# Preoperative anesthetic assessment and premedication

## Objectives

- Learn pre-anesthetic patient evaluation and risk stratification.
- Obtain a full history and physical examination including allergies, current medications, past anesthetic history, family anesthetic history.
- Understand how patient comorbidities can affect the anesthetic plan.
- Be able to understand potential anesthetic options for a given surgical procedure.
- Be able to plan an anesthetic for a basic surgical procedure.
- Understand risk stratification of a patient undergoing anesthesia.
- The perioperative patient journey.

# NCEPOD: Classification of intervention (National Confidential Enquiry into Patient Outcome and Death)

| IMP | Description | Example |
|---|---|---|
| Immediate " save pt life " | **Life/Limb/Organ saving**<br>-Resuscitation occurs simultaneously with surgery.<br>-Surgery within minutes<br>-Emergency category 1. | - Rapid bleeding: Trauma, aneurysm rupture.<br>- Intra Abdominal or intrathoracic bleeding. |
| Urgent | **Life/Limb/Organ threatening**<br>(threatening but not saving)<br>Surgery within hours. | Perforated bowel or less urgent bleeding.<br>^ This is an exam question you have to memorize it properly (MCQs) |
| Expedited | Early surgery within a day or two. | Large bowel obstruction, closed long bone fracture. e.g. Femoral fracture |
| Elective | Timing to suit patient and hospital. | Joint replacement, unobstructed hernia repair, cataract. |

**Overview: The preoperative visit:**

- ➔ Anaesthetic history.
- ➔ Examination.
- ➔ Special investigations.
- ➔ Medical referral.
- ➔ Risk assessment.
- ➔ Informing the patient and consent.
- ➔ Premedication.

**The Goal of Preoperative visit**: The best outcome, or the mortality of the pts comes from adequate preoperative assessment

The preoperative visit of all patients by anesthetist is an essential requirement for the safe and successful conduct of anesthesia.

Main aim is to assess the patient's fitness for anesthesia.

The best to be performed by an anesthetist, preferably the one who is going to administer the anesthetic.

The goal of preoperative visit:

To educate about anesthesia, perioperative care and pain management, to reduce anxiety.

To obtain the patient's medical history and physical examination. Check medications.

To determine which lab test or further medical consultation are needed .

To choose care plan guided by patient's choice and risk factors.

| Visit Allows | Coexisting Illness |
|---|---|
| ➔ Best anaesthetic technique.<br>➔ Any potential interactions between concurrent diseases.<br>➔ Anaesthesia anticipated<br>➔ Provides an explanation.<br>➔ Reassurance for the patient. When you see the patient discuss with him what is the anesthesia technique is suitable for him, postoperative analgesia, and answer his Qs. | ➔ Improve the patient's condition prior to surgery. For ex to control hypertension> control his BP then book him again to the OR, DM, Valvular heart disease not controlled>complaining shortness of breath> refer to cardiologist , give antibiotics..<br>➔ Seeking advice from other specialties.<br>➔ Optimise treatment.<br>➔ Final decision. |

**Three situations where special arrangement are usually made:**

| | |
|---|---|
| **1- Patients with complex medical or surgical problems:** | ➔ Patient is often admitted several days before surgery. everything is done before the patient is taken to the OR<br>➔ Anesthetist is actively involved in optimizing their condition prior to anesthesia and surgery. |
| **2- Surgical emergencies:** | ➔ Only a few hours separates admission and operation in these patients urgent investigations or treatment. For ex a patient with strangulated inguinal hernia he should come to OR ASAP. |
| **3- Day-case patients: " one day surgery"** | ➔ These are patients who are planned.<br>➔ Generally 'fitter' ASA1(have no medical condition) or ASA 2 (have controlled medical condition). ASA III are not allowed to be a day-case patients\surgery.<br>➔ Assessment in anesthesia clinic preoperative anesthesia clinic.<br>➔ Minor procedure, laparoscopic procedure<br>➔ Patient comes on the same day of surgery and discharged on the same day but seen in clinic before. |

**Anesthetic history And Examination:** Anesthetist should take a full history & Examine each patient.

- PREVIOUS ANAESTHETICS AND OPERATIONS:

Hospitals. Previous admissions. We have to ask which time he was admitted to the hospital and what is the indication for the admission.

Enquire about inherited or 'family' diseases: sickle-cell disease, porphyria. Does he need blood transfusion? Does he fit the OR or we have to stabilizing the patient first.

