/pubmed/26776052>

BP Letter



The above patient has attended today for a pre-operative assessment.

- Their surgery is planned for.....
- They do not have a date for their surgery

After performing 3 blood pressure readings, we found their blood pressure to be:

1) / 2) / 3) /

We appreciate these recordings may be raised artificially due to anxiety so ask that you check the blood pressure and treat if appropriate. Depending on the nature of the planned surgery and priority it may be necessary to postpone surgery until the patient is fit.

We ask that yourself or the patient telephones us direct on **01332 785087** to discuss blood pressure recordings and treatment commenced (if any) so a decision can be reached about fitness for surgery.

Many thanks

Pre-operative Assessment Practitioner

Appendix 6. Assessment of Ischaemic Heart Disease

Patients with stable coronary artery disease on appropriate medication having major or minor surgery have similar outcomes to the general population.

Those with unstable symptoms and/or associated heart failure are at significantly increased risk especially if major surgery is planned.

Pre-operative assessment must include key considerations when assessing patients for Ischaemic Heart Disease (IHD):

There are five important questions to answer when assessing patients for IHD.

<p>Is the Diagnosis of IHD likely?</p>	<p>A diagnosis of IHD is more likely in patients with:</p> <ul style="list-style-type: none"> • Abnormal ECG (left ventricular hypertrophy, left bundle-branch block, ST-T abnormalities) • Rhythm other than sinus (e.g. atrial fibrillation) • Non-insulin dependent diabetes mellitus • Poorly controlled systemic hypertension • History of stroke • Smoker • Hypercholesteraemia • Renal insufficiency (serum creatinine $\geq 180\mu\text{mol/l}$) • Advanced age (≥ 75 yrs)
<p>Is the IHD stable?</p>	<p>Patients with unstable IHD will usually need their surgery delayed and may need further investigation (either by exercise ECG, stress echo).</p> <p>These patients should be discussed with the anaesthetist on duty and their cardiology team</p>

<p>Markers of stable coronary artery disease</p>	<p>Makers of unstable coronary artery disease</p>
<ul style="list-style-type: none"> • Mild stable angina pectoris (CCS class 1 or 2) • Previous MI by history or ECG without current symptoms • Six months after CABG, Percutaneous Coronary Intervention (PCI), or bare metal stent (BMS) with good symptom control 	<ul style="list-style-type: none"> • < 6 weeks after MI, PCI, BMS, CABG • <6 months after MI, PCI, BMS, CABG if complications or current symptoms • <12 months after a drug eluting stent (DES) or > 12 months if high risk DES • Unstable or severe angina (CCS class III or IV) • Symptoms of decompensated heart failure (NYHA class III or IV) • Clinical ischaemia and symptomatic • arrhythmias (ventricular or supraventricular)

<p>Are patients on correct medication?</p>	<p>Patients with IHD should usually be on a combination of drugs for secondary prevention. These will usually include a cholesterol lowering drug (Statin) and anti platelet drugs (either aspirin, clopidogrel, or combined aspirin and clopidogrel). B Blockers, ACE inhibitors, nitrates, diuretics and other antihypertensives are common place.</p> <p>Patients with suspected coronary artery disease who are not on drugs for secondary prevention (principally aspirin, statin) should be discussed.</p> <p>See separate guidelines for management of patients on anti-platelet drugs for non-cardiac surgery. (Appendix 7)</p> <p>In general all cardiac medications should be continued up to and including the day of surgery. If in doubt please consult the anaesthetic clinic.</p>
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<p>Have all appropriate investigations been undertaken?</p>	<p>A current resting ECG should be available on all.</p> <p>Patients with stable disease and good functional capacity all require FBC and U+Es prior to any surgery.</p> <p>Patients with unstable disease need discussion as previously outlined.</p>
<p>Is there evidence of cardiac failure / poor exercise tolerance?</p>	<p>Patients with poorly controlled or undiagnosed heart failure are at significantly increased risk. Patients with poor exercise tolerance should be considered to have heart failure until proven otherwise.</p> <p>Please discuss all of these patients with the consultant anaesthetist clinic especially if major surgery is planned.</p>

GRADING OF ANGINA PECTORIS BY THE CANADIAN CARDIOVASCULAR SOCIETY CLASSIFICATION SYSTEM

Class I

Ordinary physical activity does not cause angina, such as walking, climbing stairs. Angina (occurs) with strenuous, rapid or prolonged exertion at work or recreation.

Class II

Slight limitation of ordinary activity. Angina occurs on walking or climbing stairs rapidly, walking uphill, walking or stair climbing after meals, or in cold, or in wind, or under emotional stress, or only during the few hours after awakening. Angina occurs on walking more than 2 blocks on the level and climbing more than one flight of ordinary stairs at a normal pace and in normal condition.

Class III

Marked limitations of ordinary physical activity. Angina occurs on walking one to two blocks on the level and climbing one flight of stairs in normal conditions and at a normal pace.

Class IV

Inability to carry on any physical activity without discomfort—anginal symptoms may be present at rest.

New York Heart Association (NYHA) classification of heart failure

Class I

Cardiac disease but without resulting limitation of physical activity Ordinary physical activity does not cause undue fatigue, palpitation, dyspnoea or anginal pain.

Class II

Cardiac disease resulting in slight limitation of physical activity Comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnoea or anginal pain.

Class III

Cardiac disease resulting in marked limitation of physical activity Comfortable at rest. Less than ordinary physical activity results in fatigue, palpitation, dyspnoea or anginal pain.

Class IV

Cardiac disease resulting in inability to carry on any physical activity without discomfort

Symptoms of cardiac insufficiency or of anginal syndrome may be present even at rest. If any physical activity is undertaken discomfort is increased.

Appendix 7. Guidelines on the Perioperative Management of anticoagulant and antiplatelet drugs in Elective Surgical Patients in the Pre-Operative Assessment Clinic

List of drugs and actions

Oral Anticoagulants

Warfarin	Vitamin K antagonist
Rivaroxaban	Factor Xa inhibitor
Apixaban	Factor Xa inhibitor
Edoxaban	Factor Xa inhibitor
Dabagatrin	Direct thrombin inhibitor

Intravenous or subcutaneous anticoagulants

Heparins	Anti thrombin III enhancement so inhibits thrombin and factor Xa
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Clinical uses

Venous thrombosis is mainly due to fibrin clot and therefore treatment and further prevention involve anticoagulants. These thromboses may also embolise causing distant damage. This includes

1. **Deep vein thrombosis (DVT)**. Acute treatment for 3 months and prevention after 3 months if high risk of recurrence (2 or more provoked DVT or PE episodes or 1 unprovoked DVT or PE)
2. **Pulmonary embolus (PE)**. Acute treatment for 3 months. Prevention lifelong if high risk of recurrence
3. **Atrial fibrillation (AF)**. Stroke (CVA) prevention. Warfarin recommended for those with valvular disease and AF.
4. **Congenital and acquired prothrombotic states** e.g. Protein C or S deficiencies, antithrombin III deficiency, antiphospholipid antibody syndrome
5. **Prosthetic heart valve replacement**. Mitral or aortic valve replacements. Bioprosthetic valves may not need anticoagulation for more than 3 months after insertion
6. **Cardiac failure patients with previous embolus or AF**

Oral Antiplatelet drugs

Aspirin	Inhibits cyclo oxygenase to reduce Thromboxane A2 production so inhibits platelet aggregation. Irreversible action on platelets
Dipyridamole	phosphodiesterase inhibitor
Clopidogrel	Inhibition of P2Y12 class of ADP receptors on platelets.
Prasugrel	Inhibits P2Y12 ADP receptors on platelets
Ticagrelor	Non-competitive, direct-acting P2Y12-receptor inhibitor

Clinical Uses

Arterial thrombosis is caused by platelet induced mechanisms so will be treated and further episodes prevented using antiplatelet drugs.

