



1- Preoperative Anesthetic assessment

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.

Color Index:

- Main Text
- 41 Doctor's notes
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- Reference
- Important
- Golden notes
- Extra

Editing file

Case discussion

Preoperative Anesthetic Assessment

Overview: The preoperative visit

- ★Anesthetic history
- ★Examination
- ★Special investigations
- ★Medical referral
- ★Informing the patient and consent
- ★Premedication
- ★Risk assessment

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

	Description	Example
Immediate	<ul style="list-style-type: none">● Life/Limb/Organ saving<ul style="list-style-type: none">○ Resuscitation occurs simultaneously with surgery○ Surgery within minutes	Rapid bleeding: trauma, ruptured aneurysm, blunt injury, RTA, Liver injury
Urgent	<ul style="list-style-type: none">● Life/Limb/Organ threatening<ul style="list-style-type: none">○ Surgery within hours	Perforated bowel or less urgent bleeding
Expedited	<ul style="list-style-type: none">● Early surgery<ul style="list-style-type: none">○ within a day or two	Large bowel obstruction, closed long bone fracture
Elective	<ul style="list-style-type: none">● Timing to suit patient and hospital Anesthesiologist will see all patients in the ward, except the elective surgery patients will be seen in the pre-op clinic	Joint replacement, unobstructed hernia repair, cataract

The Goal of Preoperative visit

Important: Possible SAQ?

The preoperative visit of all patients by anesthesiologist is an essential requirement for the safe and successful conduct of anaesthesia

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

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

1. To educate about anaesthesia, perioperative care and pain management, to reduce anxiety and answers the patient's question
2. To obtain the patient's full medical history and physical examination.
3. To determine which lab test or further medical consultation are needed.
4. To choose care plan guided by patient's choice and risk factors. after explaining the advantages and disadvantages of each type of anaesthesia

Preoperative Anesthetic Assessment

Visit allows:

- Best anaesthetic technique
- Any potential interactions between concurrent diseases
- Anaesthesia anticipated
- Provides an explanation
- Reassurance for the patient

Coexisting illness:

- Improve the patient's condition prior to surgery
- Seeking advice from other specialties in case of chronic uncontrolled disease
- Optimise treatment
- Final decision

Situations where special arrangement are usually made:

To optimize the patient condition before undergoing surgery

1) Patient with complex medical or surgical problem:

- Patient is often admitted several days before surgery. [1]
- Anesthetist is actively involved in optimising 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.

3) Day-case patients:

- These are patients who are planned.
- Generally 'fitter' ASA1 (have no medical condition) or ASA 2 (have controlled medical condition). = minor to moderate surgery and patient is fit for surgical
- Assessment in anesthesia clinic. 2-3 day of 1 week before

Anesthetic history

Anaesthetist should take a full history & Examine each patient

Previous anesthetics and operations:

- Hospitals.
- Enquire about inherited or 'family' diseases: sickle-cell disease خصوصًا اللي جايين من الجنوب, thalassemia, and porphyria. imp to ask about previous blood transfusion especially in case of SCA
- Difficulties with previous anesthetics.

Difficulties with previous anesthetics

Dr :Exam question What is the most predictive factor for difficult intubation ?

- History of difficult intubation including sign such as sore throat after operation
- Nausea, vomiting in case of post-op Hx of N/V We should keep the patient NPO, give multimodal antiemetic before surgery ,avoid high pressure ventilation to prevent air entering the stomach and cause irritation.
- Bad Dreams Induced by some drug like ketamine (stimulant for patient who is hemodynamically unstable)
- Awareness² Most commonly with cardiac surgery and c-section (we monitor awareness using The bispectral index (BIS))
- Postoperative jaundice Halothane (inhaler) can lead to liver injury then cause jaundice

Present and past medical history:

- All the aspects of the patient's medical history.
- Relating to the cardiovascular and respiratory systems and its severity.

