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PRE-OPERATIVE ASSESSMENT AND PREPARATION FOR SURGERY CLINICAL GUIDELINE

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Contents

1. Introduction

The pre-operative Assessment and preparation process seeks to identify potential problems prior to the patient being admitted. This can range from major medical problems to social problems. The assessment process facilitates better use of resources and most importantly improves outcome. Bed management and waiting list management are achieved more successfully when a systematic pre-operative assessment process is in place.

Anaesthetists are responsible for the pre-operative assessment of patients whom they anaesthetise. Business planning by Trusts and Anaesthetic departments should ensure that the necessary time and resources are directly targeted towards pre-operative assessment by anaesthetists. (Pre-operative assessment: The role of the Anaesthetist. AAGBI document; 2000, 2010, GPAS 2014, 2016 & 2021). This will facilitate same day admission of patients even for major surgery.

The provision of a pre-operative screening, assessment and preparation service improves efficiency and enhances patient care. In our hospital, specifically trained pre-assessment nurses are increasingly carrying out the screening and assessment process, by working to protocols.

2. Aim

The aim in assessing patients before anaesthesia and surgery is to improve outcome and minimize morbidity and mortality.

This is achieved by:

- Identifying potential anaesthetic difficulties
- Identifying and optimizing all medical conditions
- Improving safety by assessing and quantifying risk
- Allowing planning of peri-operative care
- Providing the opportunity for explanation and discussion
- Allaying fear and anxiety
- Providing help with self-help matters (e.g. stopping smoking or losing weight) these can only be achieved when all health professionals (surgeons, anaesthetists, and nurses) work as a team.

The screening and assessment process enables the identification of those patients who require:

- No pre-operative investigations
- Targeted investigations, the results of which must be available when the anaesthetist sees the patient in the immediate preoperative period
- Further investigations and/or treatment before being referred for anaesthetic assessment prior to admission for surgery
- Further assessment or referral to physicians for specific investigations

- Identify those patients who are at high risk of pre- or post-operative organ failures. Such patients may need additional monitoring and may warrant admission to ICU or an HDU post-operatively for organ function support.

- Avoid last minute cancellations

3. When to perform assessments

For patients a 'one stop' service is superior. This helps us to identify and optimise the patient's condition, even before they are added to waiting list. This is a gold standard way of achieving 18 weeks targets. For situations where preoperative assessment on the day of surgical consultation is unavailable, a booked in service should be available. This should be carried out as soon as possible i.e. within 2 weeks of surgical consultation. In patients with renal disease, 4 weeks is too long, they should be assessed as nearer to the operation and/or admission as possible.

4. Who should receive assessments?

Anyone who is to have an operation under general anaesthetic, sedation or regional anaesthesia should have an assessment.

Action during assessment

The assessment should be split into 3 distinct areas.

A) Medical B) Nursing C) Social

Action in urgent cases

Any patient who attends for pre-assessment for an urgent procedure and is found to be unfit at assessment can be referred urgently to the Anaesthetic clinic. The pre op team will organize additional investigations and/or will contact relevant specialist for further advice regarding the management of these patients. The pre op team must follow up and keep the listing/scheduling/ admissions and the surgical teams informed about the outcome.

Where possible the patient's surgical Consultant should be contacted directly and informed of all referrals and kept informed of progress. Bearing in mind patient safety, all effort should be made so the patient's surgical pathway is not delayed.

How long are Preoperative assessment and Preoperative investigations valid?

In general, any preoperative assessment is valid for 6 months. It is episode specific, i.e. for the listed operation.

All preoperative investigations including MRSA results are valid for 12 weeks.

All patients should be admitted on day of surgery unless medically indicated. Patients who are not suitable for same day admission should have the reason clearly documented on the pre op outcome sheet.

From the clinical history, identify known health problems:

Assess their current severity and whether these conditions can be improved prior to surgery

Screen the patient for common conditions that may be undiagnosed e.g. hypertension and diabetes

Identify other factors that increase risk e.g. smoking, alcohol and obesity

Document the patient's drug therapy and modifications that may be required in the perioperative period.

Record any drug allergies

Document problems with previous anaesthetics e.g. allergic reactions or difficult venous access

It is essential that appropriate information be gathered from the patient and identification of the factors that may cause problems during the pre, and perioperative period. The Pre-op nurse also needs to look at the patient's needs following discharge from the hospital.

5. How to contact an Anaesthetist

Anaesthetists are contactable through anaesthetic department coordinator (Ext. 4132) or through switchboard. If you want to speak to a particular anaesthetist, please get in touch with the anaesthetic coordinator.

For urgent cases please contact the on call Anaesthetist via switch board (bleep 504)

6. American Society of Anesthesiologists Classification:

The ASA score is widely accepted as part of preoperative assessment, aims to quantify the risk of perioperative mortality It is simple to use and although it suffers from the potential pitfall of user interpretation, it consistently identifies high-risk patients associated with higher scores.

ASA Classification	
I	A normal healthy patient with no systemic disease

II A patient with mild systemic disease that DOES NOT limit activity
III A patient with severe systemic disease, that limits activity, but not incapacitating
IV A patient with incapacitating systemic disease that is a constant threat to life
V A moribund patient (not expected to survive 24 hours with or without operation)

Table 1.2 - American Association of Anesthesiologists 'ASA' Status and mortality ranges for each class.[24]

ASA class	Definition	Mortality (%)
I	Healthy	0-0.3
II	Mild systemic disease with no functional limitation	0.3-1.4
III	Severe systemic disease with functional limitation	1.8-5.4
IV	Severe systemic disease - constant threat to life	7.8-25.9
V	Moribund patient unlikely to survive 24h with or without operation	9.4-57.8
E	Suffix added to denote emergency operation	

Inform the Anaesthetist of all patients in grades ASA 3 and 4.

In general, ASA 1, ASA 2 and stable ASA 3 patients are suitable for admission to Liverpool Women's Hospital (at present), but there may be patients who are classified 1 or 2 that may require an early anaesthetic opinion e.g. ASA 1 with a history of malignant hyperpyrexia! Or known difficult airway.

Early referral to an Anaesthetist is the key!

7. Exercise Tolerance

Preoperative functional status is probably the most important predictor of perioperative outcome. Low exercise tolerance is associated with poor perioperative outcome. The main purpose of preoperative assessment of functional capacity is to predict the individual's ability to increase oxygen delivery in the perioperative period.

Functional capacity

Assessment of an individual's capacity to perform a number of different physical tasks has been shown to correlate with maximum oxygen uptake (V02, max) by treadmill testing.

Exercise tolerance or physical fitness can be assessed in metabolic equivalent levels, or 'METs', which is a validated method of determining functional capacity from the patient's history (table .1.6).

Table 1.6 - Metabolic equivalent levels with examples of common daily tasks.[32]

Metabolic levels	Equivalent activity
1 MET	Eat
	Dress
	Use toilet
	Walk indoors around house
	Light house-work
	Walk on level ground at 2-3 mph
4 METs	Climb flight of stairs
	Walk up hill
	Run a short distance
	Heavy house-work, scrubbing floors, moving heavy furniture
	Walk on level ground at 4mph
	Recreational activity: golf, bowling, dancing, tennis
10 METs	Strenuous sports: swimming, football, skiing, basketball

1 MET = 0_2 consumption at rest = 3.5 ml 0_2/kg/min = 245 ml/min (70kg man)

<4 METs = Poor functional capacity, Increased incidence of post-operative cardiac events

WHO Performance Status

• Fully active, able to carry on all pre-disease performance without restriction (grade 0)

• Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature e.g light house work or office work (grade 1)

• Ambulatory and capable of all selfcare but unable to carry out any work activities. Up and about more than 50% of waking hours (grade 2)

• Capable pf only limited selfcare, confined to bed or chair more than 50% of waking hours (grade 3)

• Completely disabled. Cannot carry selfcare.Totally confined to bed or chair (Grade 4)

• Dead (Grade 5)

There are several objective methods of assessing exercise tolerance.

1. Duke Activity Status Index,

2. The incremental shuttle walk test (ISWT),

3. Cardiopulmonary exercise testing is available via RLUBHT

The exercise tolerance is an essential and an effective way of assessing, the extent of Cardio-respiratory diseases or cardiorespiratory reserve in a patient.

A patient's ability to perform every day physical activities before having to stop (because of symptoms) gives an indication of both cardiac and respiratory reserve.

- What can the patient do before they have to stop?
- Do they do any regular exercises
- Use day to day examples eg. Shopping, Gardening, Housework.
- How many flights of stairs can they climb before having to stop?
- How far can the patient walk on the flat before they have to stop?
- What can the patient do compared to people of same age?
- For what reason do they stop? e.g. dyspnoea, chest pain, intermittent claudication, pain in the joint (arthritis). **Patients with musculo-skeletal disorders (eg. Arthritis, Myasthenia gravis) will have difficulty in achieving their exercise tolerance. There are some conditions, where exercise tolerance does not correlate well with cardiorespiratory disease eg. cardiomyopathy, aortic stenosis. Please make note.**

8. Cardio-Vascular Assessment

Hypertension

This is the commonest condition, often detected (for the first time) at pre-operative assessment. History: how long? What medication? Whether under control or not?

How often is it recorded? Any recent changes in medication?

Untreated or poorly controlled hypertension may lead to exaggerated cardiovascular responses peri-operatively leading to a stroke (CVA) or heart attack (MI) or both.

What next?

Check blood pressure on two different occasions, (pre-investigations, and post investigations) **in** both arms if there is peripheral vascular disease.

All potential new hypertensive patients need ECG and U&E

If diastolic pressure above 90 mm Hg in < 60 year old or above100 mm Hg in > 60 year old or systolic above 180 mm Hg on both occasions, establish urgency of operation with surgeon. Refer to anaesthetist if surgery deemed urgent.

If surgery not deemed urgent refer patient to G.P. for treatment. Please inform the surgeon, and in patient booking office, so that 18 weeks clock is stopped.

9. Pre-Operative Assessment Hypertension Protocol

Ask Patient to visit Practice Nurse OR GP for BP Control

10. Angina /Chest Pain

History: Frequency, precipitating factors, duration, location, stable/unstable (Unstable means that the attacks occur with increasing frequency at rest or on minimal exertion);

Progressively worsening dyspnoea / orthopnoea / exercise tolerance

How many pillows used when sleeping?

How frequently are anti-anginal medications used?

Any cardiac surgery or angioplasty in the past?

Has the patient had any angiography / Echocardiogram? If so when?

11. Myocardial Infarction (MI)

History:

1. When (how long ago)
2. Complicated or uncomplicated (Normally, patients are out of the CCU by 4/5 days. This history can be obtained, by asking how many days has he/she spent in the CCU. Longer the time spent likely to be complicated)
3. Condition following MI (any restriction of activity or any angina since then).