- **Difficulties with previous anesthetics:**
  - History of difficult intubation. He won't know if he had previous difficult intubation unless if they gave him an alert card or he may tell you that he had hx of sore throat after previous surgery.
  - Nausea, vomiting. So we give antiemetics to prevent N\V postoperativly. The most common
  - Dreams. e.g. Ketamine causes bad dreams and hallucinations so give benzodiazepines with it.
  - Awareness: they will say they could hear the surgeons and anesthetists during the surgery but were completely paralyzed. And could feel pain if they were not given analgesia (In short; Hear everything but can not move "Paralysed"). Happens with General anesthesia in c-sections and cardiac surgeries with bypass machine.
  - Postoperative jaundice. pt will tell you that he noticed dark urine, discoloration of skin
- **Present & past medical history:**
  - All the aspects of the patient's medical history.
  - Relating to the cardiovascular and respiratory systems and its severity.

## Anesthesia Inquiries in history:

**1- Cardiovascular system:.** Patient factors associated with cardiac risk: *red flags*

- Age.
- Heart failure. US to check the ejection fraction.
- Ischaemic heart disease (MI / angina > especially recent)
- Cerebrovascular disease (CVA / TIA) any neurological deficit should be documented.
- Insulin dependent diabetes mellitus. (Type 1) HbA1C should be done more than 12 we have to postpone and control it.
- Renal impairment or dialysis. Especially renal failure we have to consult the nephrologist. RFT ,electrolytes, coagulation profile, hemoglobin >should be done before OR.

**Specific inquiries** must be made about:

- Angina if the pt have chest pain, ask:
  - Incidence,
  - Precipitating factors
  - Duration
  - Use of antianginal medications, e.g. glyceryl trinitrate (GTN) oral or sublingual). Ask if the medications made his conditions better or worse.
- Previous myocardial infarction and subsequent symptoms.

- Symptoms indicating heart failure. E.g Lower limb edema, dyspnea, orthopnea, chest pain, dizziness, palpitations, tachycardia
  - Heart failure will be worsened by the depressant effects impairing the perfusion of vital organs
  - Myocardial infarction are at a greater risk of perioperative reinfarction: avoid hypotension and anything may cause an increase in oxygen demand ending up to tachycardia.
- Elective surgery postponed until at least 6 months after the event (MI)
- Untreated or poorly controlled hypertension (diastolic consistently > 110 mmHg) may lead to exaggerated cardiovascular responses. We should postpone Untreated or poorly controlled hypertension bc BP will be fluctuated during surgery up and down or during intubation BP may peek up and induce intracerebral hemorrhage.
- Both hypertension and hypotension can be precipitated ⟶ which increase the risk of myocardial ischemia.
- Valvular heart disease: prosthetic valves may be on **anticoagulants,** need to be stopped or changed prior to surgery and give **Antibiotic prophylaxis** to avoid endocarditis**.** So consult hematologist

## Very important

| Active Cardiac Conditions | Minor Cardiac Predictors |
|---|---|
| ➔ Unstable coronary syndromes:<br>◆ Unstable or severe angina.<br>◆ Recent MI"less than 6 months" | ➔ Advanced age (>70) the elderly pts have limitations with mobilization we can't detect SOB or any cardiac problem related to exertion so take care and do proper assessment. |
| ➔ Decompensated HF. pt have pulmonary edema, hypoxic, very low ejection fraction. This pt should be treated before taking him to the OR. impairing perfusion for vital organs. | ➔ Abnormal ECG:<br>◆ LV hypertrophy. All the hypertensive pts will have it, will be accepted if the blood pressure is controlled.<br>◆ LBBB. left bundle branch block. But combined left & right is not acceptable<br>◆ ST-T abnormalities. young pt, no symptoms don't take it seriously<br>◆ Rhythm other than sinus for ex, if pt have atrial fibrillation but with controlled ventricular response will accept him it's ok. |
| ➔ Significant malignant arrhythmias. Affect hemodynamic of th pt,induce severe chest pain/mental status. | ➔ Uncontrolled systemic hypertension. It may be due to stress, pain or any other reason, but diastolic consistently > 110 mmHg is risky |
| ➔ Severe valvular disease.(active cardiac condition) Severe mitral stenosis, severe mitral regurg, severe pulmonary stenosis. They are on oral anticoagulant>should be stopped before surgery and bridge the pt to heparin infusion >then stop the heparin 4 hrs before surgery. | |
| ➔ Suppose you have a pt with severe mitral stenosis and they want to take this pt to the OR, what will you do? Call for cardiologist who will perform valvuloplasty or valve replacement. | |

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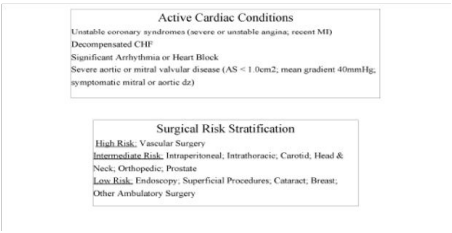
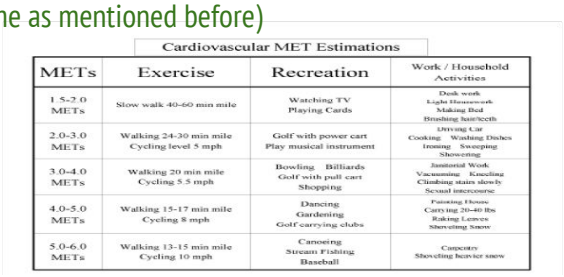