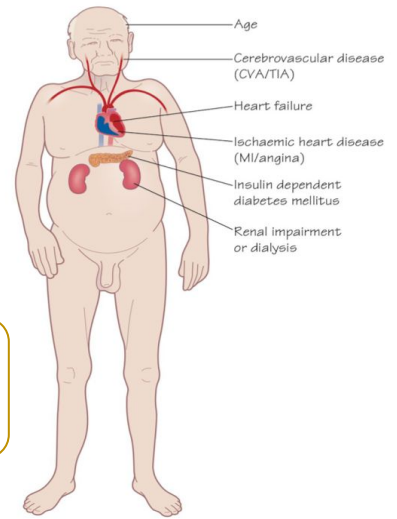
Anesthesia Inquiries in history



Cardiovascular system

Patient factors associated with cardiac risk:

- **Age**
- **Heart failure** Patient with Compensated HF can lead > can go for surgery
Patient with decompensated HF > should be treated first
- **Cerebrovascular disease (CVA/TIA)** Always ask about recent attack
- **Insulin dependent diabetes mellitus** Should be admitted as inpatients in case of chronic uncontrolled disease (ASA3)
- **Ischemic heart disease (MI/Angina)**
- **Renal impairment or dialysis**



Dr :Exam question

- any patients with Myocardial infarction should not be operated , only after 6 months
- CVA patients should not be operated only after 3 months

Specific inquiries must be made about:

1. Angina: Incidence, Precipitating factors, Duration of chest pain or SOB , Use of antianginal medications, e.g. glyceryl trinitrate (GTN) oral or sublingual.
2. Previous myocardial infarction and subsequent symptoms.
3. Symptoms indicating heart failure: Heart failure will be worsened by the depressant effects impairing the perfusion of vital organs³
4. Myocardial infarction are at a greater risk of perioperative reinfarction the risk of recurrence increase intra and postoperative
5. **Elective surgery postponed until at least 6 months after the event**
6. Untreated or poorly controlled hypertension (diastolic consistently > 110 mmHg) may lead to exaggerated cardiovascular responses. [1]
7. Both hypertension and hypotension can be precipitated → which increase the risk of myocardial ischemia and intracerebral hemorrhage
8. Valvular heart disease: prosthetic valves may be on anticoagulants, need to be stopped or changed prior to surgery and give Antibiotic prophylaxis⁴ Because high tendency for endocarditis. Patient with Prosthetic valve disease should switch warfarin to heparin before surgery.

If a pregnant lady with (aortic stenosis) needs a c section , do general not spinal (spinal can induce hypotension)

Active heart condition	Minor heart condition
<p>We should optimize Pt condition first المريض ما يصلح يدخل العمليات</p> <ul style="list-style-type: none"> • Unstable coronary syndromes (severe or unstable angina, recent MI) • Decompensated CHF • Significant arrhythmia or heart block. Affect hemodynamic of the pt, induce severe chest pain/mental status. • Severe aortic or mitral valvular disease (AS<1.0 cm ; mean gradient 40 mmHg; symptomatic mitral or aortic disease) 	<ul style="list-style-type: none"> • Advanced age >70 • Abnormal ECG: <ul style="list-style-type: none"> ○ LV hypertrophy ○ LBBB ○ ST-T abnormalities ○ Rhythm other than sinus • Uncontrolled systemic hypertension

Anesthesia Inquiries in history



Cardiovascular system

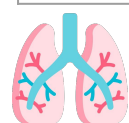
Cardiovascular MET Estimation:

METSx	Exercise	Recreation	Works/household Activities
1.5-2.0 METs	Slow walk 40-60 min mile	Watching TV Playing Cards	-Desk work -Light house work -Making bed - Brushing hair/teeth
1.5-2.0 METs	Walking 24-30 min mie Cycling ever 5 mpm	Golf with power cart Play musical instrument	-Driving car -Cooking/washing dishes - Ironing/ sweeping - Showering
3.0-4.0 METs	Walking 20 min mile Cycling 2.9 inph	Bowling Billiards Golf With pull cart Shopping	-Anitorn work -Vacuuming / Kneeling -Climbing stairs slowly -Sexual intercourse
4.0-5.0 METs	Walking 15-17 min mile veling 8 mph	Dancing Gardening Golf carrying clubs	-Painting house -Carrying 20-40 lbs -Raking leaves -Shoveling snow
5.0-6.0 METs	Walking 13-15 min mile Cycling 10 mph	Canoeine Stream Fishing Baseball	Carpentry Shoveling heavier Snow