Patients with a proven history of MI/Ischemia are at greater risk of peri-operative infarction/re-infarction, the incidence of which is related directly to the time interval between infarct and surgery. Following a myocardial infarction, normally elective surgery should be delayed for at least 6 months, unless there is surgical urgency (e.g. cancer,).

Table 1.1 — Peri-operative infarction rates following a recent MI.[18]

Time since MI	Rate of new infarct %
>6 months	5
Between 3 and 6 months	15
< 3 months	37

What to do now?

- All patients with cardiac history should have an Anaesthetic referral; it may be anaesthetic opinion+/- anaesthetic clinic.

Check BP on TWO different occasions.

(at least one manual check)

If Diastolic above 90(<60yr) or 100 mm Hg (>60 yr)

OR Systolic *above* 180mm HG on both occasions

If Surgery is Not Urgent

Refer the patient to GP.

Copy any Blood Tests and ECG to GP

- All cardiac transplant patients should be booked into anaesthetic clinic.
  If necessary, they may need an ECHO.

  The patient may be referred to the GP for cardiology referral.

New York Heart Association (NYHA) functional classification of patients with heart disease:

The accuracy and reproducibility of this classification are limited.

CLASS I	No limitation: Ordinary physical activity does not cause undue fatigue, dyspnoea or palpitation.
CLASS II	Slight limitation of physical activity: Such patients are comfortable at rest. Ordinary physical activity results in fatigue, palpitation, dyspnoea or angina.
CLASS III	Marked limitation of physical activity: Although patients are comfortable at rest, less than ordinary activity will lead to
CLASS IV	Inability to carry on any physical activity without discomfort: Symptoms of congestive failure are present even at rest. With any physical activity, increased discomfort is experienced.

12. Heart Failure

History: When, effect, last/previous hospitalisation, exercise tolerance, drug use eg. ACE inhibitor/diuretics/beta blockers. You should obtain a recent ECHO report for any operation.

The depressant effects of anaesthetic drugs may worsen heart failure,or impair the perfusion of vital organs.

Increasingly biventricular pacemakers are being inserted for severe left ventricular failure or severe left ventricular systolic dysfunction as a treatment. Beware of biventricular pacemaker. **If it is a biventricular pacemaker, please refer the patient to the Anaesthetic clinic.**

13. Palpitations / Arrhythmias / Conduction Problems

The commonest cause of palpitation is atrial fibrillation. If it is controlled with a ventricular rate of less than 100, we can proceed with elective surgery. If the ventricular rate is above 100, cardiology referral may be required, take anaesthetic opinion.

Past history of arrhythmias associated with dizziness, fainting, sweating or chest pains.

All patients with palpitations need an ECG.

If the resting pulse rate is greater than 100 or less than 50, they may need Thyroid function tests.

Conduction problems include RBBB (right bundle branch block), LBBB (left bundle branch block), and heart blocks (first degree, second degree and third degree).

Patients with demonstrable third degree heart block on ECG need to be discussed with a Consultant Anaesthetist PRIOR to leaving the pre-operative visit as they may require urgent insertion of a pacemaker.

All patients with new LBBB, second degree and third-degree heart block must be booked into Anaesthetic clinic. If they have known LBBB, please make sure an ECHO report is available.

There is an increased risk of cardiac morbidity and mortality. Some patients may require pacing. The presence of disease may warn of underlying cardiac pathology. Some patients may need URGENT cardiology referral or temporary or permanent pacemaker insertion.

Pacemaker / ICD/Loop recorders

Is it a pacemaker or ICD (Intra cardiac defibrillator)?

Why was the pacemaker inserted (indication)?

When was it inserted? Implanting hospital and follow-up hospital.

What type of pacemaker: model, type, mode of response and where is it implanted (normally subcutaneously in the left lateral chest but they may occasionally be placed in the abdomen? The patient will normally have a registration card recording details of the device and the manufacturer.

It is essential to ascertain whether the pacemaker is working correctly. If not, factors such as hypokalaemia, hyperkalaemia, alkalosis, hypothermia and thyroid disturbances can affect pacing peri-operatively. Surgical diathermy and drugs e.g. suxamethonium may interfere with some types of pacemaker.

Increasingly biventricular pacemakers are being inserted for severe left ventricular failure or severe left ventricular systolic dysfunction as a treatment. Beware of biventricular pacemaker. **If it is a biventricular pacemaker, please refer the patient to the Anaesthetic clinic. These patients may not be suitable for LWH.**

Establish when it was last checked and obtain last report from their pacemaker clinic. As per the recent MHRA guidance, all patients should have a pacemaker check three months prior to any operation.

Obtain ECG and do serum electrolytes

If patient requires a check prior to admission, and for Post-operative check,

Please contact pacemaker clinic and organise the appointment.

If it is an ICD, please send a referral to the cardiology team with the date of operation. So that they can come to the anaesthetic room in LWH theatres to switch off the defibrillator on the day of operation. The patient may need ECG monitoring. If there is no date for operation, please inform the surgical team to organise the same prior to their TCI.

Perioperative management:

o Pacemaker – no postoperative check is required unless programming has been altered or there has been an adverse event.

o ICD – deactivation during surgery and re-activation postoperatively. (Will need to inform the pacemaker technicians/ of the date as they will be required to attend for the surgery).

• Loop recorders are becoming more commonplace. They are inserted to monitor cardiac activity and pose no concerns in the perioperative period.

Valvular Heart Disease / Heart Murmurs / Rheumatic Fever

All patients with functional valvular disease (particularly aortic stenosis) will always require an anaesthetic opinion.

History, exercise tolerance, investigations, previous surgery, anticoagulants

May result in arrhythmias, embolism or bacterial endocarditis, MI, in the perioperative period

Newly diagnosed murmurs may require an echocardiogram. If abnormal, may warrant a Cardiology opinion.

Elective surgery should be deferred until murmur has been evaluated.

All these patients will require anaesthetic opinion / anaesthetic clinic visit.

Lesions may be congenital or acquired and may also be associated with other cardiac pathology. Patients with aortic valve stenosis (even in asymptomatic patients) carry a high risk for any operation/surgery. Some of the valvular lesions carry a risk of peri-operative arrhythmias, embolism or endocarditis.

Atrial Septal Defect / Ventricular Septal Defect

History, dyspnoea, oedema, cyanosis, exercise tolerance, surgery.

These conditions cause an increase in pulmonary circulation and a consequential decrease in systemic circulation. Patients develop heart failure with increased respiratory infections, fatigue and dyspnoea.

What next?

Heart Murmur / Valve Replacements / Rheumatic Heart Fever/ Ventricular Septal Defect / Atrial Septal Defects

Please book the patient into the Anaesthetic clinic with any of these problems.

On Anti-Coagulants, ascertain whether to continue, if so; establish the course of action to be taken.

See associated guidelines – Gynaecology Procedure Anticoagulation document. Arrange discussion between the anaesthetist, surgeon, haematologist and cardiologist if necessary cardiologist.

Respiratory Assessment

Respiratory complications are more common than cardiac complications. It is now increasingly gaining acceptance that significant respiratory complications are those that affect outcome. These are problems that prolong hospital or intensive care unit (ICU) stay. They also contribute to morbidity or mortality.

Patient related factors that have been shown to be predictive of postoperative pulmonary respiratory complications include smoking, obesity, age more than 70 years, and pre-existing chest problems. Patients with chronic obstructive pulmonary disease (COPD) are at increased risk of postoperative respiratory complications, the level of increased risk related to the severity of the lung disease.

During respiratory system assessment, the accurate assessment of the functional impairment caused by the disease process, as well as an appreciation of the effects of anaesthesia and surgery on the pulmonary function is important.

Ask for the

History of cough, sputum production, wheeze or tightness in chest, precipitating factors, frequency and exercise tolerance.

History of orthopnea, shortness of breath and its precipitating factors. Ask for any history of dyspnoea at rest or on slightest exertion, unable to lie flat.

History of chest infections, frequency, drugs used, hospitalisation and ITU admissions for ventilation.

What are all the medications used? nebulisers, steroids, home oxygen etc.

Ask for the presence of any respiratory diseases like:

Asthma

Bronchitis,

COPD

Emphysema,

Bronchiectasis,

Pneumonia

Cystic Fibrosis

Fibrosing Alveolitis

Sarcoidosis

Carcinoma Lung

Pleural Effusion

Pneumothorax

Tuberculosis

Asbestosis

Ascertain effects of disease, frequency of exacerbations, any hospitalizations, use of steroids, and use of nebulisers at home, home oxygen therapy, exercise tolerance and thoracic surgeries such as pneumonectomy or lobectomy.

Patients with pre-existing lung disease are more prone to post-operative chest infections, especially if obese, or undergoing upper abdominal or thoracic surgery.

Patients with COPD should be optimised prior to surgery with the usual therapies and those with acute exacerbations should be deferred until treated (usually 4 weeks).

In severe COPD patients, we may need to admit the patient the day before for chest physiotherapy and four hourly nebulisers for chest optimisation.

What next?

All patients should have oxygen saturations on room air recorded.

Order CXR, if there are any recent changes

Obtain simple spirometry.

Inform/contact Anaesthetist with results of the above investigations.

If necessary, anaesthetist may request baseline arterial blood gases.

Parameter	Obstruction	Restriction
FEV1	Reduced	Reduced
FVC	Normal	Reduced
FEVI /FVC	Reduced	Normal

Tuberculosis (TB):
If there is a history of **TB,** what treatment was given, any surgery performed? Is it active?

Obstructive Sleep Apnoea (OSA)

Obstructive sleep apnoea is of particular concern as it is associated with increased risk of peri-operative morbidity and mortality. It is characterised by periodic obstruction of the upper airway during sleep, leading to repetitive arousal from sleep to restore airway patency. The repeated airway obstruction leads to sleep associated oxygen desaturation, episodic hypercarbia and cardiovascular dysfunction. It manifests itself as daytime somnolence, poor concentration and morning headaches.

We use Epworth scoring system to screen for OSA. Any score > 10 should be referred to Anaesthetic clinic for assessment and referral back to GP for sleep studies.

Protocol for patients with existing diagnosis of OSA and using CPAP

Own home CPAP machine and are compliant with it.

Had sufficient time to trial it and become comfortable with it.

Patient able to set-up and manage the machine on the ward and has all the requisite equipments.

The patient should be advised to bring the CPAP machine to hospital with them, set it **up** pre-operatively and take it to theatre for use in the recovery (if necessary).

These patients may need admission into HDU area for postoperative monitoring purposes.

Gastro-Intestinal Assessment

Gastro-Oesophageal Reflux

Any history of indigestion or heartburn or hiatus hernia or acid reflux.
Make the distinction between heartburn and reflux. Acid reflux is an

acid taste in the mouth. Ask particularly if they get acid in their mouth if they bend over. Acid reflux is much more of a worry for the anaesthetist compared to heartburn.