**Surgical factors in the assessment of significant cardiac event: VERY IMPORTANT**

| | |
|---|---|
| Low risk <1% | ●Minor orthopaedic and urology<br>●Gynaecology.<br>●Breast.<br>●Dental. |
| Intermediate 1-5% | ●Major orthopaedic and urology<br>●Abdominal.<br>●Head and neck. |
| High risk >5% | ●Aortic, major vascular<br>●Peripheral vascular.<br>●Intraperitoneal/intrathoracic. (Recent MI) |

## 2- Respiratory System

**Patients with pre-existing lung disease:** Postponed until at least 1 month.

- ➔ Prone to postoperative chest infections if they are obese or undergoing upper abdominal or thoracic surgery . can not cough to get rid of sputum >aspiration >pneumonia.
- ➔ Chronic obstructive lung disease sputum production (volume and color).
- ➔ Dyspnea.
- ➔ Bronchial Asthma, including precipitating factor and last attack, previous hospital admission. Send him to pulmonology to asses him and do PFT to optimize the treatment.
- ➔ Upper respiratory tract infection (anaesthesia and surgery should be postponed 2 to 3 weeks unless it is for a life-threatening condition).

**3- GIT** if you give anesthesia patient may aspirate intraoperatively.

- ➔ Indigestion and GERD reflux.
- ➔ Heartburn **(may indicate the possibility of a hiatus hernia ⟶ Increase aspiration).** What is your anesthetic consideration in case of hiatus hernia? Rapid sequence induction RSI to avoid aspiration> used in hiatus hernia, pt with full stomach came to ER , C/S, acute abdomen.

**4- Rheumatoid diseases (SAQ) *very imp*** You can't evaluate the patient properly

**What is the symptoms of rheumatoid diseases that are very important for preoperative assessment?**

- ➔ (1) Chronically anaemic.
- ➔ (2) Severely limited movement of their joints ⟶ (3) makes positioning for surgery and airway maintenance difficult. (4)**Tendency for dislocation of atlanto-occipital joint.**

**5- Diabetes** Look for complications of diabete from Hx, like:

- Patients have an increased incidence of:
  - Ischaemic heart disease.
  - Renal dysfunction.
  - Autonomic and peripheral neuropathy Most imp if he had hypotension he can't compensate for his tachycardia which lead immediately to cardiac arrest so use an IV drug that won't induce hypotension (will be discussed in GA lecture)
- Intra- and postoperative complications.

**6- Neuromuscular disorders**

- Care with muscle relaxants. There are two types of neuromuscular blocking agents, depolarizing agents & non-depolarizing agents. In intubation they use depolarizing agent, these agents may cause malignant hyperthermia, or hyperkalemia which may lead to cardiac problems.
- Coexisting heart disease.
- Restrictive pulmonary disease exposes the patient to post-op complications.

**7- Chronic renal failure:**

- Anaemia
- Electrolyte abnormalities ex) hyperkalemia and hyponatremia in heart & renal failure
- Altered drug excretion. These patients prefer extrahepatic extrarenal metabolism.
- Restricts the choice of anaesthetic agents

**8- Jaundice** (liver impairment)**:** expect a delay in recovery

- Infectious or obstructive liver disease
- Altered drug metabolism
- Altered coagulation function.

**9- Epilepsy:**

- Well controlled or not, compliance to medication. If its uncontrolled and it's not an emergency then its best to wait (postpone surgery).
- Avoid anaesthetic agents potentially epileptogenic induce epilepsy (e.g. enflurane)
- Predict convulsions which induced by withdrawal effects of anesthesia drugs **(Very imp)** the pt may experience convulsions in the recovery room after recovering from anesthesia medications so be careful and check antiepileptic medications and you should give antiepileptic in the early morning before taking the pt to the OR.

**10- Drug and allergic Hx:**

- Identify all medications:
  - Prescribed
  - Self-administered over-the counter and herbal remedies.
- Allergies to drugs: Topical preparations (e.g. iodine), Adhesive dressings, Foodstuffs.

It is advised to give H1 & H2 blockers & dexamethasone anti-inflammatory before starting anesthesia to any pt who is allergic to many medications.

**11- Social history:**

- **Smoking:** (Number of cigarettes\packs, amount of tobacco). Nicotine stimulates the sympathetic nervous system causing: tachycardia, hypertension and coronary artery narrowing. If a young 17-year old presents with tachycardia & hypertension then suspect he is a smoker.
- **Alcohol**: (Induction of liver enzymes, tolerance)
- **Addiction**: Difficulty with venous access, Thrombosis of veins and Withdrawal syndromes) they almost always denies but you can suspect from their behaviors\appearance
- **Look for tattooing.** Check for AIDS & hepatitis C bc it could be transmitted by tattooing, more in western countries.