Surgical factors in the assessment of significant cardiac event:

Risk assessment depending on the surgery

Low risk <1%	<ul style="list-style-type: none"> • Minor orthopedic and urology • Gynaecology <ul style="list-style-type: none"> • Breast • Dental
Intermediate 1-5%	<ul style="list-style-type: none"> • Major orthopedic and urology <ul style="list-style-type: none"> • Abdominal • Head and neck
High risk >5%	<ul style="list-style-type: none"> • Aortic, major vascular • Peripheral vascular • Intraperitoneal / intrathoracic



Respiratory system ⁵

Patients with pre-existing lung disease:

- Prone to postoperative chest **infections** and **atelectasis** if they are obese or undergoing upper abdominal or thoracic surgery
- Chronic obstructive lung disease: **sputum production** (volume and color), **Dyspnea**.
- Bronchial Asthma, including precipitating factor and last attack, previous hospital admission.
- Upper respiratory tract infection (anaesthesia and surgery should be postponed **at least 2 weeks**, unless it is for a life-threatening condition).
- **COVID swab** for all suspected **patient**⁴

Anesthesia Inquiries in history



GI system ⁷

- Indigestion and GERD reflux.
- Heartburn (may indicate the possibility of a hiatus hernia)



Rheumatoid diseases

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

1. Chronically anaemic ⁸
2. Severely limited movement of their joints → makes positioning for surgery and airway maintenance difficult.
3. Tendency for dislocation of atlanto-occipital joint ² we should take care of head position



Diabetes

- Patients have an increased incidence of:
 - 1- Ischaemic heart disease.
 - 2 Renal dysfunction.
 - 3 Autonomic and peripheral neuropathy. (avoid vasodilators because they cannot compensate by tachycardia)
- Intra- and postoperative complications.



Neuromuscular disorders

- Care with muscle relaxants ¹⁰.
- Coexisting heart disease.
- Restrictive pulmonary disease.



Chronic renal failure

- Anaemia
- Electrolyte abnormalities hyperkalemia , hyponatremia ¹¹
- Altered drug excretion ¹²
- Restricts the choice of anaesthetic agents we should give extra-liver and renal metabolic medication to avoid prolonged recovery



Liver disease ¹³

- Infectious or obstructive liver disease
- Altered drug metabolism
- Altered coagulation function
- All patients with renal and liver diseases we should repeat their investigation one day before surgery



Epilepsy

- Well controlled or not (if not controlled consult neurologist) , compliance to medication.
- Avoid anaesthetic agents potentially epileptogenic (e.g. enflurane, ketamine).
- Predict convulsions which induced by withdrawal effects of anesthesia drugs ¹⁴



Drug history and allergies

- Identify all medications: 1- Prescribed. 2- Self-administered.
- Allergies to drugs: Topical preparations (e.g. iodine), Adhesive dressings, Foodstuffs.

Anesthesia Inquiries in history



Social history

- Smoking: (Number of cigarettes, amount of tobacco). Nicotine stimulates the sympathetic nervous system causing: tachycardia, hypertension and coronary artery narrowing.
- Alcohol: (Induction of liver enzymes, tolerance)
- Addiction: Difficulty with venous access, Thrombosis of veins and Withdrawal syndromes)
- Look for tattooing.¹⁵



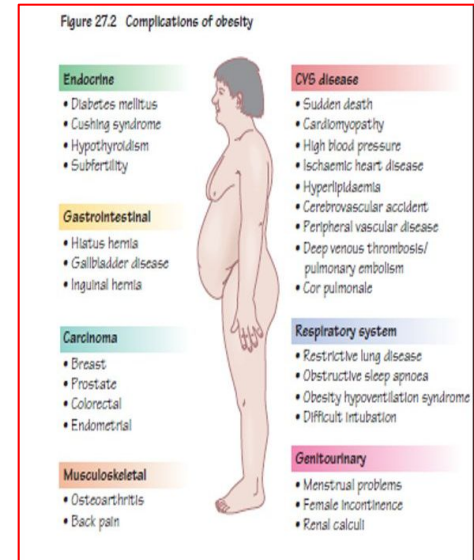
Pregnancy

- Increased risk of regurgitation and aspiration.
- Elective surgery is best postponed until after delivery.