Record the frequency and medication taken.

How many pillows do they use during sleep? (This is to prevent heartburn).

Increases risk of pulmonary aspiration of gastric fluid during anaesthesia.

Occurs in conditions such as hiatus hernia, obesity, pregnancy, previous upper GI surgery and in patients with autonomic neuropathy (diabetes and renal failure). These cause a decrease in gastro-oesophageal sphincter tone.

Obesity

BMI	Weight kg/ Height m^2 where kg is a person's weight in kilograms and m^2 is their height in metres squared.
BMI<18kg/m^2	= Underweight
BMI 18-24 kg/m^2	= Normal Range
BMI 25-29 kg/m^2	= Overweight
BMI 30-40 kg/m^2	= Obese (Highlight)
BMI >40 kg/m^2	= Morbidly obese (refer to an anaesthetist)
BMI >55 kg /m^2	= Super Obese (refer to an anaesthetist)

All morbidly obese patients (more than 20 stone or 130 kg) need a referral to lifting and manual handing team for post-operative management in the ward. The theatre co-ordinator needs to be informed. Modern operating tables can take a patient with weight **up to 40 stones or 260 kg.**

Obesity (30<BMI<40) are ASA2. Morbid obesity (BMI ≥40) is classed as ASA3. Commonly, obesity is associated with conditions which increase post-operative morbidity.

Cardiovascular system:
Hypertension
Ischemic heart disease

Respiratory system:
Difficult airway

Lung volumes reduced.

Post-operative pulmonary collapse, pneumonia, pulmonary embolism

Obstructive sleep apnoea

Other:
Difficult venous access

Difficulty in monitoring BP non-invasively

Increased incidence of diabetes, Hiatus hernia and aspiration

Surgical

Difficult access for surgery

Increased wound infections and dehiscence

Do not list any obese patient without informing/discussing with the anaesthetist.

In patients with BMI above 40, please take anaesthetic opinion and if there are other health issues, consider referral to the anaesthetic clinic.

Liver Disease/Jaundice

Take history and identify the cause, effects, and treatment.

In the history make a note of any effects on cardio-vascular, respiratory and renal systems.

In patients with liver disease with or without jaundice, drug metabolism may be altered. Blood albumin level may be decreased which may lead to electrolyte and fluid disturbance.

In these patients, please check :**Prothrombin time, LFTs, serum calcium, albumin, FBC and U&E.**

If cause unknown, check Hep B and Hep C status.

Endocrine Assessment

Diabetes Mellitus (see associated guidelines)

History: Type 1 (IDDM) / Type 2 (NIDDM)

If Type 1, please establish, how much and what type of insulin they are taking.

If Type 2, establish the medication (tablets, insulin and insulin pumps).
Duration of DM (how long years/months)

How good is the control? What are their normal blood sugar values? Look for any complications, periods of hospitalisation related to diabetes. Specifically ask for frequency of hypoglycaemic attacks

Diabetics are prone to severe atherosclerosis and early death. There are several complications which can influence anaesthesia: cardiac, renal and cerebral atherosclerotic disease, peripheral neuropathies and autonomic dysfunction. In the short term - patients are at risk of hypoglycaemia, ketoacidosis and hyperosmolar acidosis due to poor control of blood glucose concentration. Surgery induces a rise in plasma level of some hormones (cortisone, growth hormone) which tend to produce hyperglycaemia.

For any elective (non-urgent) surgery, a HbA1c should be I or less than 69 mmol/l. It indicates good preoperative diabetic control.

What next?

Obtain HbA_1 C, ECG and U & E's.

No need to do random blood sugar.

See associated documents. Please take anaesthetic opinion as necessary.

Inform/contact Anaesthetist if there are any:

Recent hospital admission (in last 6 months) with complications of diabetes.

Recent worsening of symptoms (patient's own assessment).

Recent fluctuations in blood glucose levels.

See associated documents Perioperative Management of Gynaecology Patients with Diabetes Mellitus

Hypo/Hyper thyroidism History, medications, surgical intervention, monitoring.

Undiagnosed or undertreated hyperthyroid patients can develop a 'thyroid storm'. This is an overt life threatening thyrotoxic crisis which may occur peri-operatively.

Enlarged Thyroid Gland
Location: in the neck or retro sternal. Is there any obvious tracheal deviation?

History and effect of enlargement - any tracheal compression? (Tracheal compression causes dyspnoea, stridor and /or orthopnoea).

Patient with enlarged thyroid gland can present with problems of airway control peri-operatively.

What next?

Obtain TFTs, FBC, U&Es, simple spirometry with flow volume loops.

In patients with enlarged thyroid gland (visible), please consult anaesthetist. Patient may need ENT review for nasendoscopy, neck X-ray (AP and lateral views) and/or thoracic inlet views.

In TFTs, the free T4 should be within the normal range, even though the TSH is abnormal.

Cushing's Syndrome

This is rare. May present with manifestations of diabetes, hypertension, hypokalaemia, oedema, restrictive lung disease, myopathy, and skin infections. Establish the presence and extent of these manifestations.

Contact the anaesthetist. Patient may need post-operative admission into ICU/HDU.

Request ECG, Pulmonary Function Tests, U&Es, FBC and LFT.

Renal Assessment

Assess for risk of AKI, document and alert anaesthetist. Any recent deterioration will need renal review.

Chronic Kidney Disease or End stage renal failure

CKD **Stages**

1. **eGFR >90**
2. **eGFR 60-90**
3. **eGFR 30-59 -** moderate reduction in kidney function
4. **eGFR 15-29 -** severe reduction in kidney function
5. **eGFR <15-** established renal failure, dialysis or transplant may be needed

History: cause of renal failure, how many years in renal failure? How many years on dialysis?

Dialysis: haemodialysis or CAPD; if HD, frequency of dialysis. What is their “dry weight” and if they are fluid restricted – what is their daily allowable fluid intake?

Vascular access: neck line or site of the AV fistula,

Medications

Look for the signs of fluid overload — oedema of feet, ascites, pulmonary oedema, pericardial effusion.

Co-existing problems in patients with renal failure:

CVS: IHD, hypertension, LV dysfunction, Heart failure

Respiratory system: pulmonary oedema and fluid overload

Endocrine: Diabetes

GI: delayed gastric emptying

Biochemistry: electrolyte disturbance (especially hyperkalaemia)

Haematology: anaemia, platelet dysfunction

Other: malnutrition, abnormal drug metabolism, vascular access

What next?

Chronic or End stage renal failure

Check Clotting screen, U&E, FBC, ECG, Chest X-ray (post dialysis).

Inform/contact anaesthetist: patients on dialysis may need to be managed in RLUH for surgery. Management may need a case-by-case plan of care. Please repeat U&Es, clotting screen and FBC on the day of the surgery

Haematological Assessment

Anaemia

Establish, whether it is chronic/acute, cause treatment, recent investigations, periods of hospitalisation.

Acute anaemia requires identification, diagnosis and treatment - pre-operatively.

Generally, anaesthesia is well tolerated by patients with chronic anaemia. Provided there is no blood loss and a normal heart. Menorrhagia is a common cause in young females, and dietary deficiency in vegetarians and elderly patients. Please refer to recent NICE guidance on anaemia.

If the Hb is below 100 g/l, patient will need haematinics via the GP. Inform/discuss with the anaesthetist if the surgery is URGENT.

If less than 100 g/l, patient may need to do B12, Ferratin and Folate levels via GP. If urgent these tests can be done by the lab, if we request by ringing RLBUHT Ext 4320 within 24-48 hours of initial blood sample. Prior discussion is required.

Patients with polycythemia (high Hb) should be discussed with the anaesthetist before being listed for surgery. They may need prolonged DVT prophylaxis following any surgery.

Sickle-Cell Disease / Thalassaemia

Sickle cell disease is an inherited condition characterised by repeated crises during which red cells "sickle" and clog up small blood vessels causing a variety of effects such as pain, stroke, infection etc.; these patients often have had multiple blood transfusions.

Sickle cell trait is a much milder variant, which occurs when the condition is inherited from only one parent.

Most patients will know their history as this would have been done previously. It is currently not routine to carry out Sickledex test on all patients of African, West Indian or Middle Eastern or Asian origin or even of mixed race. If needed, an informed consent must be obtained prior to testing.

Check in notes to see if Sickledex test has been previously done/patient knows their history- there is no need to repeat it.

If positive, the haematology department will do Hb electrophoresis to determine, whether it is sickle cell disease or sickle cell trait. The anaesthetist needs to be consulted about any haemoglobinopathy found on electrophoresis. In patients with Sickle cell disease, the haematologist may organise exchange blood transfusion before any surgery.

In Sickle cell carriers, if the HbS is less than 10% they are suitable for Day surgery, if is more than 10%, they are not suitable for Day surgery

Protocol for Surgery and Anaesthesia in Sickle Cell Disease

Sickle cell disease (SCD) is a chronic and debilitating disease associated with significant morbidity and mortality. Meticulous peri-operative care is required for this group of patients. Patients are generally well informed about the condition and appreciate being involved in decisions about their care.

Most patients with sickle cell anaemia are relatively asymptomatic with Hb concentrations between 50-120g/L. **This chronic steady state anaemia is not an indication for transfusion.** HbS is low-affinity haemoglobin, efficient in delivering oxygen; transfusion will increase whole blood viscosity and may aggravate sickling. Patients with SCD are prone to dehydration; this is due to an inability of the kidneys to concentrate urine and careful fluid management is an essential component of care.

The sickle cell nurse specialist RLUBHT (Mr. Andy Houghton) can be consulted. He may be contacted via Royal Hospital switch board bleep 4931 or on extension 4605. Working days are Monday - Friday 8am-5pm.

General

Elective surgery in patients with sickle cell disease should be discussed with the anaesthetists and haematologists preoperatively. Each patient should have a perioperative plan in place that takes into account their history and the nature of

the intended surgery. This may include booking a high dependency bed and provision for transfusion (see below) Preparation for surgery may take up to three weeks as below. Patients may not be suitable for day-case surgery.

Inform haematology team of patients' admission they will help to co-ordinate with the haematology laboratory.

Take bloods (see pre-operative check list, any extra bloods will be dictated by the anaesthetist or haematologist).

Where possible schedule early on the operating list to ensure they are sufficiently hydrated.

Blood Transfusion

Normal Values for sickle cell patients will vary between 50 -120g/dL.

Pre-operative transfusion where necessary, will be arranged by the haematology team in the week prior to admission and will be documented in the management plan.

Blood transfusion is not always indicated unless the patient has a serious chronic complication (e.g. chronic renal/liver failure or chronic sickle lung) OR is about to undergo major surgery.