This includes:

1. **Ischaemic Stroke**. Arterial blockage of extra cerebral or intracerebral vessels
2. **Myocardial infarction** or **coronary artery disease**. Arterial blockage in coronary arteries
3. **Peripheral vascular disease**. Arterial atheroma increases risk of thrombosis
4. **Coronary or cerebral stents** in situ thrombosis prevention

Dual Antiplatelet treatment

Aspirin and clopidogrel usually for up to 1 year after acute coronary syndrome or stent implantation for Myocardial infarction

Aspirin and clopidogrel used if CVA/TIA and stents inserted for arterial stenosis (carotid artery or intra cerebral vessels)

Combined antiplatelet and anticoagulant treatment

This is given if the patient has a combination of venous and arterial thrombosis risk eg

1. Acute coronary syndrome AND atrial fibrillation for 1 year after the event
2. Acute coronary syndrome and the first 3 months treatment of acute DVT/ PE (venous thrombosis)
3. CVA with arterial stent insertion and AF
4. CVA with arterial stents inserted and first 3 months treatment of DVT/ PE (venous thrombosis)
5. Mechanical heart valve on anticoagulant and suffers embolic event

After 1 year of treatment after an acute coronary syndrome or coronary stent if the patient has AF or had a venous thrombosis (DVT/ PE) they will revert to **anticoagulant treatment only**.

If antiplatelet treatment **AND** oral anticoagulants continued this means there is a **very high risk of coronary events** (complex stents or severe diffuse disease)

Perioperative management of antiplatelet and anticoagulant drugs**Stopping anti platelet drugs peri-operatively**

Aspirin **Do NOT** stop unless TURP or neurological operations or posterior eye chamber operations. For these stop 3 days pre-operatively. If unsure discuss with surgeon whether to stop and when to start post-operatively.

Dipyridamole **STOP 48 hours** pre-operatively if used with aspirin. Continue aspirin.

Clopidogrel **STOP 7 days** pre-operatively if used as a sole agent for prevention of CVA or peripheral vascular disease or coronary artery disease. No evidence for replacement with aspirin pre-operatively. Discuss with vascular surgeon, stroke physician or cardiologist if concerned pre-operatively re use of aspirin when clopidogrel stops.

Restart once bleeding controlled within 7 days of surgery

Prasugrel **STOP 7 days** pre-operatively

Tirofiban **STOP 5 days** pre-operatively

Ticagrelor **STOP 5 days** pre-operatively

Anticoagulants

Warfarin **STOP 5 days** pre-operatively. IF high risk patient consider bridging with THERAPEUTIC DOSE heparins. See high risk table below

Rivaroxaban **STOP 48 hours** pre-operatively NO bridging needed
If gfr LESS than 30 ml/min STOP 72 h pre-op

Apixaban **STOP 48 hr** pre-op. NO bridging required
If gfr LESS than 30ml/min STOP 72 h pre-op

Edoxaban **STOP 48h** pre-op NO bridging required
If gfr LESS than 30ml/min STOP 72h pre-op

Dabagatrin **STOP 48h** pre-op if gfr >80ml/min
STOP 48-72h pre-op if gfr 50-80 ml/min
STOP 96h pre-op if gfr 30-50 ml/min

Bridging therapy

ONLY consider if a patient is on warfarin **AND** has a

1. CVA in the last 3 months
2. PE or DVT in the past 3 months
3. PE or DVT whilst on anticoagulation so target INR now set to 3.5
4. Severe thrombophilia. Protein C or S deficiency, Antithrombin III deficiency, Prothrombin mutation homozygote
5. Mechanical valve replacement (except bileaflet aortic valve and no other risk factors)
6. AF patients who have **had a CVA / TIA AND** have **3 OR MORE** of the following factors

Congestive cardiac failure
Hypertension (including treated)
Age over 75 years
Diabetes Mellitus

Intermediate risk patients such as Factor V leiden carriers or prothrombin mutation carriers, recurrent VTE or active cancer patients may need discussion with haematology regarding need for bridging therapy.

Bridging DOSES recommended. THERAPEUTIC doses of low molecular weight heparin needed.

DALTEPARIN 200 iu/ kg per day (can be 100iu/ kg BD)

OR

ENOXAPARIN 1.5mg/kg subcutaneously OD if creatinine clearance is MORE than 30ml/minute

ENOXAPARIN 1mg/kg OD if creatinine clearance is LESS than 30ml/minute

Start bridging treatment 3 days before surgery. Stop treatment 24 hours before surgery day. (If B.D. treatment omit evening dose on day before surgery).

Restart therapeutic doses the day after surgery with usual Warfarin dose or when the surgeon is happy with haemostasis. Continue these until INR has reached usual therapeutic levels.

Surgeons should prescribe this when discussing management of thrombosis risk in clinic

Patients on BOTH anticoagulant and antiplatelet drugs

If an ACS patient or a patient who has had a PCI develops Atrial Fibrillation(AF) or acute Venous Thrombo Embolism (DVT / PE) they may also be on an anticoagulant with DAPT.

If a patient has had a stent for CVA or TIA develops AF or a DVT / PE they can be on anticoagulants with antiplatelet drugs

Perioperative management

These are the **highest risk** for thrombosis peri-operatively and should be discussed with a cardiologist or stroke physician for the peri-operative plan for anticoagulant and antiplatelet management

REFS:

1. Peri-operative management of anticoagulation and antiplatelet therapy. David Keeling, R Campbell, Henry Watson and on behalf of the British Committee of Standards for Haematology. British journal of Haematology Volume175, Issue 4 November 2016 P. 602-613
2. Indications for anticoagulant and antiplatelet combined therapy BMJ 2017;359:j3782
3. New anticoagulants in combination with platelet agents Tidsskr Nor Legforen 2016 136: 1543-6
4. Antiplatelet drugs – perioperative management – Clinical guidelines. Intranet guidelines and policies
5. Apixaban Bleeding Surgery and Overdose – Clinical guideline. Intranet guidelines and policies.
6. Rivaraxaban. Bleeding surgery and Overdose – clinical guideline. Intranet guidelines and policies.
7. 7. Warfarin. Bleeding, surgery and overdose – clinical guideline. Intranet guidelines and policies
8. 8. New oral anticoagulants and regional anaesthesia. British Journal of Anaesthesia. Volume 111, Issue suppl_1, 1 December 2013, Pages i96–i113

Appendix 8. Management of Patients who have undergone Percutaneous Coronary Intervention (PCI) who present for Surgery

Acute coronary syndrome, PCI and dual antiplatelet therapy (DAPT)

DAPT is ASPIRIN AND either clopidogrel, prasugrel OR Ticagrelor

Background

After Myocardial infarction (MI) or Acute Coronary Syndrome (ACS) patients may progress to bypass surgery (CABG), Percutaneous Coronary Intervention (PCI - usually a stent) or thrombolysis treatment.