Obesity

- Cardiovascular, Respiratory, Sleep apnea and snoring (so it is imp to evaluate the airway),
- Diabetics, Fatty liver.
- Technical problem: Airway, aspiration, intravenous access and positioning.
- Complication of obesity :
 - hiatus hernia > increase the tendency to aspiration
 - inguinal hernia > because increase of intraperitoneal pressure



Examination:

Cardiovascular system:  <ul style="list-style-type: none"> • Dysrhythmias: Atrial fibrillation. • Heart failure¹⁶. • Valvular heart disease: heart murmur. • Blood pressure is best measured at the end of the examination (after rest) 	Respiratory system:  <ul style="list-style-type: none"> • Cyanosis¹⁷ • Pattern of ventilation • Respiratory rate • Dyspnoea¹⁸ • Wheeziness¹⁸ • Signs of collapse • Consolidation and effusion
Nervous system:  <ul style="list-style-type: none"> • Chronic disease of the peripheral and central nervous system. • Evidence of motor or sensory impairment should be documented. 	Musculoskeletal system  <ul style="list-style-type: none"> • Restriction of movement & deformities common with sclerosis • Reduced muscle mass • Peripheral neuropathy • Pulmonary involvement • Particular attention to the patient's cervical spine¹⁹ and temporomandibular joints

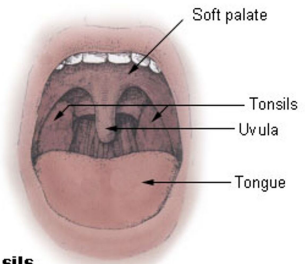
Examination

Examining the Airway:

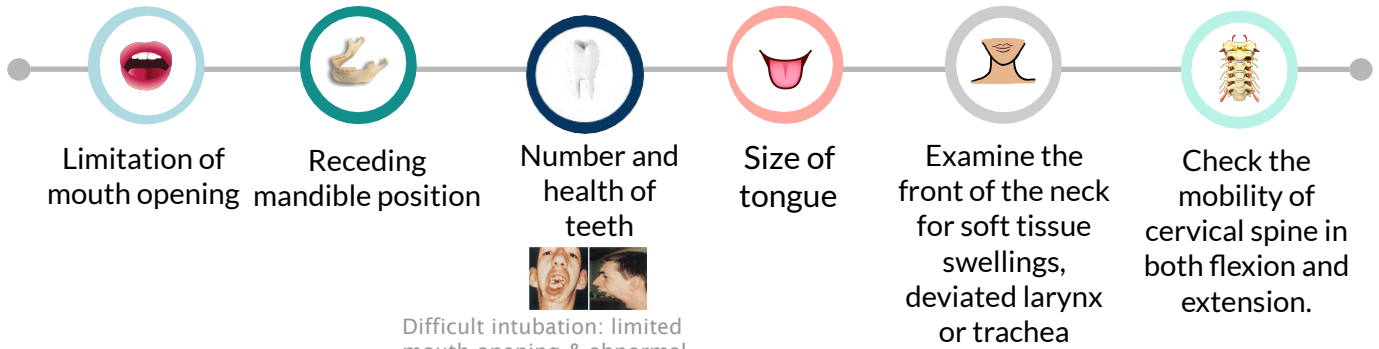
- Try and predict difficult intubation.
- Assessment is often made in three stages

Observation of the patient's anatomy:

Look for:



Tonsils



Limitation of mouth opening

Receding mandible position

Number and health of teeth

Size of tongue

Examine the front of the neck for soft tissue swellings, deviated larynx or trachea

Check the mobility of cervical spine in both flexion and extension.



Difficult intubation: limited mouth opening & abnormal baccalaureate teeth

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:



Protruding Maxillary Incisors (buck teeth).