Haemophilia or other Bleeding Disorders

History, Treatment, Effects of disease

Associated with an increased risk of haemorrhage especially with major surgery.

These patients are well known to the haematology team, contact the haemophilia nurses on (0151-706) 4329 or on BLEEP 4158 or 4034 for advice and treatment plan.

A treatment plan should be available in the notes by the time patient comes in for the operation.

Inform the anaesthetist.

If bloods are required on the day of surgery (as per advice from the haemophilia team) then they should be listed appropriately bearing this in mind.

Thrombotic disease:

Any history of DVTs in the past or any history of Factor V Leiden.

Use of oestrogen containing contraceptive pill or HRT any recent or proposed long haul flight prior to surgery, any trauma or surgery to legs.

Please refer to DVT prophylaxis policy on the intranet.

Isolated abnormal APTT

If the routine APTT is above 40, it can be due to undiagnosed von Willibrand disease or Lupus anticoagulant or Antiphopholipid syndrome. Please refer the patient to the haematology team for advice and further management. Lupus anticoagulant, and antiphospholipid syndrome are associated with DVTs post-operatively. These patients will need prolonged DVT prophylaxis postoperatively (6-8 weeks).

It will help the haematologist, if we can do "APTT 20:80 correction" by sending a sample in two clotting bottles and 'Lupus anticoagulant' screening. These blood samples need to go to Royal labs for analysis.

Platelets:

If the platelets are less than 100 or greater than 400 discuss with haematology. If platelets are >100 but <150 then discuss with the consultant anaesthetist.

White cell count:

If the white cell count is raised, discuss with anaesthetist and please contact the surgeon regarding further management.

Neurological Assessment

Epilepsy

History

Frequency and type of fits,

When was the last fit?

Are the fits stable or unstable?

Is the patient still under the care of a neurologist? If so, when was last seen by neurologist.

Are there any associated neurological problems such as brain tumour, cerebral palsy?

Is the patient allowed to drive (this also gives a good indication of fit control).

Most anti-epileptic agents, such as Phenytoin and Barbiturates, induce liver enzymes, thus enhancing the ability of the liver to metabolise anaesthetic drugs.

Inform/Contact Anaesthetist if-

Patient has had a fit following a previous general anaesthetic

Epilepsy poorly controlled / fitting regularly or irregularly

Patient currently under care of a neurologist

Currently being investigated for epilepsy

If urgent, ask the surgeon to discuss with anaesthetist; if not urgent, refer to GP or neurologist for further control of epilepsy. If the epilepsy is poorly controlled may need surgery on an acute site. The decision will be made on a case by case basis.

Advise the patient to continue anti-epileptic medication pre-operatively as well as postoperatively.

CVA/TIA

Establish the weakness, residual effects, and exercise tolerance

Patients who present with a history of CVA who undergo surgery and anaesthesia have a risk of approximately 3% of developing a new CVA. Normally it is better to avoid any elective surgery in the first 6 months following a CVA and 3 months following a TIA.

If they had a CVA or TIA, please get the relevant neurology letters from the GP or neurologist including any reports of investigations done. In these patients we need to continue Aspirin preoperatively (after discussion with surgeons). If they are not on Aspirin, we need to stop other antiplatelet drug therapy and start Aspirin (after discussion with surgeons).

Neurological / Muscular Disease

Parkinson's disease

Myopathies

Myasthenia Gravis

Myotonic Dystrophy

Multiple Sclerosis,

Motor Neurone Disease

ME Syndrome

History of above,

Effect on patient,

Exercise tolerance,

Period of hospitalization, including period in ICU, and ventilation,

Drug use (legal/illegal).

Abnormalities of respiratory and cardiac function are associated with many of the neuropathies and myopathies. Some drugs, particularly muscle relaxants, should be avoided or at least used with extreme caution because of unpredictable effects.

Check ECG, CXR, pulmonary function tests, FBC, U&E, and may need Echocardiogram.

Patients with any of the above diseases may need surgery on an acute site eg RLUH. The decision will be made on a case by case basis

All these patients need to be assessed in the Anaesthetic clinic.

Musculo-Skeletal Assessment

Rheumatoid Arthritis/Osteoarthritis/ Cervical Spondylosis

History of disease,

Effect on patient,

Any reduction in general mobility, in particular establish range of neck movement, and

Jaw opening.

Other effects of disease,

Exercise tolerance,

Detailed drug history (steroids etc.)

Periods of hospitalisation.

Note other manifestations of Rheumatoid arthritis, including congestive cardiac failure, angina, pulmonary fibrosis, pleural effusion and anaemia.

What next?

Rheumatoid Arthritis/ Cervical Spondylosis

Request cervical spine x-ray in flexion and extension.

Check FBC, U&E and LFT if taking immunosuppressant drugs or anti rheumatic medication.

Radiology opinion will establish `atlanto-axial subluxation'. The importance of this lies in the fact that the displaced odontoid process can compress the cervical spinal cord or medulla in addition to occlusion of the vertebral artery during airway manipulation.

NB: patients with Down's Syndrome are particularly susceptible to atlanto-axial subluxation.

All these patients need their cervical spine cleared for atlanto-axial instability. If this has been done before then it does not need to be repeated (within one year).

Please refer the patient to the Anaesthetic clinic for assessment, if the neck movements are limited or if there is any radiological abnormality.

Social Assessment

Smoking

History: How long the patient has been smoking (either number of cigarettes or the amount of tobacco used).

Smoking has been identified as one independent factor for predicting adverse perioperative outcome. Nicotine contributes to an increased myocardial oxygen demand by its effect on heart rate, blood pressure and peripheral vascular resistance. Carbon monoxide binds to haemoglobin to form carboxyhaemoglobin, resulting in a significant decrease in oxygen delivery to the tissues. The presence of carboxyhaemoglobin also produces an overestimation of oxygen saturation from pulse oximeters. These effects of a raised carbon monoxide are reversed if smoking stopped for longer than 12 hours. By 12-24hours ciliary function improves and nicotine levels return to normal. Advise patient to stop smoking.

Refer to smoking cessation team if accepted by the patient.

If it is more than 35 pack years, please do simple spirometry.

Pack years = number of packs smoked per day multiplied by the number of years. (One pack = 20 cigarettes)

* In asthmatics stopping smoking may actually be deleterious as cessation os a brief period increases their risk of laryngospasm and bronchospasm during anaesthesia (AAGBI 221 guideline

Alcohol

Inform the team and the anaesthetist, if alcohol intake above 50 units per week. A withdrawal programme may be required as per hospital policy. There is a risk of significant end organ damage to the heart, liver and pancreas in addition to agitation, aggression, seizures and delirium tremens.

We use five-shot questionnaire to Triage the patients.

If the score is more than 2.5, refer to alcohol assessment service for assessment and detoxification (if necessary).

Pregnancy

Last Menstrual Period of women of child bearing age, possibility of pregnancy must be noted. Patients should not be operated upon during pregnancy except in an emergency or where the risk of not operating exceeds the risk to the pregnancy. All women of child bearing age will have a pregnancy test before surgery. This done with the patient's informed consent.

Surgery and Anaesthesia increases the risk of inducing a spontaneous abortion.

Some drugs may induce Foetal abnormalities.

There is an increased risk of regurgitation and aspiration from mid pregnancy onwards.

Establish urgency of procedure with surgeon.

Elective surgery If possible, should be planned for the second trimester or best postponed until 6 weeks after delivery.

Home circumstances

Support at home can influence the suitability of the patient for day case surgery. Specifically, inquire about: Supervision at home. Transport to and from hospital and home telephone.

Recreational Drugs and preoperative management.

Recreational drug abuse (Illicit substance abuse) is on the increase, especially in the younger population. Since these patients often require medical and surgical intervention, it is not uncommon that they are seen in increasing frequency in the preoperative clinic. Many of these patients use multiple drugs and if they inject, they may have blood borne infections. The common substances abused are as follows:

Opioids: Heroin (diamorphine), methadone and codeine. Heroin

is also called 'smack' H' etc.

Ecstasy (3,4-methelenedioxymethamphetamine - MDMA)

Cocaine (also called 'crack')

Amphetamine, methamphetamine ('speed')

Cannabis

Solvent abuse

Opioid abuse

Heroin can be either injected (common) or snorted. A general examination often will reveal injection marks, especially in the groin, many of which can be infected. Some of these patients may already be on an opioid withdrawal program and be on oral methadone.

Anaesthetic implications include difficulties in pain management, venous access, patient cooperation, agitation besides opioid withdrawal. Many of these patients are undernourished & anaemic. Social issues include alcohol intake in excess as well as unreliable assistance at home postoperatively. Many intravenous drug users also have blood borne infections like Hepatitis B/C as well as HIV. Patients

who are actively injecting themselves are generally not candidates for any elective surgery

Ecstasy

The use of ecstasy is rapidly rising in the UK. The majority of patients who use ecstasy tend to be young and fit patients. They are often ingested as tablets.

Metabolic effects of ingestion can include hyperthermia, hyponatremia, rhadomyolysis, heat stroke, convulsions as well as death. Unlike heroin, ecstasy does not cause withdrawal symptoms. Patients with recent history of ecstasy intake (within 2 weeks) should be screened with LFT as well as Creatine kinase levels. If they are abnormal, surgery should be deferred, if possible, by 4 weeks.

Ingestion of ecstacy within the last few days would preclude the safe conduct of a planned surgical procedure.

Cocaine:

Cocaine is commonly snorted/fumes inhaled, though some do inject it. It is a powerful euphoriant. Metabolic effects of ingestion include cardiovascular complications (chest pain, angina, Myocardial infarction, accelerated atheroma, myocarditis, dissecting aneurysm as well as sudden death), rhabdomyolysis as well as hypermetabolic symptoms like hyperthermia.

Many of these patients have nasal septal defects due to the effects of cocaine.

Cocaine is often combined with alcohol binge (since alcohol can prolong the duration of the euphoriant effects). They can be undernourished and be anaemic.

Amphetamine, phencyclidine etc.:

Their metabolic effects are similar to that of cocaine. Again, regular users of these drugs should not be offered elective non-life saving surgery and should be advised to see their GP for referral to a drug withdrawal programme.

Cannabis

Cannabis is probably the most commonly used recreational drug. It is usually smoked. It has some euphoric, analgesic and antiemetic effects. Even though, serious metabolic effects are uncommon, however withdrawal effects include dysphoria, anxiety and delirium. In view of changes to cerebral endorphin levels by cannabis, post-operative pain control can be a problem. These patients may need high doses of opiates for the treatment of postoperative pain.

Solvent Abuse

Solvent abuse is increasing amongst adolescents. Most of the users co-abuse other illicit drugs. The clinical features of sniffing mimic acute alcohol intoxication. Physical dependence is rare but tolerance and psychological dependence can develop.

