Preoperative Assessment

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Learning Objectives

- After attending this lecture, student is expected to be to:

1. Aims of preoperative assessment.
2. How preoperative assessment is conducted.
3. ASA risk score.
4. Fasting guidelines.
5. Preoperative preparation of patients before anesthesia.

Aims of preoperative assessment

- Opportunity to identify co-morbidities that may lead to patient complications during the peri-operative period.
- Optimize any co-morbidities.

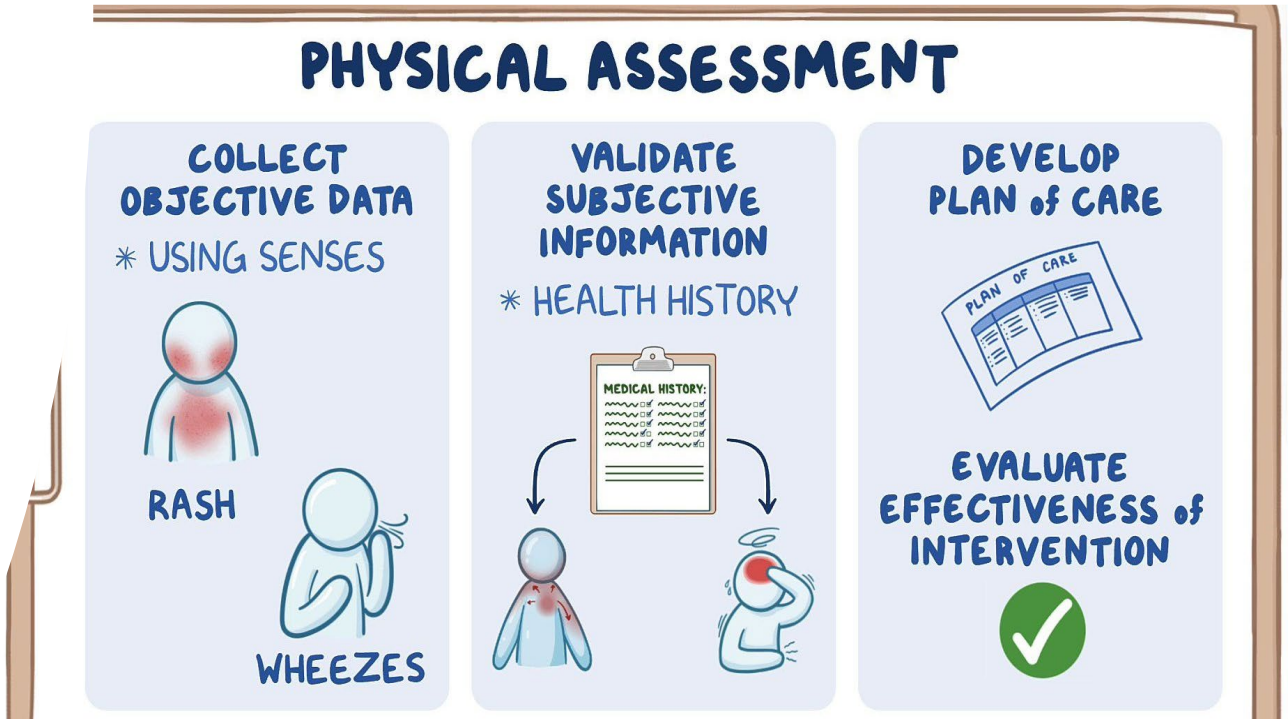
- Venue: Preoperative clinic or Wards (anaesthesia clinic) for elective cases or Emergency Department/ward for emergent surgeries.

- Establish a rapport.

Conduct of Assessment

- History, Physical examination, and Investigations +/- further consultations.

- Make sense of collected data to formulate anaesthetic plan.



History

- Profile:
  - Name/ Age/ Gender/ Weight/ Height
  - Type of surgery
  - Smoking history
  - Fasting hours
- Review of Systems (focused):

Cardiovascular	Respiratory	Neurologic	GIT	Renal	Blood disorders
IHD (CP /Angina/ stent) CHF (PNDs/ orthopnea) Exercise intolerance Palpitations	Asthma COPD OSA Recent URTI/LRTI Cough/ sputum Smoking	-Epilepsy -CVA/TIA -Denervation disease	GERD PUD Hiatus Hernia Intestinal obstruction.	CRF ARF On dialysis	Antiplatelet Anticoagulation