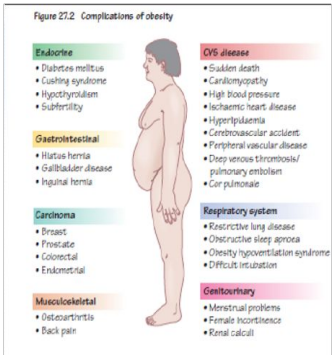
**12- Pregnancy:**

- Increased risk of regurgitation and aspiration. So most of c- section is advised to have regional anesthesia than general anesthesia.
- What is the anesthetic method of choice in elective c- section? Epidural for labor pain analgesia and spinal anesthesia
- Elective surgery is best postponed until after delivery.

**13- Obesity:**

- Cardiovascular, Respiratory, Sleep apnea> hypertensive and Pulmonary hypertension and RHF due to sleep apnea, Diabetics, Fatty liver.
- Technical problem: Airway, aspiration,
- Intravenous access and Positioning.

Very hard to intubate, especially in case of sleep apnea.

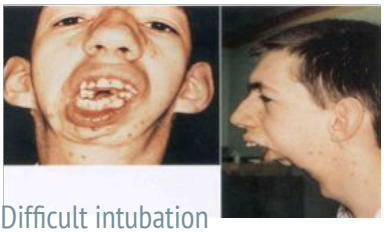



The examinations

| Cardiovascular system | Respiratory system |
|---|---|
| ➔ Dysrhythmias: Atrial fibrillation.<br>➔ Heart failure.<br>➔ Valvular heart disease: Heart murmur<br>➔ Blood pressure is best measured at the end of the examination. | ➔ Cyanosis.<br>➔ Pattern of ventilation.<br>➔ Respiratory rate .<br>➔ Dyspnoea.<br>➔ Wheeziness.<br>➔ Signs of collapse.<br>➔ Consolidation and effusion |
| **➔ Nervous system** | **➔ Musculoskeletal system** |
| ➔ Chronic disease of the peripheral and central nervous systems.<br>➔ Evidence of motor or sensory impairment should be documented. | ➔ Restriction of movement and deformities.<br>➔ Reduced muscle mass. Difficult to recover from drugs.<br>➔ Peripheral neuropathies. Difficult intubation<br>➔ Pulmonary involvement.<br>➔ Particular attention to the patient's cervical spine and temporomandibular joints |

**Examining the airway:** ask the patient to move their head in all directions

- Try and predict difficult intubation.
- Assessment is often made in **three stages:**



Difficult intubation

Limited mouth opening and abnormal buccal teeth.(1)

## 1. Observation of the patient's anatomy:

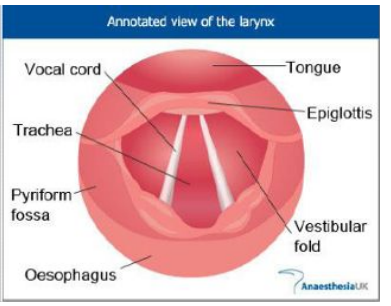
- **Look for:**

1. limitation of mouth opening,
2. Receding mandible position,
3. Number and health of teeth, number of lost teeth, prosthesis
4. Size of tongue.
   - Examine the front of the neck for soft tissue swellings, deviated larynx or trachea.
   - Check the mobility of the cervical spine in both flexion and extension.

- **Airway evaluation:**
  - Take very serious history of prior difficulty.
  - Head and neck movement (extension).
    - Alignment of oral, pharyngeal, laryngeal axes
    - Cervical spine arthritis or trauma, burn, radiation, tumor, infection, scleroderma, short and thick neck
  - Jaw Movement:
    - Inability to sublux lower incisors beyond upper incisors If they can sublux lower incisors beyond upper incisors this means they have good temporomandibular joint function

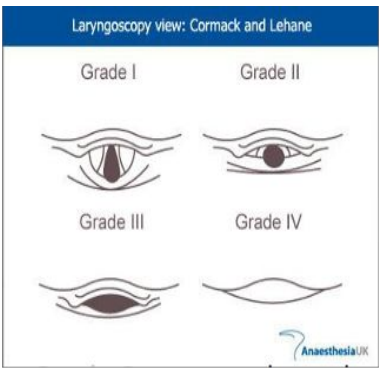
      - Receding Mandible

      - Protruding Maxillary Incisors (buck teeth)
  - Laryngoscopy view: Cormack and Lehane:
    - Grade I: complete glottis visible
    - Grade II: anterior glottis not seen
    - Grade III: epiglottis seen, but not glottis
    - Grade IV: epiglottis not seen