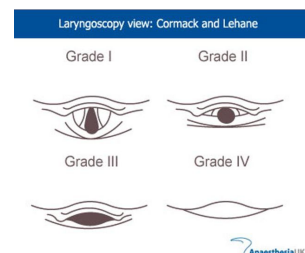
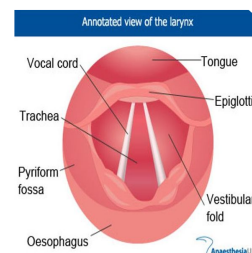
Receding Mandible: Inability to sublux lower incisors beyond upper incisors.



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



Special Investigations

Baseline examinations

If no concurrent diseases, investigations can be limited to: **CBC and coagulation profile for all patients**

Age	Sex	Investigations
<40	Male	Nil
<40	Female	Hb. (menstruating patients are slightly anemic)
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 electrolyte

- In patients taking digoxin, Diuretics
- Diabetes, renal disease
- Vomiting/ Diarrhea
-



Blood sugar

- Diabetes
- Peripheral arterial disease
- Taking long term steroids
-



Chest X-ray²⁰

- All patients with pulmonary disease, heavy smoker, or cancer (to rule out lung metastasis)



Coagulation screen²¹

- For any pt will undergo regional anesthesia



Electrocardiogram (ECG) For all patients with CVS disease

- Hypertensive.
- With symptoms or signs of heart disease.



Pulmonary function tests

- Pt with COPD, Bronchial asthma, bronchiectasis



Sickle-cell screen

- When +ve family hx



Liver function tests

- Hepatic disease
- High alcohol
- Metastatic disease
- Evidence of malnutrition

Medical Referral

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

Cardiovascular disease:

- Untreated or poorly controlled hypertension or heart failure.
- Symptomatic ischaemic heart disease (unstable angina).
- Dysrhythmias: uncontrolled atrial fibrillation, paroxysmal supraventricular tachycardia, second and third degree heart block.
- Congenital heart disease or symptomatic valvular heart disease.

Respiratory disease:

- Chronic obstructive airways disease, if dyspnoeic at rest.
- Bronchiectasis.
- Asthmatics: **1.** Unstable **2.** Taking oral steroids **3.** have a FEV1 < 60% predicted.

Renal disease:

- Chronic renal failure.
- Patients undergoing chronic dialysis

Endocrine disorders:

- Insulin and non-insulin dependent diabetics.
- Ketonuria
- Random blood sugar >12mmol/L
- Hypo/Hyper - Thyroidism
- Cushing's
- Addison disease
- Hypopituitarism

Hematological disorders:

- Bleeding diathesis: haemophilia, thrombocytopenia.
- Therapeutic anticoagulation
- Haemoglobinopathies.
- Polycythaemia.
- Haemolytic anaemias.
- Leukaemias.

Risk Assessment

Increased risk of mortality:

- Inadequate preoperative preparation including resuscitation.
- Poor postoperative care, including lack of intensive care beds.
- Lack of and inappropriate monitoring during surgery.
- 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. **In malignant hyperthermia first thing to do? Call for help**

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.
- Emergency operations.

Risk Assessment

ASA (American Society of Anesthesiologists) Grading:

ASA PS classification	Definition	Example, including, but not limited to
ASA I	A normal healthy patient	Healthy, non-smoking, 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 limitation; one or more moderate to severe diseases. Examples include (but not limited to): poorly controlled DM/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 ischemic or severe valve dysfunction, severe reduction of ejection fraction, sepsis, DIC, ARD or ESD 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 face of significant cardiac pathology or multiple organ/system dysfunction
ASA VI	A declared brain-dead patient whose organs are being removed for donor purpose	

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 & Consent

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:

1. Consent ²²
 2. Surgical safety checklist
 3. Criteria for discharge from a day surgery unit
- Patients will ask about their immediate recovery.
 - Finally:
 1. Reassure patients about postoperative pain control.
 2. 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.
- 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

Consent form

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.

Premedication

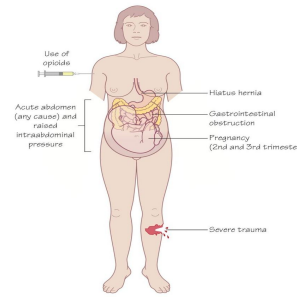
NPO Guidelines for elective sedation:

Ingested	Time
Clear liquids (water, fruit juices w/o pulp, carbonated beverages, clear tea, black coffee)	2 hours
Breast milk	4 hours
Infant formula	6 hours
Nonhuman milk (similar to solids)	6 hours
Solids (light meal; if includes fatty/fried food, consider longer faster period)	6 hours

* In emergency situation, carefully weigh the need for immediacy with increased risk of pulmonary aspiration. Use lightest effective sedation possible.