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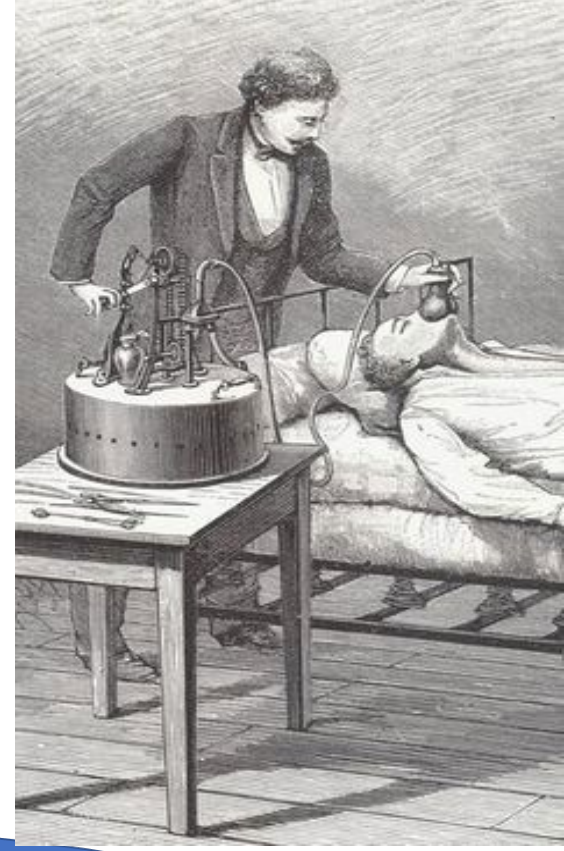
History



- Past medical history.
- Medications including allergies.
- Surgical history including previous anaesthesia.

- PREVIOUS ANAESTHESIA:
- Very important part of previous anaesthesia history is airway related history.
  - Previous difficult airway.
  - Previous airway surgeries/ burns.
  - Snoring/ obstructed breathing.

- Previous anesthesia
- Type of anesthesia
- Complications: difficult airway management/delayed emergence / PONV)-
- Family hx.

- Always check previous records/ old file.

Physical Examination

- General appearance: Obesity, malnutrition, pregnancy head and neck ..etc
- Vital signs: BP, HR, RR.

- Cardiac exam

Rate and rhythm
Heart sound

- Respiratory exam

Sign of respiratory distress
Respiratory rate
Auscultate Lung

- Neuro exam

Metal status
Gross motor/gross sensory

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Airway examination

- Purpose: To anticipate any possible difficulty in ventilation and intubation.

- Importance: airway and respiratory events are the most common events during anaesthesia. (most common: sore throat and dental damage).

Method of Assessment (L.E.M.O.N)

L — Look externally

face / mouth opening/ teeth / tongue

E — Evaluate the three distances

interincisal / thyromental / sternomental distance

M — Mallampati score (3 or 4)

O — Obstruction (presence of any obstruction like:

peri-tonsillar abscess , thyroid mass , VC nodule)

N — Neck mobility

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INSPECTION

1. Does it look difficult?

- Obesity
- Beard
- Deformities, masses, scars or burns.
- Large breasts in females.
- Neck deformities or large neck fat pad
- Position of the mandible: excessive protrusion or recession.
- Nasal deformity, deviation, patency of nostrils.
- Mouth asymmetry, deviation, high arched palate, large tonsils, abcess.
- Dentition: protrusion, missing/loose, hygiene, crowns and caps.

INSPECTION

2. Mouth opening.

- At least 3 fingers of patient's own.

3. Mobility of the lower jaw and neck.

- Ability of protruding the lower jaw in front of the upper one.
- Neck extension and flexion.

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Three distances

Thyro-mental distance

- ✓ It describes the distance between the mentum & thyroid notch
- ✓ It helps in determining how readily the laryngeal axis will fall in line with the pharyngeal axis
- ✓ It is normally > 6cm in adults .

Sterno- mental distance

- ✓ It describes the distance between the mentum & suprasternal notch
- ✓ If this distance less than 12 cm it predicts difficult intubation

Inter-incisor distance

- ✓ It describes the distance between the upper and lower incisors
- ✓ It is normally 4.5 cm

Mallampati score

- Patency of mouth and throat cavities (tongue/mouth).

class	Structures identified when pt seated

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Mallampati One

1	Tonsillar pillars, Uvula , soft & hard palate

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Mallampati two

2	Uvula ,soft & hard palate

Mallampati three

3	Base of uvula ,soft & hard palate

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Mallampati four

4	Only hard palate is can be seen

PALPATION

- Submandibular and submental area for masses.