Chronic usage can lead to cardiomyopathy and irreversible neurological changes. The interaction between hydrocarbons and catecholamines is recognised as cardiodepressant and exercise-induced arrhythmias are implicated in sudden cardiac deaths.

References:

Metabolic consequences of drug misuse. Henry JA, BJA Vol 85:136-42; 2000.

Anaesthesia and substance abuse. Wood PR, Soni N, Anaesthesia, Vol 44: 672680; 1989.

Preoperative management

Document the recreational drugs used, frequency, routes used.

Advise the patients to abstain from recreational drugs for two weeks preoperatively and postoperatively for any planned surgical procedure

May not be suitable for Day case surgery

May not be appropriate for same day admission.

Do FBC, U&E, Liver Function Tests, ECG, Simple spirometry

May need Echocardiogram

Enquire about blood borne infections like Hepatitis B, Hep C as well as HIV.

Patients who are on methadone should be advised to continue it preoperatively including on the day of surgery.

Counselling and informed consent are required prior to testing for HIV.

Anaesthetic Assessment

Previous Anaesthetics

Types: general or regional anaesthetic,

When?

What type of operation? Any side effects and what was the outcome?

Allergies:

Drugs

Dressings

Rubber/latex

Metals

Food stuffs: egg, soya etc.

Anaesthetic Problems

Post-operative Nausea and Vomiting (PONV), awareness, intubation problems, allergic reactions, adverse effects, prolonged apnoea (scoline apnoea), unexplained family deaths under anaesthetic (possibility of MH)

If the patient has never had an anaesthetic or an operation, ask about dental chair anaesthesia as a child.

Then, ask about any problems in relatives (mother, father, sisters, brothers, and children): allergic reactions, adverse effects, prolonged apnoea (scoline apnoea), unexplained family deaths under anaesthetic (possibility of MH). This is extremely important to ask.

What next?

Make **ALL ATTEMPTS** to obtain appropriate clinical notes; if problems are known to have occurred, **MUST** obtain notes or copies from other hospitals.

Inform the anaesthetist with details of the problem.

Malignant Hyperpyrexia - Inform the Anaesthetist immediately. History, Family history, Investigations (by Leeds hospitals),

Unexplained pyrexia following anaesthesia.

It is an inherited, potentially fatal disorder of skeletal muscle triggered by a number of anaesthetic drugs (especially suxamethonium and inhalational agents).

Reported incidence 1:50,000.

Porphyria

Any problems with previous anaesthetics?

Airway assessment

Mouth

Mouth opening

Cleft lip, cleft palate

State of mouth - poor dental hygiene

Loose teeth, caps or crowns or bridges

Neck

Short, fat neck
Any restriction of movements especially difficulty in extension, pain on extension,
Receding lower jaw
Thyromental distance (should be more than 6 cm)
In older patients, especially those with arthritis in the neck, ask if they get any symptoms such as lightheadedness with neck extension.

Airway

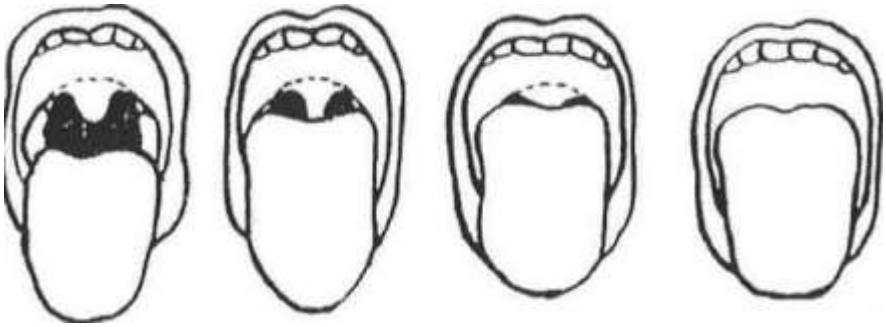
The Mallampatti assessment and thyromental distance can warn the anaesthetist of possible intubation problems.

Upright maximal tongue protrusion test (Mallampati classification - see figure below)

Mallampatti assessment involves asking the patient to open his/her **mouth as wide as possible with** fully protruded tongue. With viewer sitting directly in front of **them, look for soft palate, uvula, tonsillar pillars.**

The view is graded as follows- false positives and negatives do occur

Class I **Class II** **Class III** **Class IV**



Thyromental Distance

The thyromental distance is measured by asking the patient to extend the neck: the examiner's index finger is placed on the tip of the chin (the mentum) and remaining fingers allowed to lie underneath the chin until the thyroid cartilage is just touched. The thyromental distance is recorded as the distance between these two points.

Inform anaesthetist if Mallampatti grade is 3 or 4 or if thyromental distance is less than 6 cm.

Mouth-guards / Gum Shield

In patients with predicted difficulty in intubation, teeth / caps / crowns may be protected with mouth guards similar to those used in contact sports. But mouthguards can reduce but not eliminate the chance of damage to teeth/caps/crowns. If the patients want one this must be obtained to protect the teeth, you can advise them to get one prior to the operation.

Drug therapy and Medication History

PERIOPERATIVE MEDICATION GUIDE - See Appendix 1

Make a note of **ALL** medications, including recreational drugs.

Patients must bring in all medications. Please stress the importance of this. Identify 'over the counter' medications, HRT, herbal preparations.

What to do now?

Please continue the following medications as usual on the day of operation (Do not stop taking the medication):
Anti-hypertensive (except AC Inhibitors, Angiotensin-II receptor blockers, diuretics), Anti-anginal, Anti-convulsants, Anti-arrhythmic, Asthmatic medications (including inhalers), Steroids, Thyroxine, Digoxine, Beta blockers and Anti-acid medication (eg. Omeprazole, Ranitidine etc) .

If patients are on Steroids

Check blood pressure and U&Es.

If patients are on Thyroxine

Check TFTs, if not done in the last 3 months.

If patients are on Lithium

Check U&E (watch for serum sodium level), lithium level (do not send the sample in orange Lithium Heparin bottle!!) and Thyroid function tests.

Lithium should be stopped 24 hrs before major surgery but can be continued for minor surgery (with careful monitoring of fluids and electrolytes).

If patients are on Diuretics or ACE Inhibitors

Check U&E

If patients are on Digoxin

Check digoxin level 6 hours post dose and U&E.

If patients are on Warfarin

See associated guidelines – Gynaecology Procedure Anticoagulation document.

Guidelines for Referral to Anaesthetic Review Clinic

The following are guidelines for patients who may need to be reviewed at the Anaesthetic clinic prior to surgery.

ASA all ASA 3 and 4 patients

CVS Regular use of GTN - 2-3x per week

Unstable angina

Valvular disease/structural abnormality

Uncontrolled diabetes - e.g. Claudication, impaired renal function

Abnormal ECG — High grade AV block, SVT or VT arrhythmias with uncontrolled rate

Peripheral Vascular disease

Previous coronary revascularisation — only with recurrent signs and symptoms.

MI < 6/12 Stroke <6/52

TIA <3/52

RS COAD/COPD, SOB on minimal exertion

Wheezy, most of time

Several episodes of acute chest infections per year

FEV1 <50% predicted

FEV1< 1.2 PEFR <200

Asthma — poorly controlled, restricting activities of daily living

High doses of steroids

Frequent A&E admissions with exacerbation

Occupational lung disease e.g. asbestosis

Inherited lung disease — e.g. cystic fibrosis

Other systemic disease with recognised respiratory symptoms e.g. CCF, rheumatoid disease, certain drug side effects

Renal Poor renal function – creatinine>200mmols/l regular dialysis -peritoneal or haemodialysis

Haematology Any abnormal coagulation, thrombocytopenia

Endocrinology Thyroid disease, clinically or biochemically hyperthyroid/hypothyroid Acromegaly, Cushings /chronic steroid treatment**.**

Neurological Patients affected by syndromes associated with upper airway changes or other organ involvement e.g. Down's, Marfans, Cushings.

Any Neuromuscular diseases

Anaesthetic Factors

History of difficult intubation (mallampati 3 and 4)
Suspected potential difficult intubation.
Suspected history of malignant hyperthermia
History of allergy to anaesthetic drugs

Other BMI > 40

Any other concerns

PRE OPERATIVE INVESTIGATIONS

For ease of assessment and decision making for pre- operative investigations and tests, there is a simplified grid below.

All patients must have a haemocue as a minimum and then onto FBC and other tests as below .

Minor Surgery	
Hysteroscopy	Cystoscopy
Examination under Anaesthesia	Insertion of Mirena coil
Thermachoice endometrial ablation	I & D of Bartholins Abscess
ERPOC	Cone/Loop Biopsy
TESA	Botox to bladder
Vulval biopsy	

Major and Complex Major	
Vaginal Hysterectomy	Anterior and Posterior Repair
Repair with Vaginal Mesh	Sacrospinous Fixation
Colposuspension	Perineorrhaphy
Groin node dissection	Anterior Exenteration
Trans Abdominal Cerclage (TAC)	Vulvectomy +/- Skin Flaps
Primary Interval Debulking	All laparoscopic Procedures

Table 1

Minor Surgery			
Test	ASA Grade		
	ASA 1	ASA 2	ASA 3 or 4
Full blood count	Not routinely	Not routinely	Not routinely
Haemostasis	Not routinely	Not routinely	Not routinely
Kidney function	Not routinely	Not routinely	Consider in people at risk of AKI[1]
ECG	Not routinely	Not routinely	Consider if no ECG results available from past 12 months
Lung function/arterial blood gas	Not routinely	Not routinely	Not routinely

AKI, acute kidney injury.
[1] See recommendation 1.1.8 of the NICE guideline on acute kidney injury

Table 2

Intermediate surgery			
Test	ASA Grade		
	ASA 1	ASA 2	ASA 3 or 4
Full blood count	Not routinely	Not routinely	Consider for people with cardiovascular or renal disease if any symptoms not recently investigated
Haemostasis	Not routinely	Not routinely	Consider in people with chronic liver disease If people taking anticoagulants need modification of their treatment regimen, make an individualised plan in line with local guidance If clotting status needs to be tested before surgery (depending on local guidance) use point-of-care testing[1]
Kidney function	Not routinely	Consider in people at risk of AKI[2]	Yes

ECG	Not routinely	Consider for people with cardiovascular, renal or diabetes comorbidities	Yes
Lung function/arterial blood gas	Not routinely	Not routinely	Consider seeking advice from a senior anaesthetist as soon as possible after assessment for people who are ASA grade 3 or 4 due to known or suspected respiratory disease
AKI, acute kidney injury. [1] Note that currently the effects of direct oral anticoagulants (DOACs) cannot be measured by routine testing. [2]See recommendation 1.1.8 of the NICE guideline on acute kidney injury.			