**2. Simple bedside tests** E.g. Mallampati criteria:(if the thyromental distance is less than 6.5 or 7cm it suggests difficult intubation ), 332 rule

**3. X-Rays** not done routinely, only for difficult cases




1- Receding mandible gives you an idea about the area of which the tongue accupies. If they have a receding mandible to the point where there's no thyromental distance then it would be considered a difficult intubation. If the thyromental distance is 6.5 cm or more then it will be easier because the tongue will fit there and it won't be bulging and you can visualize the larynx

**Special investigations**

➔ **Baseline examinations:**

If no concurrent diseases, investigations can be limited to:

| Age | Sex | Investigations |
|---|---|---|
| **<40** | Male | Nil. |
| **<40** | Female | Hb. |
| **41-60** | Male | ECG, Blood sugar, creatinine. |
| **41-60** | Female | Hb, ECG, Blood sugar, creatinine. |
| **>61** | All | Hb, ECG, Blood sugar, creatinine. |

Additional investigations:

**Urea and electrolytes**

In patients taking digoxin

Diuretics.

Diabetes, renal disease.

Vomiting/ Diarrhea.

Renal\heart\liver failure, Diabetic pt.

**Liver function tests** (LFT)

➔ Hepatic disease.

➔ High alcohol.

➔ Metastatic disease.

➔ Evidence of malnutrition.

**Blood sugar** under 40

➔ Diabetes.

➔ Peripheral arterial disease.

➔ Taking long-term steroids.

**Electrocardiogram (ECG)** older than 41

➔ Hypertensive.

➔ With symptoms or signs of heart disease.

**Chest X-ray**

In case pt have pulmonary problem as metastasis, previous hx of lower respiratory tract infection

**Pulmonary function tests**

Pt with COPD, Bronchial asthma, bronchiectasis

**Coagulation screen**

For any pt will undergo regional anesthesia and pt with anticoagulant, liver disease, major procedures

**Sickle-cell screen**

When +ve family hx

**Medical referral:**

➔ Optimization of coexisting medical (or surgical) problems may mean postponing surgery

| | |
|---|---|
| **CARDIOVASCULAR DISEASE** | ➔ Untreated or poorly controlled hypertension or heart failure.<br>➔ Symptomatic ischaemic heart disease (unstable angina).<br>➔ Dysrhythmias: uncontrolled atrial fibrillation, paroxysmal supraventricular tachycardia, second and third degree heart block.<br>➔ Congenital heart disease or symptomatic valvular heart disease. |
| **RESPIRATORY DISEASE** | ➔ Chronic obstructive airways disease, if dyspnoeic at rest.<br>➔ Bronchiectasis.<br>➔ Asthmatics:<br>◆ Unstable.<br>◆ Taking oral steroids or have a FEV1 % 60% predicted. |
| **ENDOCRINE DISORDERS** | ➔ Insulin and non-insulin dependent diabetics.<br>➔ Ketonuria.<br>➔ Random blood sugar > 12 mmol/L<br>➔ Hypo- or hyperthyroidism.<br>➔ Cushing's.<br>➔ Addison's disease<br>➔ Hypopituitarism |
| **RENAL DISEASE** | ➔ Chronic renal failure.<br>➔ Patients undergoing chronic dialysis |
| **HAEMATOLOGICAL DISORDERS** | ➔ Bleeding diathesis: haemophilia, thrombocytopenia. **Don't forget it**<br>➔ Therapeutic anticoagulation<br>➔ Haemoglobinopathies.<br>➔ Polycythaemia.<br>➔ Haemolytic anaemias.<br>➔ Leukaemias. |

**Factors that increase risk of mortality:**

- ➔ Inadequate preoperative preparation including resuscitation.
- ➔ Lack of and inappropriate monitoring during surgery.
- ➔ Poor postoperative care, including lack of intensive care beds.
- ➔ Inadequate supervision of trainees.

**Mortality related to anesthesia:**

- ➔ Approx 1:26,000 anaesthetics.
- ➔ One third of deaths are preventable.
- ➔ Causes in order of frequency:

**1- Inadequate patient preparation.**

2- Inadequate postoperative management.

3- Wrong choice of anaesthetic technique.

4- Inadequate crisis management.

*To reduce the risk do pre-op assessment and plan post-op care, anesthesia plan, and follow the guidelines.

**Anaesthetic associated death:**

- ➔ Increasing age: >60 years.
- ➔ Sex: male > female.
- ➔ Worsening physical status.
- ➔ Increasing number of concurrent medical conditions, in particular: myocardial infarction and diabetes mellitus.
- ➔ Renal disease
- ➔ Increasing complexity of surgery: intracranial, major vascular and intrathoracic.
- ➔ Increasing length of surgery. الاوتكوم لعملية ٣٦ ساعة مو زي الاوتكوم لعملية ٦ ساعات مثلا
- ➔ Emergency operations.