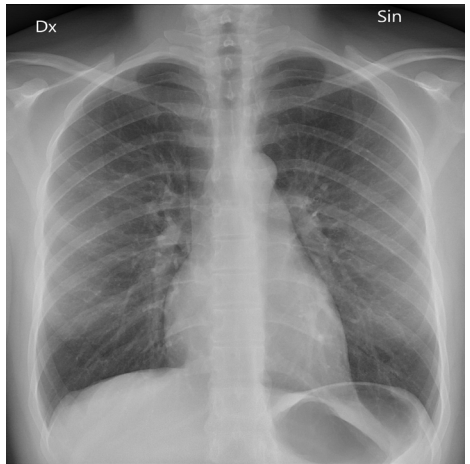
- Tracheal centralization.

Preoperative investigations

- Routine (test ordered in the absence of a specific clinical indication) testing does not add much to the preoperative assessment.

- Guided by history, physical examination, and nature of surgery.

- Haemoglobin/haematocrit.
- Urine Analysis.
- Chest radiograph (CXR).
- Electrocardiograph (ECG).
- Pulmonary Function Tests (PFT).



- CBC — Advanced age/ Anemic pt/ Bleeding /chronic disease (kidney liver heart)
- KFT — Diabetics/ HTN/ chronic disease / on medications like diuretics , digoxin ,ACEI
- Sugar — Diabetics / HTN/ chronic disease / on steroid
- LFT — Liver disease / malnourished pt
- Coagulation — Bleeding disorder/ Kidney disease/ Liver disease/ pt on anticoagulants

Investigations

CXR

- ✓Indicated in
  - ➢patients with respiratory or cardiac disease
  - ➢smokers
  - ➢patients with recent LRTI

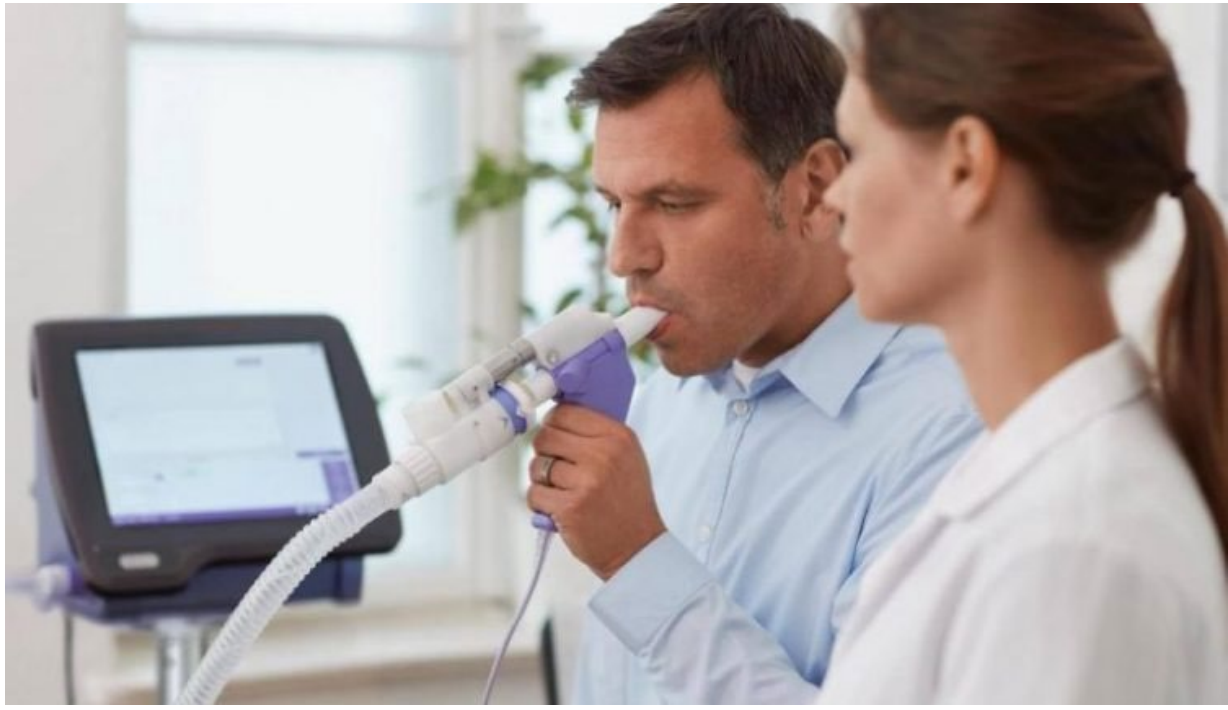
ECG

- ✓Indicated in
  - ➢patients with respiratory or cardiac disease
  - ➢Advanced Age (M: 55y F: 65y)
  - ➢Any patient with CAD risk factors : (HTN, DM, hyperlipidemia , exercise intolerance)