Dual antiplatelet medication is recommended as the risk of thrombosis and further MI or CVA is very high.

CABG	12 months treatment with aspirin and clopidogrel (or prasugrel or ticagrelor)
Bare metal Stent (PCI)	At least 4 weeks aspirin and clopidogrel (or other P2Y12 inhibitor)
Drug Eluting Stents (PCI)	At least 6 months dual antiplatelet treatment.
MI with no PCI just fibrinolysis	1 month DAPT recommended but consider up to 12 months.

If patient has MI then has a PCI (stent) DAPT up to 12 months post procedure

Summary: For 12 months after CABG, ACS with stent insertion most patients will be on DAPT

Perioperative management

- low bleeding risk procedures endoscopy, some dental surgery, superficial skin surgery could proceed without interruption of antiplatelet therapy. ASK SURGEON
- high bleeding risk procedures
Postpone operation in patients still requiring dual antiplatelet therapy.
If surgery cannot be postponed, CONTINUE aspirin and STOP Clopidogrel or Ticagrelor from 5 days pre-op or STOP Prasugrel 7 days pre-op.

Remember that Clopidogrel to be safe for SPINAL or EPIDURAL anaesthesia is ideally STOPPED 7 days before surgery so inform the anaesthetist in these high risk situations

Refs:

1. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology. European Heart Journal. Volume 39, Issue 2, 7 January 2018, Pages 119–177
2. Peri-operative management of anticoagulation and antiplatelet therapy. David Keeling, R Campbell, Henry Watson and on behalf of the British Committee of Standards for Haematology. British journal of Haematology Volume 175, Issue 4 November 2016 P. 602-613

Appendix 9. Diabetic Management

<p>DIABETES DRUGS</p>	<p>Demand careful peri-operative management. Intravenous insulin replacement may be required until oral absorption of drugs is resumed post-operatively. All insulin dependent diabetics should have their requirements discussed with the diabetic nurse specialist teams if there are concerns around how to manage their diabetic medication peri-operatively. HbA1C should be well controlled. HbA1C>69mmol/mol needs referral to specialist nurse teams.</p> <ol style="list-style-type: none"> 1. Diabetics should be first on the list wherever possible 2. Omit metformin morning of surgery. 3. Omit other oral hypoglycaemics the morning of surgery (check full trust guideline). (Quick reference Appendix below) 4. For s/c insulin (short, medium and long acting) see Trust guideline. 5. All IDDM and NIDDM patients for major surgery should have a sliding scale considered from the morning of surgery, especially if NBM for more than 1 meal. For minor/intermediate procedures, this is very often not necessary, especially for NIDDM (see Trust guideline).
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See link to trust guidelines:

[Diabetes Mellitus - Elective Surgical Procedures - Clinical Guidelines](#)

Appendix A: Minor/Intermediate surgery & adjustment of non-insulin medication

**Guidelines for peri-operative adjustment of
non-insulin medication**

(Following a short starvation period i.e. no more than ONE missed meal)

Note; DPP-4 & GLP agonists MAY delay gastric emptying and preoperative fasting/starvation guidance should bear this in mind

Usual tablets	Day prior to Surgery	Day of Surgery	
		AM Surgery	PM Surgery
Acarbose	Take as normal	Omit morning dose if nil by mouth	Give morning dose if eating. Omit evening dose.
Metformin	Take as normal, unless eGFR<50mls/min or contrast media used, then omit for48h.	Take as normal, unless eGFR< 50mls/min or contrast media used, then omit for48h.	Take as normal, unless eGFR< 50mls/min or contrast media used, then omit for48h.
Sulphonylureas (glibenclamide, glicazide, glipizide etc.)	Take as normal	Once daily omit am Twice daily omit am	Once daily omit am, Twice daily omit am and pm
Pioglitazone	Take as normal	Take as normal	Take as normal
DPP-4 inhibitor (Sitagliptin, Vidagliptin, Saxagliptin)	Take as normal	Omit on day of surgery	Omit on day of surgery
GLP-1 agonists Exenatide/Byetta injections	Inject as normal	Omit on day of surgery	Omit on day of surgery
Liraglutide/Lixisenatide injections	Give as usual in the morning. Omit if evening injection		

Appendix B: Minor/Intermediate surgery & adjustment of insulin treatment

Guideline for peri-operative adjustment of insulin medication

(Following a short starvation period i.e. no more than ONE missed meal)

Usual insulin	Day prior to Surgery	Day of Surgery	
		AM Surgery	PM Surgery
Once daily (evening): e.g. Lantus/Glargine, Levemir/Detemir, Insulatard or Humulin I Insuman Basal	No dose change	Take normal dose	Take normal dose
Once daily (morning): e.g. Lantus/Glargine or Levemir/Detemir, Insulatard, Humulin I Insuman Basal	No dose change	Take normal dose	Take normal dose
Twice daily isophane (morning & evening): e.g. Insulatard, Humulin I Insuman Basal	No dose change	Take normal dose	Take normal dose
Twice daily: Mixed insulin e.g. Novomix 30, Humulin M3, Humalog Mix 25, Humalog Mix 50 Insuman Mix 15/25/50	No dose change	Give half usual morning dose with lunch (post-op). Resume normal insulin dose with evening meal	Halve usual morning dose at breakfast (before 7.30). Resume normal insulin dose with 1 st post-op meal
Basal bolus regimens: Long and short acting insulin e.g. novorapid tds and glargine od,	No dose change	Continue basal/long-acting insulin unchanged. Omit morning short-acting insulin and take usual short acting dose with next meal.	Continue basal/long-acting insulin unchanged. Take usual morning short acting insulin with breakfast. Omit lunch-time dose of short acting and take usual short acting insulin with next meal.
3 times daily mixed insulin: e.g. Novomix 30, Humulin M3 Insuman Mix 15/25/50	No dose change	Omit morning dose and take half normal lunch-time dose. Resume usual insulin with evening meal	Take half usual morning dose and omit lunch-time dose. Resume usual insulin with evening meal
Insulin pump therapy or other insulin regimes	Encourage patient to self manage. For advice contact the diabetes team		

If unsure, seek advice from diabetes team.