## ASA (American Society of Anesthesiologists) Grading: *VERY IMPORTANT*

**" Please study ASA III by heart لان فيه منها سؤال "**

| ASA PS Classification | Definition | Examples, including, but not limited to: |
|---|---|---|
| ASA I | A normal healthy patient | Healthy, non-smoking, no or minimal alcohol use |
| ASA II | A patient with mild systemic disease | Mild diseases only without substantive functional limitations. Examples include (but not limited to): current smoker, social alcohol drinker, pregnancy, obesity (30 < BMI < 40), well-controlled DM/HTN, mild lung disease |
| ASA III | A patient with severe systemic disease | Substantive functional limitations; One or more moderate to severe diseases. Examples include (but not limited to): poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, premature infant PCA < 60 weeks, history (>3 months) of MI, CVA, TIA, or CAD/stents. |
| ASA IV | A patient with severe systemic disease that is a constant threat to life | Examples include (but not limited to): recent ( < 3 months) MI, CVA, TIA, or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis |
| ASA V | A moribund patient who is not expected to survive without the operation | Examples include (but not limited to): ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction |
| ASA VI | A declared brain-dead patient whose organs are being removed for donor purposes | |

- ➔ The addition of "E" denotes Emergency surgery: (An emergency is defined as existing when delay in treatment of the patient would lead to a significant increase in the threat to life or body part)

**Informing the patient:**

- ➔ The choice of anaesthetic technique rests with the anaesthetist, but most patients appreciate some details of what to expect.
- ➔ **The perioperative patient journey:** (Consent - Surgical safety checklist "Sign In | Time Out | Sign Out" - Criteria for discharge from a day surgery unit).
- ➔ Patients will ask about their immediate recovery.
- ➔ Finally:
  - Reassure patients about postoperative pain control.
  - Informed of the technique.
- ➔ Consent for anaesthesia.

**Consent form:**

➔ Anaesthetic consent is an important aspect of operative consent.

➔ All patients should have received written information in advance as well as an explanation of side effects:

- **Common** side effects, e.g. postoperative nausea and vomiting.
- **Rare** side effects, e.g. nerve damage after spinal or epidural Anaesthesia.
- **Risks specific** to that patient – this can relate to a career (e.g. an opera singer and the risk of vocal cord injury) or the risk of perioperative myocardial infarction in a patient with a significant history of cardiac disease.

Consent must be obtained before any sedating , premedication is given.

**Consent form requirements:**

➔ Capacity necessitates:

1. Ability to understand and retain information about the treatment.
2. Ability to weigh up the information.
3. Ability to make a free choice.

➔ Enough relevant information.

**The 6As of Premedication: *important***

➔ **Anxiolysis**:

- The best anxiolytic is the anesthetist who visits the patient and listens to the patient.
- Benzodiazepines | Phenothiazines.

➔ **Amnesia**: Lorazepam | anterograde amnesia.

➔ **Anti-emetic:** we usually use 3 classes at the same time.

- Dopamine antagonists| Antihistamines | Anticholinergics | Phenothiazines | 5-hydroxytryptamine antagonists | a2- agonists: clonidine, Dex.

➔ **Antacid:** especially for pregnant patients.

- Patients who have received opiates.
- Present as emergencies.
- If in pain.
- Delayed gastric emptying.
- Hiatus hernia
- Drugs: Oral sodium citrate, Ranitidine, Proton inhibitors, Metoclopramide, naso- or orogastric tube.

➔ **Anti-autonomic:** (Atropine) used to avoid bradycardia

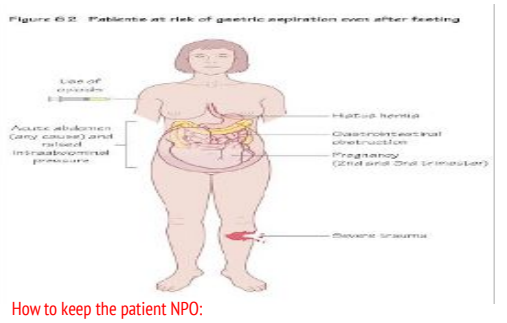
- Parasympathetic reflexes.

- Excessive vagal activity causing profound bradycardia.
- Halothane. not used anymore because it causes bradycardia.
- Suxamethonium. not used anymore because it causes bradycardia.
- Surgery.
- Traction on the extraocular muscles.
- Handling of the viscera.
- During elevation of a fractured zygoma.

➔ **Analgesic**

## Patients at risk of gastric aspiration even after fasting:

- ➔ Gastrointestinal obstruction.
- ➔ Hiatus hernia.
- ➔ Pregnancy (2nd and 3rd trimester).
- ➔ Severe trauma.
- ➔ Use of opioids.
- ➔ Acute abdomen (any cause).
- ➔ Raised intra abdominal pressure.