Investigations

Pulmonary Function test:

- Identifying patients at respiratory risk, evaluating the risk, and finding modified factors to decrease risk



Indicated in:

- Obstructive lung disorders
- Restrictive lung disorders
- Neuromuscular disorders

Includes mainly

- ❑Spirometry
- ❑ABGs

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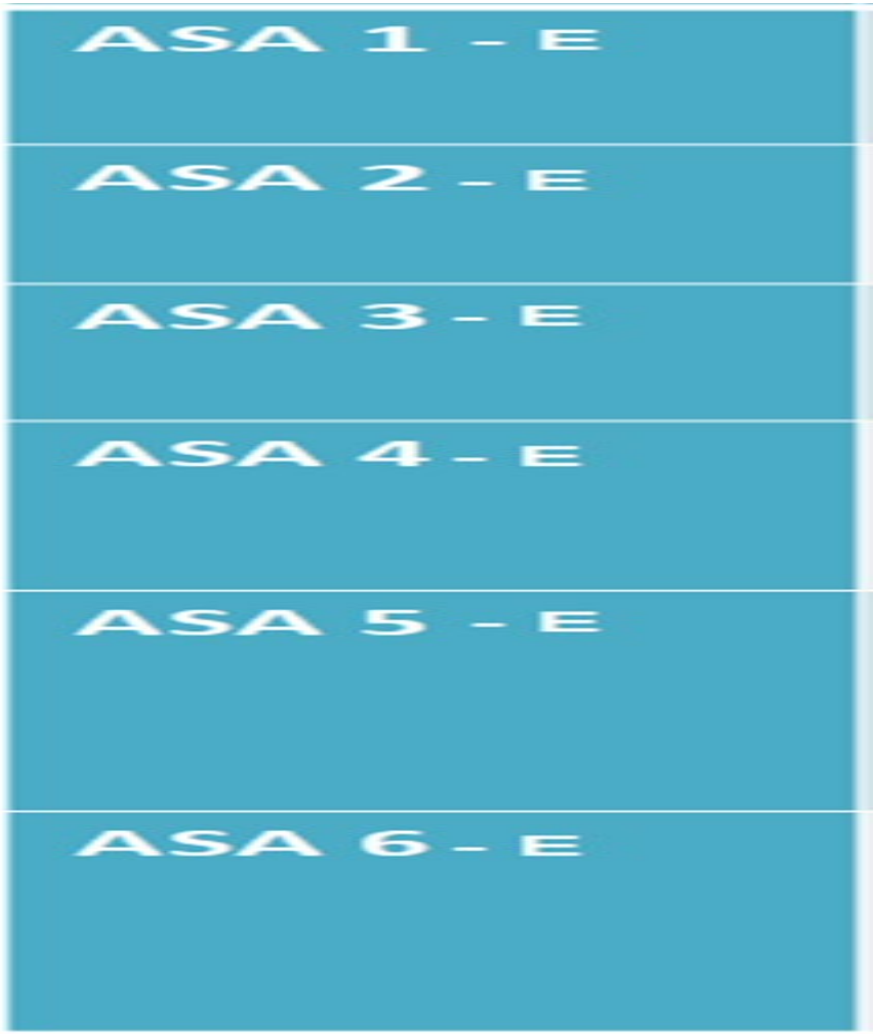
ASA risk score

Category	Health status	Examples
ASA 1	A normal healthy patient	Nonsmoker, BMI <30
ASA II	A patient with mild systemic disease	No functional limitations and a well-controlled disease (e.g., treated hypertension, obesity with BMI under 35, frequent social drinker, or cigarette smoker
ASA III	A patient with a severe systemic disease that is not life-threatening	Some functional limitation due to disease (e.g., poorly treated hypertension or diabetes, morbid obesity, chronic renal failure, a bronchospastic disease with intermittent exacerbation, stable angina, implanted pacemaker)
ASA IV	A patient with a severe systemic disease that is a constant threat to life	(e.g., unstable angina, poorly controlled COPD, symptomatic CHF, recent (less than three months ago) myocardial infarction or stroke)
ASA V	A moribund patient who is not expected to survive without the operation	(e.g., ruptured abdominal aortic aneurysm, massive trauma, and extensive intracranial hemorrhage with mass effect)
ASA IV	A brain-dead patient whose organs are being removed with the intention of transplanting them into another patient	

EMERGENCY ?!