Appendix D: Major surgery and all diabetes medications

**Guideline for peri-operative adjustment of
insulin and non-insulin medication**
(Following a long starvation period i.e. patient will NOT resume eating
within 4 hours of surgery)

Usual tablets	Day prior to Surgery	Day of Surgery
Acarbose	Take as normal	Use Variable rate intravenous insulin
Metformin	Omit for 48h if eGFR< 50mls/min or if contrast media used. Otherwise take as normal.	
Sulphonylureas (glibenclamide, glicazide, glipizide etc.)	Take as normal	
Pioglitazone	Take as normal	
DPP-4 inhibitor (Sitagliptin, Linagliptin, Vidagliptin, Saxagliptin)	Take as normal	
GLP-1 agonists (exenatide, liraglutide, lixisenatide injections)	Inject as normal	

- Omit insulin on morning of surgery (except long-acting insulin analogue, like Levemir/Detemir or Glargine/Lantus which should be continued).
- Seek help if patient is on insulin pump.
- Commence on Variable rate intravenous Insulin on morning of surgery.
- Resume diabetes medication when clinically stable and tolerating fluid and solids.

Diabetic patients for Day Surgery

Management for perioperative medication is the same and follows the guidance from the Trust.

Points that should be taken into account for Day Surgery are as follows

1. All diabetic patients should be first on a MORNING list if at all possible.
2. Diabetics taking INSULIN should be moved to a MORNING list (first patient) if at all possible
3. Patients taking INSULIN may NOT be suitable for day surgery if having longer or more complex operations where eating and drinking may not be possible immediately after surgery eg laparoscopic cholecystectomies, laparoscopic hernia repairs, mastoid or middle ear operations, tonsillectomies. Discuss these patients with an Anaesthetist before proceeding.
4. Patients with unstable diabetes on subcutaneous infusions may not be suitable for day surgery. Discuss with an Anaesthetist.
5. Patients with unpredictable hypoglycaemic episodes may not be suitable for day surgery. Discuss with Anaesthetist
6. Anaesthetists should be informed for patients taking INSULIN for day surgery.

HbA1C should be measured if this has not been done for over 3 months. Levels GREATER THAN 69 need referral back to the GP or diabetic team for better control. This is in line with the Trust guidelines. The elective day surgery should be postponed until better control is achieved.

Appendix 10. Guidance on which medicines should be continued or omitted prior to surgery. An alphabetical list

Disclaimer:

This guideline is believed to be an accurate reflection of the most current evidenced based literature available at time of composition. This is not an exhaustive list; it is intended to be used as a guide only. Users are advised to always consult medical literature and take into account any new developments. Always relate the information provided to the individual clinical situation.

Introduction:

It is important that a patient continues all their regular medication for as long as feasibly possible to ensure a patient is as stable as possible on admission to theatre. This is particularly important for immunosuppressants, *B*-blockers, and other drugs used to treat angina, heart failure, bronchospasm and epilepsy.

Medication can still be taken by a Nil By Mouth (NBM) patient: Plain water will be emptied from the stomach within two hours; therefore medication can be swallowed with a glass of water up to two hours prior to surgery.

Certain medications do need to be withheld prior to surgery. Examples include to reduce a patient's thrombus risk, avoid an interaction with anaesthetics or improving glycaemic control during the NBM period. Below is a list of commonly prescribed medications and whether they can be continued prior to surgery or from when they should be omitted.

Important points:

- This list should be used as a guide only.
- When in doubt, consult the anaesthetist and /or surgeon conducting the procedure.
- If necessary, discuss individual cases with associated speciality teams.
- Herbal medication and their potential peri-op complications are listed in a separate guide.

A	
Acarbose	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Acenocoumarol	Treat as for Warfarin. See Anticoagulation policy (Appendix 7)
Anagrelide	Seek haematologist advice
Apixaban	Omit 48 hours pre op
Aspirin	Continue (75mg dose) unless otherwise specified. Reduce higher doses to 75mg.
Betamethasone (steroid)	Continue – but consider dose increase if long duration or high dose.
C	
Chlorpropamide	See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Clopidogrel	Discuss with surgical/cardiology teams (if single agent for stroke, usually omit 7 days pre op. Start 75mg aspirin in its

	place where possible. (Appendix 7) Guidelines on the Perioperative Management of anticoagulant and antiplatelet drugs in Elective Surgical Patients in the Pre-Assessment Clinic.		
Clozapine	Withhold 12 hours pre op. Alert Anaesthetist. Alert Pharmacy that patient is in hospital. Dose will need re-titrating if withheld for more than 48 hours.		
Contraceptives	See oral contraceptives		
D			
Dabigatran (see simplified recommendations appendix 11)	Renal function and bleeding risk dependant as below:		
	Creatinine Clearance	Standard surgery	Major surgery or high bleeding risk
	>80mls/min	Omit 24hrs pre-op	Omit 48hrs pre-op
	50-80mls/min	Omit 36hrs pre-op	Omit 72hrs pre-op
	30-50mls/min	Omit 48hrs pre-op	Omit 96hrs pre-op
Dapaglifozin	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792		
Deflazacort (steroid)	Continue - but consider dose increase if long duration or high dose.		
Desferrioxamine	Seek haematologist advice		
Dipyridamole	Withhold 48 hours prior to procedure or switch to aspirin 75mg		
E			
Ephedrine	Seek Anaesthetist advice		
Ethinylestradiol	Discuss with endocrine team. High doses may need to be stopped or continued at a lower dose.		
Etidronalte	Omit on day of procedure		
Exenatide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792		
G			
Glibenclamide	See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792		
Gliclazide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792		
Glimepiride	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792		
Glipizide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792		
Glucosamine	Stop 2 weeks pre-op if mixed with chondroitin		

H	
HRT: combined oestrogens and progestones or oestrogen only preparations	<p><u>Oral preparations:</u> Non-orthopaedic daycase procedures: Continue normal HRT</p> <p>All inpatient and orthopaedic procedures: Advise to omit 10 days prior surgery. Listing consultant to advise patient to see GP to convert to transdermal HRT (patch or gel) because of possible menopausal like side effects of withdrawal, which may be considerable. Continue with transdermal HRT until mobilising normally. Patches come in 3 month packs.</p> <p><u>Transdermal preparation:</u> Continue with medication. Do not stop.</p> <p>Thromboprophylaxis as per trust guidelines. Listing Consultant to ensure TCI form is completed to inform pre op assessment of the plan.</p>
I	
Insulins	See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Isocarboxazid (MAOI)	Seek both anaesthetic and psychiatric input. If withdrawal necessary; do so slowly, well in advance to allow a 2 week drug free period.
L	
Linagliptin	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Liraglutide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Lithium	Continue – but alert Anaesthetist and monitor electrolytes and fluid balance closely
Lixisenatide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
M	
Moclobemide	Omit 12 hours pre-op
N	
Nateglinide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Neostigmine	Discuss with Anaesthetist
O	
Oral contraceptive:	Non-orthopaedic daycase procedure: Continue

