

## **Preoperative assessment, premedication and optimisation**

### **Dr Roy Williamson Aug 2015**

It is absolutely vital that patients are fully assessed prior to anaesthesia, to ensure that their surgical procedure can be carried out as safely as possible. This needs to take account risks arising from the patient's pre-existing comorbidities as well as from the nature of the surgery. The majority of patients will be seen at an assessment clinic preoperatively but still need an individual visit from an anaesthetist when admitted for surgery. Thorough preoperative assessment will also reduce patient anxiety and reduce the risk of unexpected cancellation.

#### **Preoperative assessment clinics**

Many patients are seen preoperatively in an assessment clinic. This is usually by a trained specialist nurse under the guidance of consultant anaesthetists, in this hospital Drs Alcorn and Riddell. The purpose of the clinic is to ensure that the patient is fully aware of what their procedure and its anaesthetic will involve as well as to make sure perioperative risk is reduced as much as possible. Higher risk patients should be flagged and discussed with an anaesthetist (ideally the anaesthetist who will be responsible for the case). Preoperative assessment clinics use protocols to identify which patients require further investigation and ensure that all necessary tests have been requested and completed with results available by the time of surgery.

#### **What tests should be done?**

This varies with local protocols. NICE published a [guideline](#) in 2003 which provides a useful framework. The extent of preoperative investigations depends on the severity of the planned surgery as well as the patient's condition. There are a number of useful tables within that document suggesting investigations to consider but clinical acumen should always trump protocols.

[This paper from 2009](#) suggests that fit and healthy patients (ASA 1 or 2) having ambulatory surgery require no investigations preoperatively at all. In practice, however, the vast majority of adults presenting for elective surgery will have had full blood count and urea and electrolytes checked, and many will have had an electrocardiogram. Tests that are often forgotten include pregnancy testing on females of reproductive age and sickle-cell testing on patients of African/Asian/Middle-Eastern extraction.

#### **Preoperative visit by anaesthetist**

All patients should be seen preoperatively by the anaesthetist responsible for their anaesthetic; this should still be the case even if the patient has been previously seen at a preoperative assessment clinic. When you are attached to a list with a consultant or other more senior

anaesthetist it is a good idea to see as many of the patients as possible yourself. With regard to emergency patients, it should still be possible to see almost all of them on the ward before theatre; there will be very occasional patients whose presentation means this will not be possible, but there are still important questions that must be asked even if this is on the way to the operating theatre from the emergency department.

#### **Aim of the visit:**

- Develop rapport with patient to reduce anxiety
- Discuss anaesthetic plan with patient including
  - premedication
  - analgesia including regional techniques
  - postoperative care including high dependency/intensive care
- Airway assessment
- Ensure optimisation of any pre-existing conditions
- Check results of investigations requested at preoperative clinic
- Discuss risks and benefits of anaesthetic interventions and obtain verbal consent

#### **Past medical history:**

- Medication
  - Generally, most chronic medications should be continued in the perioperative period, particularly anti-anginals, anti-epileptics, psychiatric medication and antihypertensives. If a patient is on modified release nitrates such as Imdur, but will be nil by mouth or unlikely to absorb oral medication, consider giving a GTN patch instead.
  - **Diabetics** should not get their normal regime while fasting. There is a guideline for the perioperative management of diabetic patients available on the intranet. In summary:
    - Insulin dependant diabetics: take normal insulin the day before surgery.
      - Once daily insulin regime (am): take usual dose
      - Twice daily insulin regime: Give half usual am insulin and aim to restart normal insulin with evening meal.
      - Twice daily with separate injections of short and intermediate acting insulin: Calculate total dose of both am insulins and give half as intermediate acting insulin in the morning, aim to restart normal insulin with evening meal.
    - Patients on non-insulin diabetic drugs: take drugs as normal the day before.
      - Metformin: omit am dose
      - Sulphonylureas: omit am dose
      - Pioglitazone: take as normal
      - ...glinides: Omit am dose if fasting.
      - ...gliptins: omit on day of surgery if fasting.
      - GLP-1 analogues: Omit am dose if fasting.