How to keep the patient NPO:
8 hrs after heavy meal
6 hrs after ordinary meal
**4 hrs after Breastfeeding**
2hrs after Water, tea without milk, juice without pulp.

**Surgical safety checklist is very important** كل امتحان يجي سؤال منه **you have to read it properly very very imp**

Figure 8.2 Surgical safety checklist

**Sign in** occurs before anaesthesia starts. The patient's details are checked, as well as the operation, consent, appropriate marking of site, allergies, potential airway issues and the anticipated blood loss.

**Time out** occurs in the operating theatre before the start of the operation. The team all introduce themselves, formally identify the patient and the planned operation and site (including anticipated blood loss), as well as any medical concerns about the patient. A check of availability of all equipment and imaging for the proposed operation is also established.

**Sign out** at the end of the operation. There is a summary of the procedure, including a check of swabs and instruments, and there is a log of any unexpected events during the operation.

World Health Organization

**Surgical Safety Checklist** (First edition)

Before induction of anaesthesia → Before skin incision → Before patient leaves operating room

### Sign in

- ☐ Patient has confirmed
  - Identity
  - Site
  - Procedure
  - Consent
- ☐ Site marked/not applicable
- ☐ Anaesthesia safety check completed
- ☐ Pulse oximeter on patient and functioning

**Does patient have a:**

**Known allergy?**
- ☐ No
- ☐ Yes

**Difficult airway/aspiration risk?**
- ☐ No
- ☐ Yes, and equipment/assistance available

**Risk of >500mL blood loss (7mL/kg in children)?**
- ☐ No
- ☐ Yes, and adequate intravenous access and fluids planned

### Time out

- ☐ Confirm all team members have introduced themselves by name and role
- ☐ Surgeon, Anaesthesia professional and nurse verbally confirm
  - Patient
  - Site
  - Procedure

Anticipated critical events
- ☐ Surgeon reviews: what are the critical or unexpected steps, operative duration, anticiptaed blood loss?
- ☐ Anaesthesia team reviews: are therw any patient-specific concerns?
- ☐ Nursing team reviews: has sterility (including indicator results) been confirmed? Are the equipment issues or any concerns?

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

### Sign out

Nurse verbally confirms with the team:
- ☐ The name of the procedure recorded
- ☐ That instrument, sponge and needle counts are correct (or not applicable)
- ☐ How the specimen is labelled (including patient name)
- ☐ Whether ther are any equipment problems to be addressed
- ☐ Surgeon, anaesthesia professional and nurse review the key concerns for recovery and management of this patient

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged

Surgical safety checklist: Sign in, time out, sign out **IMP**

| | |
|---|---|
| **Sign In**<br>**("Before induction of anesthesia")**<br>**MCQs** | • Patient has confirmed: Identity \| Site \| Procedure \| Consent.<br>• Site marked/not applicable.<br>• Anesthesia safety check completed, Pulse oximeter on patient and functioning.<br>• Does patient have a:<br>○ Known allergy?<br>○ Difficult airway/aspiration risk? Yes \| NO? (equipment/assistance available).<br>○ Risk of >500mL blood loss (7 mL/kg in children)? If yes, and adequate intravenous access and fluids planned.<br>**Intraoperative stage:** from entering the theatre room to the recovery room. Will come as MCQs<br>• The patient arrives in the anaesthetic room, sign in.<br>• Apply monitoring (ASA standard monitors, invasive monitor).<br>• Large IV cannula. A small cannula is used if minimal blood loss is anticipated.<br>• Invasive monitors neuraxial intervention (spinal epidural) or general anesthesia with endotracheal intubation or LMA insertion.<br>• Peripheral nerve block should be in block area before general anesthesia.<br>• Application of limb tourniquets and urinary catheter insertion occur, if indicated. |
| **Time Out**<br>**("After induction of anesthesia and Before skin incision")**<br>**MCQs** | • Occurs in the operating theatre before the start of the operation.<br>• The team all introduce themselves.<br>• Identify the patient and the planned operation and site (including anticipated blood loss).<br>• Any medical concerns about the patient.<br>• A check of availability of all equipment and imaging for the proposed operation is also established.<br>• Confirm all team members have introduced themselves by name and role.<br>• Surgeon, Anesthesia professional and nurse verbally confirm ( Patient, Site, Procedure).<br>**Anticipated critical events:**<br>• Surgeon reviews: what are the critical or unexpected steps, operative duration, anticipated blood loss?<br>• Anesthesia team reviews: are there any patient specific concerns?<br>• Nursing team reviews: has sterility (including indicator results) been confirmed? Are the equipment, issues or any concerns? Has antibiotic prophylaxis been given within the last 60 minutes? Yes, Not applicable.<br>○ If it was before more than 60 min we should repeat the dose |

**Sign Out**
**"Before patient leaves operating room"**

- Nurse verbally confirms with the team:
  - The name of the procedure recorded That instrument, sponge and needles counts are correct (or not applicable).
  - How the specimen is labelled (including patient name).
  - Whether there are any equipment problems to be addressed.
- Surgeon, anesthesia professional and nurse review the key concerns for recovery and management of this patient post operatively.