combined oestrogen and progesterones	Any inpatient or orthopaedic surgery: Advise to omit 1 month prior to surgery. Listing consultant to either offer advice re alternative precautions or refer to GP/CASH clinic for management. The progesterone only pill is a reasonable alternative. If the combined pill is going to be restarted allow at least 2 weeks after mobilisation. If continuing, document decision and ensure adequate thromboprophylaxis if continued. Listing Consultant to ensure TCI form is completed to inform pre op assessment of the plan.
Orlistat	Omit once nil by mouth
P	
Perindopril	Omit day of procedure (increases seizure risk)
Phenelzine (MAOI)	Seek both anaesthetic and psychiatric input. If withdrawal necessary; do so slowly, well in advance to allow a 2 week drug free period.
Phenindione	Treat as for Warfarin. See Anticoagulation policy and Appendix 7
Phentolamine	Seek Anaesthetist advice
Pioglitazone	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Prasugrel	Discuss with surgical / cardiology teams. Appendix 7 Guidelines on the Perioperative Management of anticoagulant and antiplatelet drugs in Elective Surgical Patients in the Pre-Assessment Clinic
Pyridostigmine	Discuss with Anaesthetist
Q	
Quinapril	Continue
R	
Ramipril	Continue
Repaglinide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Rivaroxaban	Omit 48 hours pre-op
Rosiglitazone	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
S	
Saxagliptin	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Sevelamer	Omit once patient NBM
Sitagliptin	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines

	https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
T	
Tapentadol	Omit day of procedure (increase seizure risk)
Thalidomide	Seek Haematologist advice
Theophylline	Continue – consider checking level pre-op if patient risk of arrhythmias
Ticagrelor	Discuss with surgical / cardiology teams Appendix 7 Guidelines on the Perioperative Management of anticoagulant and antiplatelet drugs in Elective Surgical Patients in the Pre-Assessment Clinic
Tolbutamide	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
Trancypromine (MAOI)	Seek both Anaesthetic and Psychiatric input. If withdrawal necessary; do so slowly, well in advance to allow a 2 week drug free period.
Trandolapril	Continue
Trilostane	Discuss with Anaesthetist
V	
Vildagliptin	Usually omitted morning of surgery. See Diabetic Patients – Perioperative Management – Clinical Guidelines https://derby.koha-ptfs.co.uk/cgi-bin/koha/opac-detail.pl?biblionumber=792
W	
Warfarin	Appendix 7 Guidelines on the Perioperative Management of anticoagulant and antiplatelet drugs in Elective Surgical Patients in the Pre-Assessment Clinic

Rheumatology guidance for biological agents peri-operatively

Biological Immunomodulatory Therapy	Time to STOP pre-operatively	Time to START again post operatively
Abatacept	6 weeks	2 weeks
Adalimumab	6 weeks	2 weeks
Anakinra	1 week	2 weeks
Certolizumab	6 weeks	2 weeks
Etanercept	2 weeks	2 weeks
Golimumab	6 weeks	2 weeks
Infliximab	4 weeks	2 weeks (if no infection and healing of wound OK)
Secukinumab	6 weeks	2 weeks
Tocilizumab	6 weeks	2 weeks
Ustekinumab	6 weeks	2 weeks

Appendix 11. Herbal Medicine with potential peri-operative complications

OMIT 2 weeks pre-op.

In general all herbal Medicine should be omitted for 2 weeks prior to surgery as exact contents can be difficult to clarify.

Disclaimer:

This guideline is believed to be an accurate reflection of the most current evidenced based literature available at time of composition. This is not an exhaustive list; it is intended to be used as a guide only. Users are advised to always consult medical literature and take into account any new developments. Always relate the information provided to the individual clinical situation.

Background:

The use of natural medicines in the UK is extensive. Many patients do not consider these products to be drugs or medication and often do not disclose their use to health providers. As a result there is a risk that patients may take these products in the perioperative period without healthcare provider's knowledge.

Purpose:

Many natural medicines have pharmacological effects that have the potential to interfere with surgical procedures. Therefore, assessment of natural medicine use is an important aspect of perioperative assessment. Patients should be asked specifically about their use of herbs, vitamins, minerals, or other natural or alternative products.

Advise patients to *discontinue taking all non-essential natural medicines two weeks before an elective surgery procedure*. Some products may not need to be discontinued this far in advance; however, there often is not enough information about which constituents cause a particular pharmacological effect or the half-life of those constituents¹.

Below is a list of herbal medicines known to have pharmacological effects which could adversely affect surgery. Advise patients to stop taking any preparation with these ingredients two weeks prior to surgery. If a patient discloses a medication not on this list but wishes to continue taking it, please seek further advice from pharmacy.

Constituent	Reason why it should be stopped
5-HTP	Has serotonergic properties; treat as an SSRI. Caution with pethidine use.
Agnus Castus	Pro-oestrogenic; could increase thrombus risk Dopamine agonist; Treat as haloperidol clozapine or sulpiride.
Agrimony	Clinical evidence of hypotensive effects Clinical research suggests hypoglycaemic effects
Alfalfa	Immunomodulating properties; Possible increased risk of infection and poor wound healing Pro-oestrogenic; could increase thrombus risk Clinical research suggests hypoglycaemic effects
Aloes/Aloe vera	Clinical research suggests hypoglycaemic effects

Alpha-lipoic acid	Clinical research suggests hypoglycaemic effects
Andrographis Aniseed	Preliminary evidence of hypotensive effects Pro-oestrogenic; could increase thrombus risk Sympathomimetic; can cause hypertension, tachycardia and arrhythmias
Arnica	Anticholinesterase action; bradycardia, hypotension, bronchoconstriction.
Asafoetida	Clinical evidence of hypotensive effects
Avens	Clinical evidence of hypotensive effects
Banaba	Clinical research suggests hypoglycaemic effects
Bayberry	Mineralocorticoid effect; could increase blood pressure
Bilberry	Antiplatelet effect; increases bleeding risk
Bitter melon	Clinical research suggests hypoglycaemic effects
Bitter orange	Stimulant. Structurally related to phenylephrine, it can predispose the patient to stroke, myocardial infarction, arrhythmia from tachycardia and hypertension. May interact with MAOIs. Omit a minimum of 24hours pre-op.
<i>Black Cohosh</i>	Pro-oestrogenic; could increase thrombus risk
Black tea (concentrated tablets)	Large quantities of caffeine in black tea can have antiplatelet effects; increased bleeding risk
<i>Blue Cohosh</i>	Theoretical hypertensive effects
Boldo	Anticoagulation effect; increased risk of bleeding. Can potentiate the effects of warfarin.
Boneset	Immunomodulating properties; Possible increased risk of infection and poor wound healing
Broom	Hypertensive; potential to raise blood pressure. Potential cardiac depressant activity
Burdock	Clinical research suggests hypoglycaemic effects
Butterbur	Clinical evidence of hypotensive effects
Calamus	Clinical evidence of hypotensive effects Theoretical catecholamine activity Potentiates barbiturate sleeping time
Calendula	Immunomodulating properties; Possible increased risk of infection and poor wound healing