Table 3

Major or complex surgery			
Test	ASA Grade		
	ASA 1	ASA 2	ASA 3 or 4
Full blood count	Yes	Yes	Yes

Haemostasis	Not routinely	Not routinely	Consider in people with chronic liver disease If people taking anticoagulants need modification of their treatment regimen, make an individualised plan in line with local guidance If clotting status needs to be tested before surgery (depending on local guidance) use point-of-care testing[1]
Kidney function	Consider in people at risk of AKI[2]	Yes	Yes
ECG	Consider for people aged over 50 if no ECG results available from past 12 months	Yes	Yes
Lung function/arterial blood gas	Not routinely	Not routinely	Consider seeking advice from a senior anaesthetist as soon as possible after assessment for people who are ASA grade 3 or 4
			due to known or suspected respiratory disease

AKI, acute kidney injury.

[1] Note that currently the effects of direct oral anticoagulants (DOACs) cannot be measured by routine testing.

[2] See recommendation 1.1.8 of the NICE guideline on acute kidney injury.

Guidelines for Pre-operative Investigations	
These guidelines are to help with the ordering of appropriate tests. If in doubt ask for advice. Routine urine analysis in all patients (including pregnancy test).	
TEST	**INDICATION**
FBC	All patients need a haemocue. If abnormal, they will need an FBC. Major surgery. Likelihood of significant perioperative blood loss.-H/O blood loss (acute or chronic), anaemia,, renal disease,cardiovascular disease
Coagulation screen	Patient taking anticoagulants, Patients with bleeding disorder or chronic hepatobiliary disease. Consumption > 21 units alcohol / week.
U&E	H/O cardiovascular disease including hypertension. Any cardiovascular drugs including diuretics. Diabetes, asthmatics on inhalers, patients on steroids. Major/complex major surgery screen for AKI
Glucose	– Random glucose has no role in the preoperative assessment process. If necessary do a fasting glucose.
HbA_1C	All diabetic patients
LFTs	Any patient undergoing major gynaecology/bowel surgery. H/O malignancy or chronic liver disease or jaundice or cardiac failure. Consumption > 21 units alcohol/week.
Sickledex	Patients of African or Middle Eastern. Patient usually knows history. Check in notes to see if this test has been previously done. If so, it does not need to be repeated. If positive and necessary, Hb electrophoresis
Group & save*	Any surgical procedure in which blood loss > 20% of circulating blood volume is possible but not likely. Hb < 10g/dl pre op.
X match*	Any surgical procedure in which loss of > 20% of circulating blood volume is likely.

CXR	Not indicated routinely H/O Cardiovascular or Respiratory disease. Known or suspected malignancy or possible TB. At anaesthetists' request in dyspnoeic patients, very elderly patients or in patients with any positive chest signs. For non-cardiothoracic surgery, routine pre-operative CXR is not indicated in patients <60 years old but maybe helpful in patients aged 60 and over with significant cardiorespiratory disease If a recent (in last 12 months) X-ray is available, a repeat Xray is not usually needed.
ECG	All patients over 50 years. H/O cardiovascular disease eg. Hypertension, palpitations or chronic pulmonary disease. Patients taking any cardiovascular drugs. Diabetes, renal comorbidities. Patients using heroin/ cocaine will also need an ECG
Respiratory function tests/arterial blood gas	Any patient with respiratory disease eg Asthma, COAD Breathlessness on mild exertion. > 10 years exposure to coal dust
Arterial blood gases	Patients with known respiratory disease who are listed for major surgery.
Drug levels / tests	Patients taking lithium, anti-epileptics, digoxin or thyroxine (if not done in past 3

Guidance on pre-operative echocardiography for anaesthetists and pre op nurses.

Pre-operative investigations must be planned in a timely way in the days and weeks leading up to surgery. The majority of investigations is done as outpatients and requires time to be arranged.

Consider resting echocardiography before surgery if the patient has:

A heart murmur and any cardiac symptoms (including breathlessness, presyncope, syncope or chest pain or

Signs or symptoms of heart failure

Do not offer routine pre-operative echo.

A cardiology opinion may be of more value than a scan. The cardiologist can help with preoperative optimisation of the patient and also with decision making about levels of perioperative support. Where investigations are requested, the patient should preferably have been examined by the referring clinician.

Selection Criteria for Surgery on Acute Site

The following is a guideline to aid selection of patients who may need surgery on the Royal site. Selection will be based on a case by case basis.

ASA Unstable 3 and all ASA 4 patients – ACUTE SITE ONLY

CVS Regular use of GTN - 2-3x per week

Unstable angina

Recent MI

Moderate aortic and mitral stenosis

Severe aortic, mitral, tricuspid regurgitation

Pulmonary hypertension with pressures more than 25 mm Hg

CCF with biventricular pacemaker

Any moderate or severely impaired LV / RV function

Previous coronary revascularisation – only with recurrent signs and symptoms.

All congenital heart disease patients with pulmonary hypertension

High degree AV block with symptoms and no pacemaker

MI < 6/12

Stroke <6/52

TIA <3/52

RS: COAD/COPD, SOB on minimal exertion, Wheezy, most of time

Several episodes of acute chest infections per year

FEV1 /FVC ratio <40% FEV1< 1L

Asthma – Poorly controlled, restricting activities of daily living

High doses of steroids

Frequent A&E admissions with exacerbation

Pulmonary fibrosis with reduced transfer factor

Patients on home oxygen

Untreated OSA patients particularly if moderate/ severe OSA.

All pneumonectomy patients with poor spirometry

Renal CKD 4/5 patients on Regular dialysis – peritoneal or haemodialysis

Haematology Sickle cell disease

Sickle cell carriers with HbS more than 20-30% need HDU care

GIT: History of hepatic encephalopathy with portal hypertension

Endocrinology: Poorly controlled DM for urgent surgery

Untreated Hyperthyroid / hypothyroid

Any patient with tracheal compression

Neurological: Any neuromuscular diseases, (case by case basis)

Poorly controlled epilepsy

Severe learning disabilities may be with cerebral palsy

Anaesthetic factors:

Suspected history of malignant hyperthermia

Previous ITU admissions

Patients with difficulty airway

Multiple Allergic reactions with airway involvement in the past

Other Unstable C-spine

Poorly controlled Myasthenia Gravis

Frailty:

Is a medical syndrome with multiple causes and contributors that is characterised by diminished strength, endurance, and reduced physiological function, that increases an individual's vulnerability for developing increased dependency and/or death

Medication: Any patient with a medical condition and refusing to take medications.

14. Associated Guidelines

Gynaecology Procedure Anticoagulation document and Bridging Plan - see Appendices 1 and 2.
Perioperative Management of Gynaecology Patient with Diabetes Mellitus - Link
Perioperative Drug Management
Management of the Anticoagulated Patient Requiring Gynaecology Surgery or an Invasive Procedure Link

15. References

AAGBI Pre-operative Assessment,
The Role of the Anaesthetist November 2001
AAGBI Safety guideline, Pre-operative Assessment and Patient Preparation, The Role of the Anaesthetist, January 2010
Guidelines for the Provision of Anaesthetic Services (GPAS)
Anaesthesia services for pre-operative assessment and preparation 2014
Guidelines for the Provision of Anaesthetic Services (GPAS)
Anaesthesia services for pre-operative assessment and preparation 2016 NICE guideline Published: 5 April 2016 nice.org.uk/guidance/ng45

16. Consultation and Ratification Process

Guideline will be consulted and ratified within Anaesthetic Clinical Meeting

Appendix 1: SOP Pre-Op Drug Management

SOP – SUMMARY GUIDELINE FOR PERIOPERATIVE DRUG MANAGEMENT

PERIOPERATIVE MEDICINES MANAGEMENT

Pain Killers	**Conventional NSAIDs** e.g. ibuprofen, diclofenac	Continue treatment
	COX-2 inhibitors e.g. meloxicam	Continue treatment
	Paracetamol/codeine combinations e.g. co-codamol	Continue treatment

	Neuropathic agents e.g. gabapentin, pregabalin, carbamazepine, amitryptiline	Important to **continue** usual treatment.
	Opioids (analgesic doses) e.g. tramadol, buprenorphine, fentanyl, morphine, oxycodone	Important to **continue** usual treatment. Buprenorphine patch up to 70mcg/h should be continued.
Opioids (high dose for drug addiction)[1] Eg. S/L buprenorphine, methadone, naltrexone		Can be problematic for pain control during perioperative period. Methadone – continue. High dose SL buprenorphine >70mcg/h: consider conversion to full agonist preop (discuss with anaesthetist). Naltrexone – stop 72hrs preop.iscuss with anaesthetist. Advise patient to bring contact details of their GP, alcohol and drug addiction service provider and chemist. Continue treatment. Advise patient to bring contact details of their GP, alcohol and drug addiction service provider and chemist
Statins e.g. simvastatin, atorvastatin, pravastatin		Continue treatment

Insulin and oral hypogylcaemics e.g. insulin, glicazide, metformin, pioglitazone	See guideline 'Perioperative Management of the gynaecology patient with Diabetes Mellitus'
Inhalers e.g. salbutamol, beclomethasone, serevent, seretide, spiriva, atrovent	Continue treatment
Bisphosphonates e.g. alendronate, risendronate	Omit on morning of surgery
Alpha-blockers e.g. alfuzosin, doxazosin, indoramin, tamsulosin, terazosin	Continue treatment

Anti-platelet medication e.g. Aspirin, clopidogrel, Ticagrelol, Prasugrel, Dipyridamole		See guideline for 'management of patient on anticoagulant for planned surgery'
Oral anticoagulants e.g. warfarin, rivaroxaban, dabigatran		See guideline for 'management of patient on anticoagulant for planned surgery'
Cardiac medications[2]	**ACE inhibitors** e.g. enalapril, lisinopril, ramipril, trandolapril, captopril, fosinopril	Omit on day of surgery but bring medication with them to hospital
	Angiotensin II inhibitors e.g. losartan, candesartan	As for ACE inhibitors
	Anti-anginal therapy e.g. Isosorbide mononitrate	Continue treatment
	Anti-arrythmics e.g. amiodarone, digoxin, diisopyramide, flecainide, verapamil	Continue treatment
	Anti-hypertensives e.g. amlodipine, atenolol, hydralazine, clonidine, nicorandil	Continue treatment
	Beta blockers e.g. atenolol, bisoprolol, metoprolol, sotalol	Continue treatment

	Diuretics e.g. bendroflumethiazide, furosemide, amiloride, spironolactone	Omit on day of surgery but bring medication with them to hospital.