**Postoperative stage:**

- At the end of the operation, the patient is either extubated in the operating theatre (and an oropharyngeal airway inserted if needed) or transferred to the recovery room with an LMA still in situ.
- All patients receive supplemental oxygen during transfer.
- Many patients who do not have a general anesthesia/sedation bypass the recovery room and go straight from the operating theatre to stage 2 recovery in the day surgery unit. Examples include local anesthesia cases (e.g. minor surface surgery, cataract removal, some regional anesthesia cases).

**Once in the recovery room:**

- A handover occurs between the anaesthetist and a recovery nurse.
- Important information passed on includes: (patient's name and age | operation details | blood loss.
- Anaesthetic technique with emphasis on:

- Analgesia given.
- Regional/nerve blocks.
- Antiemetics given.
- Antibiotics.
- The use of local anaesthetic infiltration.
- Thromboprophylaxis.

**Figure 8.3 Criteria for discharge from a day surgery unit**

**Before discharge from the day surgery unit, the patient must:**

- Be pain free
- Have taken oral fluids } Preferred but not essential
- Have passed urine
- Have a carer at home for first 24 hours
- Be given and understand oral and written instructions
- Be given a contact number to call in case of problems and have access to a telephone at home
- Have adequate oral analgesia
- Be given instructions not to do any of the following for first 24 hours:
  - drive a car
  - operate any sort of machinery
  - cook

**Post operative stage:**

➔At the end of the operation, the patient is either extubated in the operating theatre (and an oropharyngeal airway inserted if needed) or transferred to the recovery room with an LMA still *in situ*.

➔ All patients receive supplemental oxygen during transfer.

➔Many patients who do not have a general anesthesia/sedation bypass the recovery room and go straight from the operating theatre

➔ Examples include local anesthesia cases (e.g. minor surface surgery, cataract removal, some regional anesthesia cases).

**➔Once in the recovery room:**

➔Handover occurs between the anesthetist and a recovery nurse. Important information passed on includes:

➔patient's name and age;

➔operation details;

➔blood loss;

➔anaesthetic technique with emphasis on:

- analgesia given;
- regional/nerve blocks;
- antiemetics given;
- antibiotics;
- the use of local anaesthetic infiltration;
- Thromboprophylaxis.

# Questions:

**Q1: What is the appropriate time for doing the surgical safety checklist "time out"?**

A. Before patient leave receiving room  B. Before induction of anesthesia

C. Before skin incision  D. Before patient leave operating

**Q2: Which of the following is ASA score for patient with BMI>40?**

A. I  B. II  C. III  D. IV

**Q3: Which of the following is considered as high risk for perioperative period?**

A. Above 50 with diabetes  B. Hypertension with ventricular hypertrophy

C. Hypothyroidism and hyperlipidemia  D. Myocardial infarction within past 3M

**Q4: Which one of the following is the most significant predictor of difficult airway during preoperative assessment?**

A. Past History of difficult intubation  B. Mallampatti grade III

C. Missing teeth  D. Morbid obesity

**Q5: Which of the following consider ASA 1 standard monitors?**

A. Pulse oximetry  B. Capnography

C. Anesthesiologist presence  D. Blood pressure monitoring

**Q1: C | Q2: C | Q3: D | Q4: A | Q5: C**

**Q6: Which of the following is the intra-operative time period?**

A. From leaving floor to operating room

B. From entering the OR theatre to recovery room

C. From leaving the hospital for discharge

D. From leaving recovery room till time of follow up

**Q7: 85 year old male patient came to the emergency department complaining of abdominal pain diagnosed as perforated duodenal ulcer. Regarding time factor, which of the following is the classification of this surgery?**

A. Elective B. Expedited C. Urgent D. Immediate

**Q8: Before which one of the following is the timing for doing "sign-in" for surgical safety checklist?**

A. Coming to operating room B. Induction of anesthesia

C. Skin incision D. Patient leaving theatre

**Q9: Elective surgery should be postponed in patients with a history of myocardial infarction? What is an appropriate time for postponement?**

A. 1M B. 2M C. 4M D. 6M

**Q10: What is the main reason for giving 2 mg oral lorazepam to a 24 patient who is scheduled for left hemithyroidectomy?**

A. Antisialagogue. B. Amnesia C. Analgesia D. Antiemesis

**Q6: B | Q7: C | Q8: B | Q9: D | Q10: B**

# Thank You

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Special thank you to 436 team