Capsicum	Sympathomimetic; can cause hypertension, tachycardia and arrhythmias
Cat's Claw	Antiplatelet effect; increases bleeding risk Clinical evidence of hypotensive effects Immunomodulating properties; Possible increased risk of infection and poor wound healing
Celery	Clinical research suggests hypoglycaemic effects Sedatives effect
Centaury	Sedative effect
Chamomile	Immunomodulating properties; Possible increased risk of infection and poor wound healing. Mild sedative effects; could potentiate anaesthetics
Chondroitin	Anticoagulation effect; increased risk of bleeding. Can potentiate the effects of warfarin. Chondroitin also affects blood sugar control
Clove	Antiplatelet effect; increases bleeding risk
Coenzyme Q10	Clinical research suggesting modest hypotensive effects
Cola nut	Stimulant. Increased risk of tachycardia and hypertension.
Coltsfoot	Vasopressor activity causes hypertension
Corn Silk	Clinical evidence of hypotensive effects Clinical research suggests hypoglycaemic effects
Couchgrass	Sedative effect
Cowslip	Initially causes hypotension, then later hypertension
Damiana	Clinical research suggests hypoglycaemic effects
Dandelion	Clinical research suggests hypoglycaemic effects
Danshen	Anticoagulation effect; increased risk of bleeding. Can potentiate the effects of warfarin
Devil's Claw	Clinical research suggests hypoglycaemic effects Clinical evidence of hypotensive effects
Dong quai	Anticoagulation effect; increased risk of bleeding. Can potentiate the effects of warfarin
Drosera	Immunomodulating properties; Possible increased risk of infection and poor wound healing
Echinacea	Possible increased risk of infection and poor wound healing

Elecampane	Clinical research suggests hypoglycaemic effects Sedative effect. Clinical evidence of hypotensive effects
Ephedra	Stimulant: Is a source of ephedrine, pseudoephedrine, and phenylpropanolamine. Can cause tachycardia and hypertension with spontaneous adverse events including stroke, myocardial infarction, QT interval prolongation and arrhythmia. Also known to inhibit complement pathway
Epimedium	Preliminary evidence of hypotensive effects
Eucalyptus	Clinical research suggests hypoglycaemic effects
Fenugreek	Anticholinesterase action; bradycardia, hypotension, bronchoconstriction. Anticoagulation effect; increased risk of bleeding. Can potentiate the effects of warfarin Clinical research suggests hypoglycaemic effects
Feverfew	Antiplatelet effect; increases bleeding risk
Fucus	Anticoagulation effect; increased risk of bleeding. Potential hypotensive effects. Both hyper- and hypo thyroidism reported with continued use
Fumitory	Clinical evidence of hypotensive effects
Garlic	Antiplatelet effect; increases bleeding risk Also has hypotensive properties. Clinical research suggests hypoglycaemic effects
Ginger	Antiplatelet effect; increases bleeding risk Clinical research suggests hypoglycaemic effects Also has hypotensive properties
Ginkgo	Pro-oestrogenic; could increase thrombus risk MAOI activity Antiplatelet effect; increases bleeding risk
Ginseng (American, Eleutherococcus and Panax)	Immunomodulating properties; Possible increased risk of infection and poor wound healing. Has erratic blood glucose control in patients reporting both hyper- and hypo-glycaemic control CNS depressant and stimulant Pro-oestrogenic; could increase thrombus risk Antiplatelet effects; increases bleeding risk Also has erratic blood pressure altering properties, causing both hyper- and hypo-tension in patients. MAOI potentiation, suspected phenelzine interaction
Glucomannan	Clinical research suggesting hypoglycaemic effects

Glucosamine	Anticoagulation effect; increased risk of bleeding. Can potentiate the effects of warfarin. Glucosamine can also affect blood sugar control.
Golden Seal	Potential hypotensive effects Heparin antagonist Sedative effect
Greater Celandine	Immunomodulating properties; Possible increased risk of infection and poor wound healing
Green tea (concentrated)	Large quantities of caffeine in green tea can have antiplatelet effects; increased bleeding risk. It can also be a stimulant in large quantities.
Guarana	Antiplatelet effects; increases bleeding risk Also a known stimulant; increases risk of tachycardia, hypertension and arrhythmias.
Gymnema	Clinical research suggests hypoglycaemic effects
Hawthorn	Clinical evidence of hypotensive effects CNS depressant; potentiates barbiturate sleeping time
Hops	Mild sedative effects(usually used in combination with other sedative products). Could potentiate anaesthetics.
Horehound, White	Vasodilator properties; lowers blood pressure
Horse chestnut	Active constituents thought to have antiplatelet activity; increases bleeding risk. Clinical evidence of hypotensive effects
Horseradish	Clinical evidence of hypotensive effects Peroxidase stimulates synthesis of arachidonic acid metabolites Both hyper- and hypo thyroidism reported with Continued use
Hydrocotyl	Hyperglycaemic effect Sedative effect
Jamaica Dogwood	Sedative effect
Java Tea	Clinical evidence of hypotensive effects Clinical research suggests hypoglycaemic effects
Juniper	Clinical evidence of hypotensive effects Clinical research suggests hypoglycaemic effects
Kava	Additive effects with benzodiazepines increasing sedation; also linked to numerous reports of hepatotoxicity Possible dopamine antagonist effects. Treat as haloperidol clozapine or sulpiride.

L-arginine	Clinical research suggesting modest hypotensive effects
Lavender	Mild sedative effects; additive effects with CNS depressants and anaesthetics.
Lemon balm	Clinical research suggesting sedative effects. Could potentiate anaesthetics.
Liquorice	Mineralocorticoid effect; could increase blood pressure Pro-oestrogenic; could increase thrombus risk Antiplatelet effect; increases bleeding risk Also has a laxative effect similar to senna. Particularly important to withdraw prior to bowel surgery.
L-tryptophan	Clinical research showing sedative effects; documented reports of additive effects with CNS depressants and anaesthetics. Also has serotonergic properties; treat as an SSRI. Caution with pethidine.
Marshmallow	Clinical research suggests hypoglycaemic effects
Maté	Stimulant. Increased risk of tachycardia and Hypertension
Melatonin	Clinical research suggesting sedative effects; can potentiate anaesthetics. Seek anaesthetic advice if prescribed by a clinician (especially in children).
Mistletoe	Clinical evidence of hypotensive effects Promotes coagulation Immunomodulating properties; Possible increased risk of infection and poor wound healing
Motherwort	Oxytocic properties
Myrrh	Clinical research suggests hypoglycaemic effects
Nettle	Clinical evidence of hypotensive effects CNS depression, in vivo Clinical research suggests hypoglycaemic effects Anticholinesterase action; bradycardia, hypotension, bronchoconstriction.
Parsley	Sympathomimetic; can cause hypertension, tachycardia and arrhythmias
Passionflower	Mild sedative effects; animal models suggest additive effects with CNS depressants
Plantain	Clinical evidence of hypotensive effects
Pleurisy Root	Sympathomimetic; can cause hypertension, tachycardia and arrhythmias Pro-oestrogenic; could increase thrombus risk
Pokeroot	Clinical evidence of hypotensive effects