ASA: “when the delay in treatment of the patient would lead to a significant increase in the threat to life or body part.”

E



Plan

- Decisions about:
  - Further consultations.
  - Further investigations.
  - Patient's medications.
  - Preparation of blood and blood products.
  - Type of admission (if seen in clinic)
  - ICU bed reservation.
  - Fasting time
  - Ordering Pre-medication.

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Jordan University Hospital
Department of Anesthesia
Anesthesia Management Record

CLN F223/4

Patient Name: .....
Age: ..... Sex: .....
Hospital No. : .....
Date: .....

1- Pre-Operative Assessment Note

Patient seen in Pre-operative Anesthesia Clinic? ☐ *YES* ☐ *NO*

A- History

Previuos Anesthesia:

Complications?

Airway Difficulty?

Allergies:

Cardiovascular:

Respiratory:

Weight kg | **Height:** cm

Age:

Past Med. Hx.:

Fasting Status:

Other:

Medications:

B- Physical Examination

Vital Signs:

B/P

Pulse

Temp

R/R

Pain

Cardiovascular:

Respiratory:

Airway: *H&N movement:*
Mouth Opening: *Tracheal Shift?*
Mallampati class: *Thyromental Distance:*
Teeth: *Other:*

Other:

C- Investigations:

Full Blood Count:

Electrolytes:

Arterial Blood Gases:

Chest X Ray:

ECG:

Other:

D- Assessment Outcome:

ASA:

Possible Modalities of Anesthesia

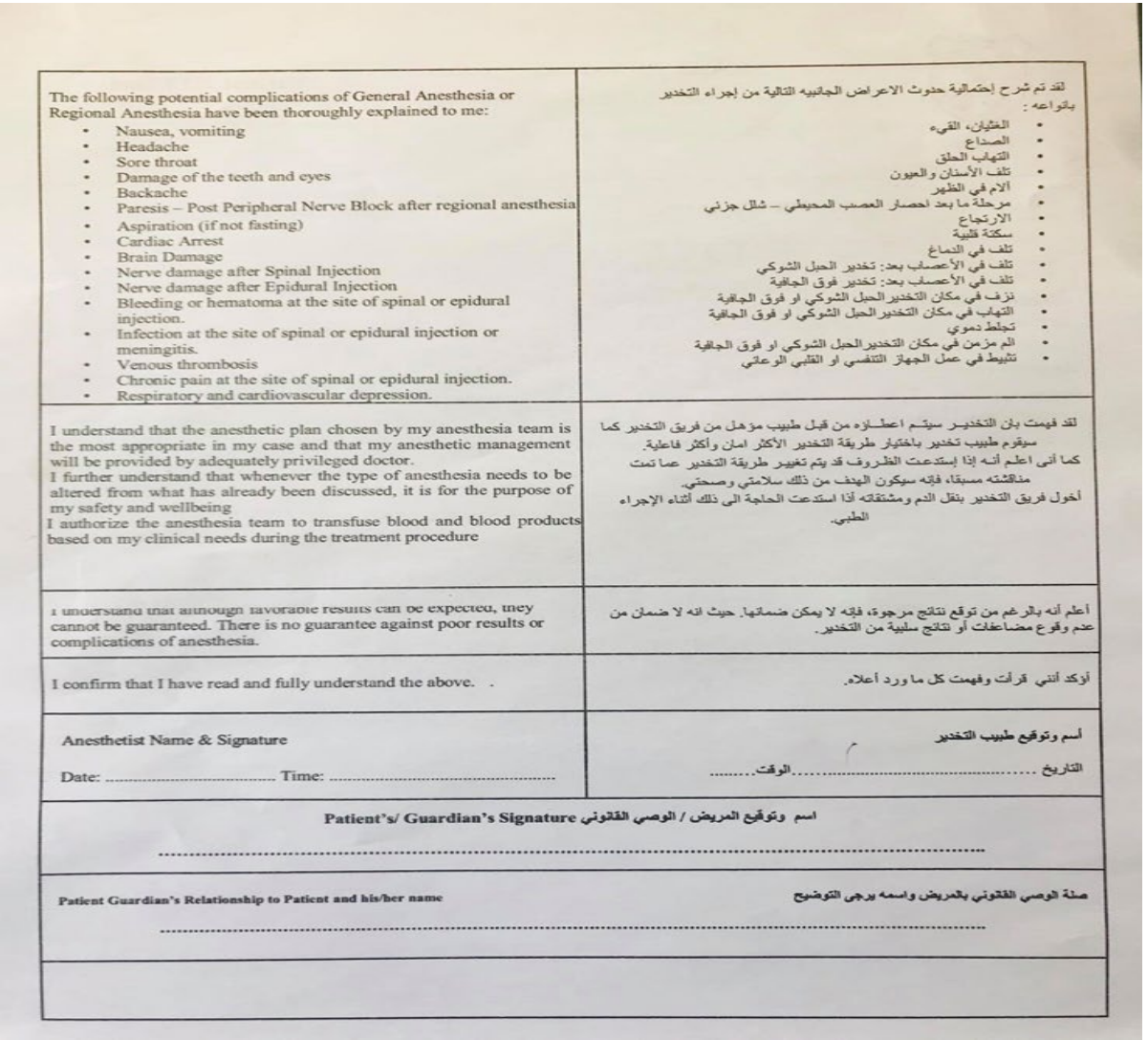
Anesthesia & Pain management Plan discussed with Patient/ Family? ☐ YES ☐ NO