Immunosuppression medications[3]	**Conventional** e.g. methotrexate, leflunomide, azathioprine, ciclosporin, hydroxychloroquine, mercaptopurine	Methotrexate, hydroxycholoquine, azathioprine – continue as usual. Consider stopping if renal impairment or infection. Leflunomide, cyclosporine, mycophenelate usually withdraw 1-2 weeks before. Balance risk: benefit of stopping vs. continuing. Discuss with anaesthetist.
	Anti-rejection medications e.g. tacrolimus, sirolimus	Continue treatment
	Anti-TNF α e.g. infliximab, etanercept, adalimumab	Usually may continue for minor surgery but omit in advance (sometimes several weeks in advance) for major surgery. Consult with anaesthetist / rheumatologist to balance risk of infection / surgery with disease relapse.
Corticosteroids e.g. prednisolone		Continue treatment, Inform anaesthetist if taking steroids for congenital adrenal hyperplasia or Addisons disease
Neurological	**Anti-epileptics** e.g. phenytoin, carbamazepine, sodium valproate, levitiracetam	Important to **continue** treatment
	Anti-parkinsonian drugs[4] e.g. cabergoline, madopar, sinemet, entacapone, pramipexole, rasagiline	**Important drug interactions: inform anaesthetist.** Important to **continue** all anti-parkinson's medications
	Anti-psychotics & anxiolytics e.g. diazepam, chlorpromazine, clozapine, sulpiride	Continue treatment

	Lithium	Usually continue (may omit for 24hrs prior to major surgery but aim to restart at 24hrs postop). Check lithium levels pre-op. Avoid NSAIDs and dehydration, monitor U&Es. Inform anaesthetist.
	Dementia[5] e.g. donepezil, galantamine, rivastigmine	**Important drug interactions: inform anaesthetist.** Galantamine & rivastigmine : omit day before surgery. Donepezil – usually continue as is long acting.
Levothyroxine		Continue treatment
Anti-thyroid medications e.g. carbimazole, propylthiouracil		Continue treatment
Herbal medicines **Eg. Gingko biloba**		Discontinue 2 weeks before surgery
Contraceptives[6] **(oral)**	**Combined**	All women of childbearing age should be asked if they are on the contraceptive pill as some do not consider it a medication. There is an increased risk of postoperative VTE (2.5 fold) postoperatively and women should be informed of this. Advise patients to consider stopping oestrogen-containing oral contraceptives 4 weeks before elective surgery, particularly if major surgery or other risk factors for VTE. If stopped, provide advice on alternative contraceptive methods. If patient decides to continue, it should be taken into account when assessing risk of VTE
	Progesterone only	Continue treatment
Hormone Replacement Therapy (HRT)[6]		There is consistent evidence that HRT is associated with 1.3-3 fold increase in postoperative VTE. All women should be informed of this. Advise patients to consider stopping oestrogen-containing hormone replacement therapy 4 weeks before elective surgery,

	particularly if major surgery or other risk factors for VTE. If patient decides to continue, it should be taken into account when assessing risk of VTE
Tamoxifen	Continue. Increased VTE risk.

References:

1. Perioperative management of opioid-tolerant patients. Simpson GK, Jackson M BJA Education, 17 (4): 124-128 (2017)
2. 2014 ACC/AHA Guideline on perioperative cardiovascular evaluation and management of patients undergoing noncardiac surgery. JACC 64 (22) 2014
3. Franco AS, Iuamoto LR, Pereira RMR. Perioperative management of drugs commonly used in patients with rheumatic diseases: a review. *Clinics*. 2017;72(6):386-390. doi:10.6061/clinics/2017(06)09
4. Parkinson's diseaseD J Chambers, BM BCh DPhil MRCP FRCA J Sebastian, BSc MBBS MRCP FRCA D J Ahearn, MB ChB MRCP MSc*BJA Education*, Volume 17, Issue 4, 1 April 2017, Pages 145–149, https://doi.org/10.1093/bjaed/mkw050
5. Perioperative management of patients with dementia. Alcorn S, Foo I. BJA Education, 17 (3): 94-98 (2017)
6. Venous thromboembolism: reducing the risk for patients in hospital | Guidance and guidelines | NICE https://www.nice.org.uk/guidance/cg92/chapter/1Recommendations#.WenEVNqp9mg.email

Abiraterone	**Continue**
Acamprosate	Continue
Acarbose	See Trust diabetes guidelines
Acenocoumarol	Treat as for Warfarin. See Perioperative Anticoagulation Guideline
Acebutolol	Continue (risk of hypotension)
Adalimumab	Omit if due <2 weeks prior to surgery
Alendronate	Continue (may be safely omitted if due day of procedure)
Alfuzosin	Continue (may be withheld if patient catheterised, risk of hypotension)
Alimemazine	Continue
Aliskiren	Continue
Allopurinol	Continue
Alverine	Continue
Amantadine	Continue
Ambrisentan	Continue
Amiloride	Continue
Amiodarone	Continue
Amisulpride	Continue

Amitriptyline	Continue (risk of hypotension and arrhythmias)
Amlodipine	Continue
Anagrelide	Seek Haematologist advice
Anastrozole	Continue
Apixaban	See Perioperative Anticoagulation Guideline
Apomorphine	Continue
Aripiprazole	Continue
Aspirin	See Perioperative Anticoagulation Guideline
Atenolol	Continue
Atorvastatin	Continue
Azathioprine	Continue
Azilsartan	Continue
Baclofen	Continue
Balsalazide	Continue (may not be indicated postop if procedure is to remove diseased bowel)
Barbiturates	Continue
Bendroflumethiazide	Omit on day of surgery
Benzhexol	Continue
Benperidol	Continue
Betamethasone	Continue (consider dose increase)
Bezafibrate	Continue
Bicalutamide	Continue
Bilastine	Continue
Bisacodyl	Continue (may omit if laxative action undesirable)
Bisoprolol	Continue
Bosentan	Continue
Bromocriptine	Continue
Budesonide	Continue (may not be indicated postop if procedure is to remove diseased bowel)
Bumetanide	Continue
Buprenorphine	Continue (alert anaesthetist)
Bupropion	Continue (avoid pethidine; increased seizure risk)
Buspirone	Continue
Cabergoline	Continue
Calcitonin	Continue
Calcium salts	Continue
Candesartan	Omit 24 hrs before surgery
Captopril	Omit on day of surgery
Carbamazepine	Continue (check U&Es for low sodium)
Carbimazole	Continue
Carbocisteine	Continue
Carvedilol	Continue (risk of hypotension)

Celecoxib	Continue
Celiprolol	Continue (risk of hypotension)
Cetirizine	Continue
Chloroquine	Continue
Chlorphenamine	Continue
Chlorpromazine	Continue
Ciclosporin	Continue
Cilostazol	Continue (increased bleeding risk due to antiplatelet action)
Cimetidine	Continue
Cinacalcet	Continue
Cinnarizine	Continue
Ciprofibrate	Contnue
Citalopram	Continue (caution with pethidine)
Clodronate	Continue (may be safely omitted if due day of procedure)
Clomethiazole	Continue
Clomifen	Continue
Clomipramine	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Clonazepam	Continue
Clonidine	Continue
Clopidogrel	See Perioperative Anticoagulant Guideline
Clozapine	Alert anaesthetist. Alert pharmacy that patient is in hospital. Dose will need re-titrating if withheld for >48hrs
Co-amilofruse	Omit on day of surgery
Co-amilozide	Continue
Co-beneldopa	Continue
Co-careldopa	Continue
Co-danthramer	Continue – May omit if laxative action undesirable
Codeine phosphate	Continue
Colchicine	Continue
Colesevelam	Continue
Colestyramine	Continue
Contraceptives	Patients to consider stopping oestrogen-containing contraceptives and HRT (refer VTE guidelines)
Co-phenotrope (lomitil)	Continue
Cortisone (steroid)	Continue (may need increased dose peri-operatively)
Cyanocobalamin	Continue
Cyproterone	Continue
Dabigatran	See Perioperative Anticoagulation Guideline (duration of stopping is related to renal function so check U&Es)

Dapagliflozin	See Trust diabetes guidelines
Deflazacort (steroid)	Continue (may need increased dose peri-operatively)
Desferrioxamine	Seek haematologist advice
Desloratadine	Continue
Dexamethasone (steroid)	Continue (may need increased dose peri-operatively)
Dexamfetamine	Continue
Diazepam	Continue
Diclofenac	Continue
Dicycloverine	Continue
Digoxin	Continue
Diltiazem	Continue
Dipyridamole	See Perioperative Anticoagulation Guideline Withhold 48 hours prior to procedure
Disopyramide	Continue
Disulfiram	Continue
Docusate sodium	Continue – May omit if laxative action undesirable
Domperidone	Continue
Donepezil	Continue. May potentiate muscle relaxation during anaesthesia (alert anaesthetist)
Dosulepin	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Doxazosin	Continue if for BP control. If for urinary symptoms, then may be withheld if patient catheterised (risk of hypotension).
Doxepin	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Dronedarone	Continue
Dutasteride	Continue
Duloxetine	Continue (caution with pethidine use)
Edoxaban	See anticoagulation policy
Enalapril	Omit on day of surgery
Entacapone	Continue
Eplerenone	Continue
Eprosartan	Omit 24 hrs before surgery
Escitalopram	Continue (caution with pethidine use)
Eslicarbazepine	Continue
Esomeprazole	Continue
Etanercept	Omit if due 1 week prior to surgery
Ethinylestradiol	Discuss with endocrine team. High doses may need to be stopped or continued at a lower dose
Ethosuximide	Continue
Etodolac	Continue
Etoricoxib	Continue

Exemestane	Continue
Exenatide	See Trust diabetes guidelines
Ezetimibe	Continue
Famotidine	Continue
Fampridine	Continue
Febuxostat	Continue
Felodipine	Continue
Fenofibrate	Continue
Fentanyl patch	Continue (alert anaesthetist)
Ferrous fumarate	Continue
Ferrous gluconate	Continue
Ferrous sulphate	Continue
Fexofenadine	Continue
Finasteride	Continue
Flavoxate	Continue (may be withheld if patient catheterised)
Flecanide	Continue
Flurazepam	Continue
Fludrocortisone (steroid)	Continue
Fluoxetine	Continue (caution with pethidine use)
Flupentixol	Continue (caution with pethidine use)
Flutamide	Continue
Fluvastatin	Continue
Folic acid	Continue
Fosinopril	Omit on day of surgery
Furosemide	Omit on day of surgery
Gabapentin	Continue
Galantamine	Continue (alert anaesthetist; may potentiate muscle relaxation during anaesthesia)
Gaviscon	Continue
Gemfibrozil	Continue
Glibenclamide	See Trust diabetes guidelines
Gliclazide	See Trust diabetes guidelines
Glimepiride	See Trust diabetes guidelines
Glipizide	See Trust diabetes guidelines
Haloperidol	Continue
HRT: Oestrogens only	See table above
HRT: combined	See table above
Hydromorphone	Continue
Hydralazine	Continue