- Patients for surgery in the afternoon may need to omit or adjust any drugs they normally take at around lunchtime. The guideline steps through this quite well.
- **Warfarin** should be stopped 72 hours before surgery to allow the INR to get below 1.5 in order to reduce the risk of bleeding. A regional technique (spinal or epidural) is contraindicated if the INR is 1.5 or more due to the risk of vertebral canal haematoma. It is important that some alternative anticoagulation is provided: depending on the indication for the warfarin this will be either low molecular weight heparin or iv heparin infusion. In an emergency warfarin can be reversed with vitamin K, fresh frozen plasma or Beriplex (contains Factors II, VII, IX and X), usually under the advice of a haematologist. A good summary of neuraxial blockade and anticoagulation is [here](#).
- What to do with **novel oral anticoagulants** (rivaroxaban, dabigatran, apixaban etc) is a bit less clear, but the [AAGBI produced a guideline in 2013](#) which offers some advice. It's worth discussing these patients with a consultant before performing neuraxial anaesthesia.
  - For **rivaroxaban**, the guideline suggests leaving 18 hrs after a prophylactic dose and 48 h after a therapeutic dose before performing neuraxial block.
  - For **dabigatran**, 48-96 hrs is suggested depending on the patient's creatinine clearance.
  - For **apixaban**, 24-48 hrs is suggested.
- **Antiplatelet drugs** are being prescribed increasingly commonly, often in combination, for primary or secondary prevention of cardiovascular or cerebrovascular events. These drugs are also used after the insertion of coronary artery stents: dual antiplatelet therapy with aspirin and clopidogrel is required for at least three months after a bare metal stent, and for at least a year after a drug eluting stent. Generally, aspirin should be continued as its effects on bleeding is minor. Clopidogrel should be stopped 7 days before surgery but **not** if there is a stent *in situ*: in such cases it is **imperative** that the patient be discussed with the cardiologist involved. Elective surgery should be avoided during the critical periods following stent insertion. There is a simple review of this topic [here](#), and a detailed one [here](#).
  - Spinal or epidural anaesthesia is ok if the patient is only receiving aspirin, but **contraindicated** in patients on clopidogrel.
- **ACE inhibitors etc**: Many anaesthetists omit the morning dose if a patient is on an ACE inhibitor or angiotensin II receptor antagonist, as there is the feeling that there may be more intraoperative haemodynamic lability, particularly if a central neuraxial technique is planned. [This is not always the case](#), however, and omitting a single dose may not prevent this happening. It is better to continue these drugs but be prepared to administer a vasopressor as required to counteract the hypotensive effect. Renal function should be carefully monitored in the perioperative period in patients continuing to take ACE inhibitors.

- **Steroids:** if the patient is on long-term steroids and is having stressful surgery they will need supplementation with hydrocortisone. If the patient stopped a course of steroids within the last three months they should be treated as if they are still on steroids and be supplemented appropriately. A good review of this topic is [here](#). This table is from that article, and summarises doses nicely:

Patients currently taking steroids	<10 mg day <sup>-1</sup>	Assume normal HPA response	Additional steroid cover <i>not</i> required
	>10 mg day <sup>-1</sup>	Minor surgery	25 mg hydrocortisone @ induction
		Moderate surgery	Usual pre-operative steroids + 25 mg hydrocortisone @ induction +100 mg day <sup>-1</sup> for 24 h
		Major surgery	Usual pre-operative steroids + 25 mg hydrocortisone @ induction +100 mg day <sup>-1</sup> for 48– 72 h
	High-dose immunosuppression	Give usual immunosuppressive doses during peri-operative period	
Patients stopped taking steroids	<3 months	Treat as if on steroids	
	>3 months	No peri-operative steroids necessary	

The impact of adrenocortical disease on anaesthesia is discussed [here](#).

- **Monoamine oxidase inhibitors** should ideally be stopped two weeks before elective surgery; if not, drugs including ephedrine and pethidine **must not** be given, as you risk precipitating a hypertensive crisis. There is a good review of this topic [here](#).
- Allergies and intolerances including ability to tolerate non-steroidal anti-inflammatory drugs (NSAIDs).
  - Side-effects or intolerances such as nausea with antibiotics will often be reported by the patient as “allergies”, and the patient may already have a red “allergy” band by the time you see them. It is quite important to try to educate the patient about the difference between these intolerances and true allergy.