Patients at risk of gastric aspiration even after fasting:

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



Surgical safety checklist Antibiotic 60 minutes before surgery

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.

Surgical Safety Checklist (First edition)		
Before induction of anaesthesia	Before skin incision	Before patient leaves operating room
<p>Sign in</p> <input type="checkbox"/> Patient has confirmed <ul style="list-style-type: none"> • Identity • Site • Procedure • Consent <input type="checkbox"/> Site marked/not applicable <input type="checkbox"/> Anaesthesia safety check completed <input type="checkbox"/> Pulse oximeter on patient and functioning <p>Does patient have a:</p> <p>Known allergy?</p> <input type="checkbox"/> No <input type="checkbox"/> Yes <p>Difficult airway/aspiration risk?</p> <input type="checkbox"/> No <input type="checkbox"/> Yes, and equipment/assistance available <p>Risk of >500mL blood loss (7mL/kg in children)?</p> <input type="checkbox"/> No <input type="checkbox"/> Yes, and adequate intravenous access and fluids planned <p style="color: red; font-size: small;">Intraoperative stage: from entering the theatre room to the recovery room.</p>	<p>Time out</p> <input type="checkbox"/> Confirm all team members have introduced themselves by name and role <input type="checkbox"/> Surgeon, Anaesthesia professional and nurse verbally confirm <ul style="list-style-type: none"> • Patient • Site • Procedure <p>Anticipated critical events</p> <input type="checkbox"/> Surgeon reviews: what are the critical or unexpected steps, operative duration, anticipated blood loss? <input type="checkbox"/> Anaesthesia team reviews: are there any patient-specific concerns? <input type="checkbox"/> Nursing team reviews: has sterility (including indicator results) been confirmed? Are the equipment issues or any concerns? <p>Has antibiotic prophylaxis been given within the last 60 minutes?</p> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable <p>Is essential imaging displayed?</p> <input type="checkbox"/> Yes <input type="checkbox"/> Not applicable	<p>Sign out</p> <p>Nurse verbally confirms with the team:</p> <input type="checkbox"/> The name of the procedure recorded <input type="checkbox"/> That instrument, sponge and needle counts are correct (or not applicable) <input type="checkbox"/> How the specimen is labelled (including patient name) <input type="checkbox"/> Whether there are any equipment problems to be addressed <input type="checkbox"/> Surgeon, anaesthesia professional and nurse review the key concerns for recovery and management of this patient

Premedication

The 6As of Premedication:



Anxiolysis:

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



Amnesia:

- Lorazepam | anterograde amnesia.



Antiemetic:

- Dopamine antagonists | Antihistamines | Anticholinergics | Phenothiazines | 5-hydroxytryptamine antagonists |
- α_2 -agonists: clonidine, Dex.



Antacid:

- Patients who have received opiates.
- Present as emergencies.
- If in pain
- Delayed gastric emptying.
- Hiatus hernia
- Drugs: Oral sodium citrate, Ranitidine, Proton inhibitors²³, Metoclopramide, naso- or orogastric tube.



Anti-autonomic²⁴: atropine

- given to patients have parasympathetic reflexes.
- Excessive vagal activity causing profound bradycardia.
- Halothane.
- 2nd dose of Suxamethonium.
- Surgery.
- Traction on the extraocular muscles.
- Handling of the viscera.
- During elevation of a fractured zygoma



Analgesic

Post-operative stage

1st

At the end of the operation, the patient is either

1. extubated in the operating theatre (and an oropharyngeal airway inserted if needed)
2. transferred to the recovery room with an LMA still in situ.