Policosanol	Possible antiplatelet effect (based on anecdotal evidence). May increase bleeding risk
Prickly Ash (North and South)	Clinical evidence of hypotensive effects
Prickly pear cactus	Clinical research suggesting hypoglycaemic effects
Red Clover	Pro-oestrogenic; could increase thrombus risk
Resveratrol	Possible antiplatelet effect (based on in vitro data). May increase bleeding risk
Rosemary	Hyperglycaemic effect
Sage	Potential hypotensive effects Sedative effect Clinical research suggests hypoglycaemic effects
SAMe,	Has serotonergic properties; treat as an SSRI. Caution with pethidine use.
Saw Palmetto	Immunomodulating properties; Possible increased risk of infection and poor wound healing Both oestrogenic and anti-androgenic properties Possible antiplatelet effect (based on anecdotal evidence). May increase bleeding risk
Scullcap	Reputed action
Senega	CNS depressant, Clinical research suggests hypoglycaemic effects
Shepherd's Purse	Potentiates barbiturate sleeping time Anticholinesterase action; bradycardia, hypotension, bronchoconstriction.
Squill	Clinical evidence of hypotensive effects
St. John's wort	Has serotonergic properties; treat as an SSRI. Caution with pethidine use. Also reduces warfarin effect. Clinical evidence of hypotensive effects
Tansy	Clinical research suggests hypoglycaemic effects
Theanine	Hypotensive effects
Thyme	Clinical evidence of hypotensive effects
Valerian	Sedative effects. Potentiates anaesthetics. Advise patients to withdraw slowly to avoid withdrawal effects.
Vanadium	Clinical research suggesting hypoglycaemic effects
Vervain	Erratic blood pressure altering properties, causing both hyperand hypo-tension in patients. Inhibition of gonadotrophic activity; conflicting results

	Some sympathomimetic activity; causing, tachycardia and arrhythmias
Vitamin E	High doses associated with antiplatelet effects; increases bleeding risk
Wild Carrot	Clinical evidence of hypotensive effects Sedative effect Pro-oestrogenic; could increase thrombus risk
Wild Lettuce	Sedative effect
Yarrow coagulation	Clinical evidence of hypotensive effects Promotes

Appendix 12. Guidelines for Pre-Operative Assessment of Elective Surgical Patients with Cardiac Implantable Electronic Devices

PRE OP

Summary

It is essential to know whether the patient has a pacemaker or an implantable cardioverter defibrillator (ICD) in place.

For all devices a deactivating magnet must be readily available

For a pacemaker, the use of bipolar diathermy will usually suffice, but for an ICD a deactivating magnet is almost certain to be required and should be taped over the device.

If you do not know what type of device is in place in an emergency patient, use a deactivating magnet. The magnet will turn off the defibrillator mode of an ICD and will change a pacemaker to its asynchronous mode. Monitor the ECG at all time when the magnetic is applied

It is the responsibility of the surgical/anaesthetic /theatre team to find the magnet.

Remember to take the magnet off at the end of the case

Implantable loop recorders (ILRs) and insertable cardiac monitors (ICMs) are used for monitoring cardiac arrhythmias. There is no additional risk to the patient during surgery and no additional actions are required.

Pacemakers (PPM) – Look up device check records on Lorenzo or paper notes. Contact Cardiac Physiologists if:

- the re-check frequency is less than 6 months, or
- previous problems were noted on the last check, or
- the record is not available, or
- the next check is overdue.

Otherwise pre-operative checks are *not required*.

NB. Pacemaker dependant patients (no underlying rhythm) undergoing breast / clavicle / shoulder or upper limb surgery above the elbow, may require PPM reprogramming if prolonged diathermy close to the device is likely. Clarify with surgeon, then Consultant Anaesthetist.

Implantable Cardiac Defibrillators (ICDs) for treatment of life-threatening ventricular tachycardia, biventricular or resynchronisation pacemakers and ICDs for treatment of heart failure using ventricular resynchronisation (CRT-P and CRT-D respectively) Look up device check records on Trust systems or paper notes. Contact Cardiac technicians if:

- the re-check frequency is less than 6 months, or

- previous problems were noted on the last check, or
- the record is not available, or
- the next check is overdue.

Otherwise pre-operative checks are *not required*.

A request for device deactivation before surgery and reactivation after surgery will need to be made for the day of surgery. This should be done using the request form on Maxims for cardiac devices.

NB. Endoscopy or dental procedures – deactivation is only required if argon beam or prolonged diathermy is anticipated; clarify with the surgeon.

POST OP – for all devices:

No post op device checks required unless programming has been altered or an adverse event has occurred.

NB. Patients with PPM who have undergone lithotripsy or ECT should have the device interrogated within 1 month of the procedure.

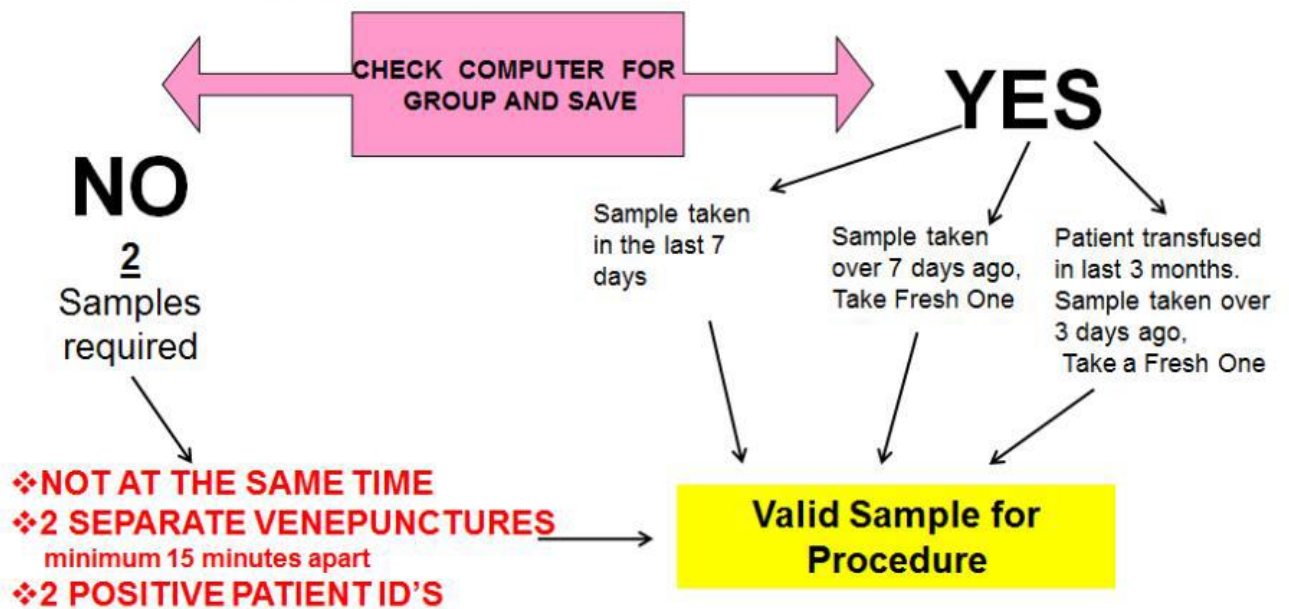
Site Suitability

The presence of ILR, ICM or PPM is not a contraindication to surgery at peripheral sites.