### Past anaesthetic history:

- Any airway difficulty. Sometimes the patient will be able to tell you of previous difficulty, sometimes they may have a letter from a previous anaesthetist. Some patients get Medalert bracelets if their airway is horribly difficult to manage, but I’ve never seen a patient with one. “Has anyone ever told you there was difficulty getting a tube down?” is a pretty good question to get into the habit of asking.
- Any drug reactions or intolerances (see above).
- Postoperative nausea and vomiting (PONV)
  - [Apfel score](#) (4 categories: female gender, history of PONV or motion sickness, non-smokers, surgery requiring opioids. One point each. 0=10% risk of PONV, 1=20%, 2=40%, 3=60%, 4=80%.)
- Previous anaesthetic charts - scrutinise for problems as well as previous airway

- management techniques, grade of intubation and any difficulty.
- Any other problems.

**Family history:**

- Suxamethonium apnoea
- [Malignant hyperpyrexia](#)
- Any other

**Airway assessment:**

Airway control is the most important part of anaesthesia, so a full airway assessment should be carried out on every patient you assess. This should be the case even if it is predicted the entire case will be performed under regional anaesthesia, as it is impossible to be sure that a regional technique will work flawlessly and you must always be aware of the potential of conversion to general anaesthesia.

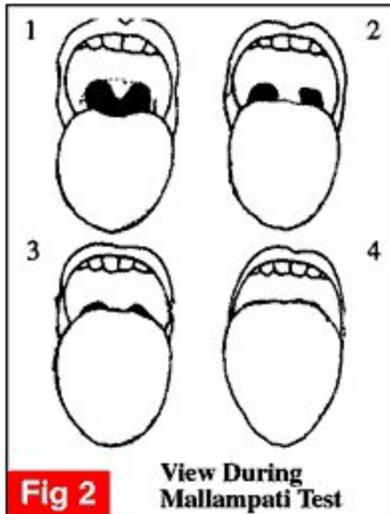
There are many individual clinical tests but no single test can predict a difficult airway accurately. Several tests together are more reliable.

It is very common to get fixated on whether a particular patient's trachea may be difficult to intubate, however it is more important also to consider whether **mask ventilation** is likely to be difficult. OBESE is a good mnemonic for predicting such patients: The **O**verweight, **B**earded, **E**lderly, **S**norring, **E**dentulous patient.

The general examination of the patient often gives clues of potential difficulty: as well as the OBESE factors above, the presence of neck masses or scars from previous surgery or neck radiotherapy, morbid obesity, large breasts and a short "bull" neck can predict difficulty.

Other airway assessment tests include:

- Mouth opening - an interincisor gap of 3cm or less is a predictor of difficult intubation (up to 38% chance of difficulty).
- [Mallampati score](#) with [Samsoon and Young's](#) modification:



Mallampati 3 and 4 are associated with difficult

intubation.

- Any teeth and their quality. Prominent upper incisors are a mark of difficulty.
- Subluxation of the temporomandibular joint (Class A: can get lower teeth anterior to upper; Class B: can bring upper and lower incisors edge to edge; Class C: underbite)
- Thyromental distance (Patil test). This is the distance from the thyroid cartilage to the tip of the mandible with the neck fully extended. <6cm is associated with difficulty up to 75% of the time as there is not enough space into which to displace the tongue.
- Any caps/crowns/expensive dental work.
- Neck movement. <90° range of flexion-extension is a predictor of difficulty.
- Fasting status: the American Society of Anesthesiologists (ASA) have produced a useful [guideline](#): in summary
  - Clear liquids 2 hours
  - Breast milk 4 hours
  - Infant formula / Non-human milk / Light meal 6 hours
  - Both the amount and type of food ingested must be considered when determining an appropriate fasting period (a full Scottish breakfast is not a light meal). In addition, it is important to remember that gastric emptying is delayed in trauma, with intra-abdominal pathology, and with opioid analgesics.
  - In summary: if in doubt, assume the stomach is full and do a rapid sequence induction.

### **Premedication:**

The days of every patient getting intramuscular “[om](#) and [scop](#)” are, thankfully, over.

Premedication is generally used a lot less than it used to be although there are some specific situations where you might consider it.