Hydrocortisone (steroid)	Continue (may need increased dose peri-operatively)
Hydroxychloroquine	Continue
Hydroxyzine	Continue
Hyoscine butylbromide	Continue
Ibandronate	Continue (may be safely omitted if due day of procedure)
Ibuprofen	Continue
Imipramine	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Indapamide	Continue
Indomethacin	Continue
Indoramin	Continue if for BP control
Infliximab	Omit 6-8 weeks before surgery
Insulins	See Trust diabetes guidelines.
Irbesartan	Omit 24 hrs before surgery
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.
Isosorbide dinitrate	Continue
Isosorbide mononitrate	Continue
Ispaghula husk	Continue (may omit if laxative action undesirable)
Isradipine	Continue
Ivabradine	Continue
Ivacaftor	Continue
Ketoprofen	Continue
Labetalol	Continue
Lacidipine	Continue
Lacosamide	Continue
Lactulose	Continue (may omit if laxative action undesirable)
Lamotrigine	Continue
Lansoprazole	Continue
Leflunomide	Hold 2 weeks prior to surgery, restart 3 days postop
Lenalidomide	Continue (increases DVT risk but usually benefit outweighs risk)
Lercanidipine	Continue
Letrozole	Continue
Levetiracetam	Continue
Levocetirizine	Continue
Levomepromazine	Continue
Levothyroxine	Continue
Liothyronine	Continue

Linaclotide	Continue (may omit if laxative action undesirable)
Linagliptin	See Trust diabetes guidelines
Liraglutide	See Trust diabetes guidelines
Lisdexamfetamine	Continue
Lisinopril	Omit 24 hours before surgery
Lithium	Continue (omit for 24hrs prior to major abdominal surgery but aim to restart at 24hrs post-op). Prolongs neuromuscular blockade. Risk of toxicity (Lithium salts have a narrow therapeutic/toxic ratio). Check lithium levels pre-op. Concurrent treatment with NSAIDs should be avoided. Avoid dehydration. Monitor U&Es.
Lixisenatide	See trust diabetes guidelines
Lofepramine	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Loperamide	Continue
Loprazolam	Continue
Loratidine	Continue
Lorazepam	Continue
Lormetazepam	Continue
Losartan	Omit 24 hrs before surgery
Magnesium trisilicate	Continue
Mebeverine	Continue
Mefenamic acid	Continue
Meloxicam	Continue
Memantine	Contunue
Meprobamate	Continue – caution with use as CNS depressant
Meptazinol Continue	Continue
Mercaptopurine	Continue (may not be indicated post-op if procedure is to remove diseased bowel)
Mesalazine	Continue (may not be indicated post-op if procedure is to remove diseased bowel)
Methocarbamol	Continue – alert anaesthetist
Metformin	See Trust diabetes guidelines
Methadone	Continue. Alert anaesthetist. Avoid buprenorphine.
Methotrexate	Continue
Methylcellulose	Continue (may omit if laxative action undesirable)
Methyldopa	Continue
Methylphenidate	Continue
Methylprednisolone (steroid)	Continue (may need increased dose peri-operatively)
Metoclopramide	Continue
Metolazone	Continue
Metoprolol	Continue
Metyrapone	Continue (inform anaesthetist)

Mirabegron	Continue (may be omitted if patient catheterised)
Mirtazepine	Continue (caution with pethidine use)
Misoprostol	Continue
Moclobemide	Omit on day of surgery
Modafinil	Continue
Montelukast	Continue
Morphine	Continue
Movicol	Continue (may omit if laxative action undesirable)
Moxonidine	Continue
Mycophenolate	Continue
Nabumetone	Continue
Nadolol	Continue (risk of hypotension)
Naftidrofuryl oxalate	Continue
Nalmefene	Continue (alert anaesthetist, opioid antagonist)
Naproxen	Continue
Nateglinide	See Trust diabetes guidelines
Nebivolol	Continue (risk of hypotension)
Neostigmine	Discuss with anaesthetist
Nicardipine	Continue (risk of hypotension)
Nicorandil	Continue
Nicotinic acid	Continue
Nifedipine	Continue (risk of hypotension)
Nimodipine	Continue (risk of hypotension)
Nitrazepam	Continue
Nizatidine	Continue
Nortriptyline	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Olanzapine	Continue
Olmesartan	Omit 24 hours before surgery
Olsalazine	Continue (may not be indicated post-op if procedure is to remove diseased bowel)
Omacor	Continue
Omeprazole	Continue
Oral contraceptive: combined oestrogen and progesterones	See table above
Oral contraceptive: progesterone only	See table above
Orlistat	Omit when nil by mouth
Oxazepam	Continue
Oxcarbazepine	Continue
Oxprenolol	Continue (risk of hypotension)

Oxybutynin	Continue (may be omitted if patient catheterised)
Oxycodone	Continue
Pancreatin enzymes (creon)	Continue
Pantoprazole	Continue
Paroxetine	Continue (caution with pethidine use)
Penicillamine	Continue
Pentoxifyline	Continue
Peppermint oil	Continue
Peptac	Continue
Pergolide	Continue
Perindopril	Omit 24 hrs before surgery
Pethidine	Continue
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 Perioperative Anticoagulation Guideline
Phenobarbital	Continue
Phentolamine	Seek anaesthetist advice
Phenytoin	Continue
Pindolol	Continue (risk of hypotension)
Pioglitazone	See Trust diabetes guidelines
Piracetam	Continue – but alert anaesthetist
Pirfenidone	Continue
Piroxicam	Continue
Pizotifen	Continue
Pramipexole	Continue
Prasugrel	Discuss with anaesthetics/surgical/cardiology
Pravastatin	Continue
Prazosin	Continue if for BP control
Prednisolone (steroid)	Continue (may need increased dose peri-operatively)
Pregabalin	Continue
Prestylon	Continue
Primidone	Continue
Propafenone	Continue
Propantheline	Continue (may be omitted if patient catheterised)
Propiverine	Continue (may be omitted if patient catheterised)
Propranolol	Continue (risk of hypotension)
Propylthiouracil	Continue
Prucalopride	Continue (may omit if laxative action undesirable)
Pyridostigmine	Continue (discuss with anaesthetist)

Quetiapine	Continue
Quinapril	Omit 24 hours before surgery
Quinine	Continue
Rabeprazole	Continue
Raloxifene	Continue
Ramipril	Omit 24 hours before surgery
Ranitidine	Continue
Rasagiline	Continue (avoid pethidine)
Reboxetine	Continue (caution with pethidine use)
Repaglinide	See Trust diabetes guidelines
Retigabine	Continue
Rifaximin	Continue
Riluzole	Continue (alert anaesthetist)
Risedronate	Continue (may be safely omitted if due day of procedure)
Risperidone	Continue
Rivaroxaban	See Perioperative Anticoagulation Guideline
Rivastigmine	Continue (alert anaesthetist)
Ropinirole	Continue
Rosiglitazone	See Trust diabetes guidelines
Rosuvastatin	Continue
Rotigotine	Continue
Saxagliptin	See Trust diabetes guidelines
Selegiline	Continue (avoid pethidine)
Senna	Continue (may omit if laxative action undesirable)
Sertraline	Continue (caution with pethidine use)
Sevelamer	Omit once patient NBM
Simvastatin	Continue
Sirolimus	Continue
Sitagliptin	See Trust diabetes guideline
Sodium Valproate	Continue
Solifenacin	Continue (may be omitted if patient catheterised)
Sotalol	Continue (risk of hypotension)
Spironolactone	Continue
Strontium	Continue (may be safely omitted if due day of procedure)
Sulfasalazine	Continue (may not be indicated post-op if procedure is to remove diseased bowel)
Sulindac	Continue
Sulpiride	Continue
Tacrolimus	Continue
Tafamidis	Continue (alert anaesthetist)
Tamoxifen	Continue

Tamsulosin	Continue (may be withheld if patient catheterised, risk of hypotension)
Tapentadol	Continue (alert anaesthetist)
Telaprevir	Continue
Telmisartan	Omit 24 hrs before surgery
Temazepam	Continue
Tenoxicam	Continue
Terazosin	Continue if for BP control.
Tetrabenazine	Continue (alert anaesthetist)
Thalidomide	Seek Haematologist advice
Theophylline	Continue
Tibolone	Continue
Ticagrelor	Discuss with anaesthetic/surgical/cardiology
Tiagabine	Continue
Timolol	Continue (risk of hypotension)
Tolbutamide	See Trust diabetes guidelines
Tolcapone	Continue
Tolterodine	Continue (may be withheld if patient catheterised).
Tolvaptan	Continue
Topiramate	Continue
Toremifene	Continue
Tramadol	Continue
Tranylcypromine (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	Omit 24 hrs before surgery
Tranexamic acid	Continue
Trazodone	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Triamterene	Continue
Trifluoperazine	Continue
Trihexyphenidyl	Continue
Trilostane	Discuss with anaesthetist
Trimipramine	Continue (caution with pethidine use, also risk of arrhythmias and hypotension)
Trospium chloride	Continue (may be omitted if patient catheterised)
Ulipristal	Continue (may not be needed post op if removing uterine fibroids)
Ursodeoxycholic acid	Continue
Valproic acid	Continue
Valsartan	Omit 24 hrs before surgery
Varenicline	Continue
Venlafaxine	Continue (avoid pethidine use)
Verapamil	Omit 24 hrs before surgery
Vigabatrin	Continue

Vildagliptin	See Trust diabetes guidelines
Warfarin	See Perioperative Anticoagulation Guideline
Zafirlukast	Continue
Zolendronate	Continue (may be safely omitted if due day of procedure)
Zolpidem	Continue
Zopiclone	Continue
Zotepine	Continue
Zuclopenthixol	Continue

17. Intranet Classification

Tags (separated by ;)	Pre-operative; Preparation; assessment;

18. Version Control Sheet

Version	Date	Author	Status	Comment
1.0	2006	Consultant Anaesthetist	Archived	Guideline Creation
2.1	2009	Consultant Anaesthetist	Archived	Guideline review and update
3.0	2012	Consultant Anaesthetist	Archived	Reviewed and Updated
4.0	2015	Consultant Anaesthetist	Archived	Reviewed and Updated
5.0	2017	Clinical Director and preoperative Assessment Lead	Archived	Full review of content, formatting and template change
5.1	2018	Clinical Director and preoperative Assessment Lead	Archived	Wording rephrase inclusion of assessment within title
6.0	2021	Clinical Director and preoperative Assessment Lead	Archived	Reviewed and updated
7.0	Jun 2024	Dipali Verma	Current	Reviewed, updated minor changes