Appendix 13. Major Surgical Procedures – Valid Group and Save sample required on admission.

AP Resection
Anterior Resection
Colectomy (Sigmoid/left/right)
Ileostomy (including reversal)
Oesophagectomy
Gastrectomy
Aortic Aneurysm (inc. Endovascular Aneurysm Repair EVAR)
Fem.Pop. Bypass
Bariatric Surgery
Cholecystectomy (Open & Laparoscopic)
Liver Biopsy
Splenectomy
Breast reconstruction
Major Maxillary surgery (Max Fax) (inc. Osteotomy)
Neck dissection, Parotidectomy, Submandibular gland excision.
Laryngectomy / laryngeal surgery
Thyroidectomy / hemi-thyroidectomy
Major ENT surgery
Cystectomy
Nephrectomy (Open & Laparoscopic)
Prostate surgery (use cell salvage most of the time)
TURP

Major Procedure Valid Group & Save



UROLOGY

UROLOGY																										
Procedures	FBC	U&E'S	TFT'S	LFT'S	CLOTTING	GROUP & SAVE	HBA1C	BNP	CEA	CALCIUM	PARATHYROID	VIT D	ECG	Echocardiogram	Urine ACR	MSU	CXR	PHOTOS	AUDIO (WITHIN LAST 3 MONTHS)	PFT'S	Anaesthetic Review	PHYSIO	DIETICIAN	SALT	Comments	
CYSTOSCOPY & BIOPSIES																									CONSIDER LFT'S IF CANCER DIAGNOSIS	
TURP																									CONSIDER LFT'S IF CANCER DIAGNOSIS	
URETHROSCOPY URETHRAL DILATATION / URETHROPLASTY																										
CYSTODIATHERMY																										
TURBT																									CONSIDER LFT'S IF CANCER DIAGNOSIS	
LASERTRIPSY / ESWL																										
CIRCUMCISION																										
VASECTOMY																										
RETROGRADES																										
URETERECTOMY																										
STENTS																										
TOT / MONARC																									DELAY SURGERY IF MENSTRUATING	
NEPHRECTOMY LAP/OPEN																										
RADICAL / OPEN PROSTATECTOMY																									ENHANCED RECOVERY PATHWAY. PRE OP DRINKS	
ROBOTIC / LAP PROSTATECTOMY																									ENHANCED RECOVERY PATHWAY. UROLOGOLOGY TEAM REVIEW. PRE OP DRINKS	
ADRENALECTOMY																										
CYSTECTOMY																									ENHANCED RECOVERY PATHWAY. PRE OP DRINKS / SDU	

BREAST

BREAST																				Comments						
Procedures	FBC	URE'S	TFT'S	LFT'S	CLOTTING	GROUP & SAVE	HBA1C	BNP	CEA	CALCIUM	PARATHYROID	VITD	ECG	Echocardiogram	Urine ACR	MSU	CKR	PHOTOS	AUDIO (WITHIN LAST 3 MONTHS)		PFT'S	Anaesthetic Review	PHYSIO	DIETICIAN	SALT	
MASTECTOMY +/- SNB, ANC																										
RISK REDUCING MASTECTOMY																										
AUXILIARY NODE CLEARANCE																										
SENTINAL NODE BIOPSY																										
HADFIELDS / MICRODOCTECTOMY																										
WIDE LOCAL EXCISION																										
NEEDLE MARKER																										
BREAST REDUCTION																										
LIPO FILLING																										
TISSUE EXPANDERS																										
FLAPS																										
IMPLANTS / EXCHANGE																										

COLORECTAL

COLORECTAL																				Comments						
Procedures	FBC	URE'S	TFT'S	LFT'S	CLOTTING	GROUP & SAVE	HBA1C	BNP	CEA	CALCIUM	PARATHYROID	VITD	ECG	Echocardiogram	Urine ACR	MSU	CKR	PHOTOS	AUDIO (WITHIN LAST 3 MONTHS)		PFT'S	Anaesthetic Review	PHYSIO	DIETICIAN	SALT	
ENDOSCOPY																										PRE-OP GIVEN IF GA OR IV SEDATION
HEMI-COLECTOMY																										ERAS PATHWAY / ? STOMA NURSE IF LEFT HEMI
ANTERIOR RESECTION																										ERAS PATHWAY
APER																										ERAS PATHWAY
HARTMANN'S																										USUALLY PERFORMED AS EMERGENCY PROCEDURE
REVERSALS																										ILEOSTOMY (DAYCASE / EPU) / INFORM COLORECTAL NURSE SPECIALIST OF REVERSAL DATE. HARTMANN'S REVERSAL POSSIBLE 7 DAY STAY IN HOSPITAL/ ALL ERAS PATHWAY
TART																										? BOWEL PREP REQUIRED
TAMIS																										? BOWEL PREP REQUIRED
EMR																										? BOWEL PREP REQUIRED / USUALLY UNDER SEDATION

UPPER GI/HPB

UPPER GI/HEPATOBIILIARY																									
Procedures	FBC	U&E'S	TFT'S	LFT'S	CLOTTING	GROUP & SAVE	HBA1C	BNP	CEA	CALCIUM	PARATHYROID	VIT D	ECG	Echocardiogram	Urine ACR	MSU	CXR	PHOTOS	AUDIO (WITHIN LAST 3 MONTHS)	PFT'S	Anaesthetic Review	PHYSIO	DIETICIAN	SALT	Comments
CHOLECYSTECTOMY																									LIVER REDUCING DIET IF HIGH BMI (AT CONSULTANTS REQUEST)/ CAN BE DAYCASE IF LFT'S NOT INCREASING, CONSIDER OTC
NISSENS FUNDOPLICATION																									POST OP DIET SHEET
STAGING LAP																									
OESOPHAGECTOMY																									PHYSIO BLEEP 3321 / DIETRY ASSESSMENT BLEEP 3268 EXT 85573 / ERAS PATHWAY / ICU
GASTRECTOMY																									PHYSIO BLEEP 3321 / DIETRY ASSESSMENT BLEEP 3268 EXT 85573 / ERAS PATHWAY / SDU
WHIPPLES																									

BARIATRIC

BARIATRIC																									
Procedures	FBC	U&E'S	TFT'S	LFT'S	CLOTTING	GROUP & SAVE	HBA1C	BNP	CEA	CALCIUM	PARATHYROID	VIT D	ECG	Echocardiogram	Urine ACR	MSU	CXR	PHOTOS	AUDIO (WITHIN LAST 3 MONTHS)	PFT'S	Anaesthetic Review	PHYSIO	DIETICIAN	SALT	Comments
GASTRIC BYPASS																									ERAS (NO DRINKS) / LIVER REDUCING DIET PRE-OP (2-4 WEEKS AT CONSULTANTS REQUEST) / BARIATRIC PHYSIO 07500976470
GASTRIC SLEEVE																									ERAS (NO DRINKS) / LIVER REDUCING DIET PRE-OP (2-4 WEEKS AT CONSULTANTS REQUEST)/ BARIATRIC PHYSIO 07500976470