- Anxiolytics:
  - The best anxiolysis is the preoperative visit. Sedative premedication used to be routine however it has fallen out of favour in most hospitals in recent years. With so much emphasis on ambulatory surgery, any medication that may delay safe

discharge should be avoided if possible. With same day admission and last-minute list order changes, it can often be difficult to judge the correct time to administer sedatives preoperatively to ensure that they both have time to work (temazepam: 45-60 mins; midazolam: 30 mins) and have not worn off by the time the patient arrives in the anaesthetic room. There will be some patients (children, those with learning difficulties, the truly anxious) where sedatives are still required so it is important to mention you've prescribed one to the ward nurses and remember to mention it at the pre-list brief. Don't prescribe it for a set time unless the patient is the first on a list: you will need to remember to phone the ward about an hour before you plan to start the next case to get the nurses to give it.

- Analgesics:
  - For some procedures, preoperative paracetamol +/- NSAID may be beneficial. Intravenous paracetamol intraoperatively is more efficacious than preoperative oral paracetamol, but is not widely used in Greater Glasgow and Clyde.
- Gastric acid & gastric volume control:
  - Patients at high risk of a full stomach (eg pregnancy) can have sodium citrate 30mls to neutralise acid already in the stomach.
  - H2 antagonists such as ranitidine given the evening before and on the morning of surgery can help reduce the risk of acid aspiration in high risk patients such as pregnant patients or those with a history of gastritis.
  - Metoclopramide or other prokinetic agents can hasten gastric emptying but have not been proven to have an effect in trauma.
- Bronchodilators:
  - Patients with more than mild asthma may benefit from using their reliever inhaler (whatever they usually use) or from nebulised salbutamol immediately preoperatively.

#### **Checking results:**

- Potassium: check it's more than 3.0 mmol/l and less than 6.0; don't get too worried as long as it's within this range.
- Sodium: elective surgery should be postponed if the Na is <120 or >155 to allow some assessment of the underlying problem that has driven the derangement and to allow it to be corrected. The exact means and rate of correction will depend on the underlying problem plus the speed of onset of the derangement.
- Platelets: no spinal or epidural if the platelet count is <80.
- Make sure a group and save sample +/- cross-match has been sent, as appropriate for the surgical procedure being done.

#### **Risks to mention:**

It is worth mentioning common risks to every patient, such as postoperative nausea and vomiting, sore throat and damage to lips/oral mucosa. Dental damage is rarer but a recognised complication of airway management, particularly in a difficult airway, so I always mention this.

I don't personally mention death and cardiorespiratory complications to every ASA 1 & 2 patient I anaesthetise though some people do. However, if a patient is clearly high risk it stands to reason that a more serious pre-op chat should be had.

The specific risks related to, for example, central line insertion or epidural anaesthesia should also be discussed as appropriate.

### **Verbal consent/assent:**

Specifically record that the patient has given their consent for the planned anaesthetic procedures to take place. Record risks discussed for other procedures such as epidural anaesthesia and note that the patient has consented to this. If rectal analgesia under anaesthesia is planned, specific consent for this should be sought and documented from the patient or their parent as appropriate.

### **When to cancel a patient:**

Generally, don't, without discussion with a consultant. Patients will have prepared themselves psychologically, and will often have had to make arrangements to have time off work, someone to look after them, childcare, etc and cancelling them on the day can be extremely inconvenient. However, it goes without saying that patient safety is more important than convenience so always err on the side of caution and discuss any patient who concerns you with a consultant.

Hopefully any significant problems will have been detected at the preoperative assessment clinic and treatment started, for example hypertension treatment or optimisation of anti-anginal treatment.

### **When not to operate:**

You will occasionally encounter patients who are extremely sick, either chronically, acutely or both. It will sometimes be the case that the risks of anaesthesia and surgery are unacceptably high and that non-surgical treatment +/- palliation will be more appropriate. The decision not to operate is not for the inexperienced: it should be made at consultant level, with liaison between the anaesthetist and the surgeon(s) involved.

### **In summary:**

**Always** see your patients preoperatively (it's good to get into the habit of seeing them postoperatively too).

**Always** discuss patients you are concerned about.

**Never** (at least early on) cancel a patient without first discussing them with a consultant.

**Never** feel pressurised to anaesthetise a patient you are unhappy with and never hesitate to call for help or advice.

### **References:**

Many useful references are included in the text above as hyperlinks. In addition, this is a useful

document: [Pre-operative Assessment and Patient Preparation - The role of the Anaesthetist 2.](#)  
AAGBI Jan 2010.