2nd

All patient receive supplemental oxygen during transfer





3rd

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
-  Blood loss
-  Operation details
-  Anaesthetic technique with emphasis on:
 - analgesia given
 - regional/nerve blocks
 - antiemetics given
 - antibiotics
 - the use of local anaesthetic infiltration
 - Thromboprophylaxis

438 Notes:

1. For necessary investigations to be done like cardiography, X-ray or echo before surgery.
2. Patient can recall what he heard during surgery (intraoperatively).
3. Patient should be assessed properly. Doctor should request echocardiography and check ejection fraction (EF), valvular status and pulmonary artery (PA) pressure.
4. Abx prophylaxis is given for every VHD patients.
5. Any Pt with COPD, severe asthma, bronchiectasis should be referred to a pulmonologist to optimize their condition before going to surgery
6. Done for all patients NOT only suspected.
7. Those conditions (GERD, hiatal hernia) will aspirate gastric content so we do modified rapid induction to shorten the time of anesthesia induction thus secure airway and prevent aspiration
8. Can mask cardiac disease
9. During intubation do not flex the patient's head
10. We give small small doses of muscle relaxant succinylcholine if indicated because it may induce malignant hyperthermia
11. Hyperkalemia, hyponatremia and acidosis
12. e.g. rocuronium is a muscle relaxant, if its secretion is prolonged the Pt will be paralyzed for longer time
13. FFP prescription, they have tendency for bleeding
14. We have to be prepared in the recovery room for convulsions, if it happened give diazepam
15. Sometimes it accompanied with hepatitis C or HIV
16. You have to auscultate looking for tachycardia, S3, S4 and basal crepitation.
17. Indicate very low oxygen saturation "emergency"
18. Should be treated before surgery
19. Especially with rheumatoid arthritis patients will have subluxation.
20. For all patients with pulmonary disease, cancer patients or suspected pneumonia.
21. For all patients with anticoagulants, liver disease and cancer patients.
22. anesthesia consent, surgical consent and blood transfusion consent.
23. e.g. omeprazole
24. e.g. hyoscine and glycopyrronium

441 Notes:

1. Case by the doctor: If the patient has a renal stone and is hypertensive you should proceed with the surgery because the hypertension is caused by the renal stone itself
2. Case by the doctor: If a patient was to undergo c-section and known to have aortic stenosis: NEVER give spinal anesthesia because the patient cannot tolerate hypotension so the right choice is general anesthesia

439 Lecture Quiz

Question 1: Regarding preoperative management of the high-risk patient, which of the following statements are true?

- A. A course of antibiotics should always be given in patients with chronic sputum production.
- B. Stopping smoking prior to surgery is of little benefit.
- C. Oral medications can still be given with a little water in patients who are nil-by-mouth.
- D. A course of steroids prior to surgery may be necessary in patients with chronic obstructive airways disease.

Question 2: Regarding consent for surgery, which of the following are true?

- A. Children below the age of 16 years cannot give consent
- B. A social worker can give consent for a child under a care order
- C. All minor complications with an incidence above 1% should be discussed
- D. Consent is not required for life-saving surgery in a competent patient
- E. Two senior doctors need to sign the form explaining reasons for actions if an adult is deemed not competent to consent.

Question 3: Which of the following statements regarding preoperative management of specific medical problems are true?

- A. Patients with a diastolic pressure above 95 mmHg should have their elective operations postponed.
- B. Elective surgery should be delayed until at least 1 year after a myocardial infarction (MI).
- C. There is no need to control tachyarrhythmias preoperatively.
- D. Preoperative transfusion should be considered if the Hb level <10 g/dL.
- E. In patients with malnutrition, preoperative nutrition therapy should be started 2 weeks prior to surgery.

Question 4: Regarding sedation during endoscopy, which of the following statements are false?

- A. Sedation has no significant dangers and can be used without restrictions.
- B. All sedated patients require secure intravenous access.
- C. Co-administration of opiates and benzodiazepines has a synergistic effect.
- D. The use of supplementary oxygen is essential in all sedated patients.
- E. All sedated patients require pulse oximetry to monitor oxygen saturations

Question 5: Preoperative assessment of patients with diabetes mellitus should include:

- A. An assessment of functional status
- B. 24-Hour creatinine clearance
- C. Pulmonary function testing
- D. Cancellation of the surgical case if HbA1c >10%

Key Answers: 1- (C-D) / 2-(B-C-E) / 3-(A-E) / 4-A / 5-A



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