Consent taken yet? ☐ YES ☐ NO

E- PLAN:

Anesthetist's Name: | **Signature :** | **Date/ Time:**

Informed Consent



The following potential complications of General Anesthesia or Regional Anesthesia have been thoroughly explained to me: • Nausea, vomiting • Headache • Sore throat • Damage of the teeth and eyes • Backache • Paresis – Post Peripheral Nerve Block after regional anesthesia • Aspiration (if not fasting) • Cardiac Arrest • Brain Damage • Nerve damage after Spinal Injection • Nerve damage after Epidural Injection • Bleeding or hematoma at the site of spinal or epidural injection. • Infection at the site of spinal or epidural injection or meningitis. • Venous thrombosis • Chronic pain at the site of spinal or epidural injection. • Respiratory and cardiovascular depression.	لقد تم شرح إحتمالية حدوث الاعراض الجانبيه التالية من إجراء التخدير بانواعه : • الغثيان، القيء • الصداع • التهاب الحلق • تلف الأسنان والعيون • ألام في الظهر • مرحلة ما بعد احصار العصب المحيطي – شلل جزئي • الارتجاع • سكتة قلبية • تلف في الدماغ • تلف في الأعصاب بعد: تخدير الحبل الشوكي • تلف في الأعصاب بعد: تخدير فوق الجافية • نزف في مكان التخدير الحبل الشوكي او فوق الجافية • التهاب في مكان التخدير الحبل الشوكي او فوق الجافية • تجلط دموي • الم مزمن في مكان التخدير الحبل الشوكي او فوق الجافية • تثبيط في عمل الجهاز التنفسي او القلبي الوعائي
I understand that the anesthetic plan chosen by my anesthesia team is the most appropriate in my case and that my anesthetic management will be provided by adequately privileged doctor. I further understand that whenever the type of anesthesia needs to be altered from what has already been discussed, it is for the purpose of my safety and wellbeing I authorize the anesthesia team to transfuse blood and blood products based on my clinical needs during the treatment procedure	لقد فهمت بان التخدير سيتم اعطـازه من قبل طبيب مؤهل من فريق التخدير كما سيقوم طبيب تخدير باختيار طريقة التخدير الأكثر امان وأكثر فاعلية. كما أنى اعلم أنه إذا إستدعت الظروف قد يتم تغيير طريقة التخدير عما تمت مناقشته مسبقا، فإنه سيكون الهدف من ذلك سلامتي وصحتي. أخول فريق التخدير بنقل الدم ومشتقاته اذا استدعت الحاجة الى ذلك أثناء الإجراء الطبي.
I understand that although favorable results can be expected, they cannot be guaranteed. There is no guarantee against poor results or complications of anesthesia.	أعلم أنه بالرغم من توقع نتائج مرجوة، فإنه لا يمكن ضمانها. حيث انه لا ضمان من عدم وقوع مضاعفات أو نتائج سلبية من التخدير.
I confirm that I have read and fully understand the above. .	أؤكد أنني قرأت وفهمت كل ما ورد أعلاه.
Anesthetist Name & Signature Date: ..... Time:	أسم وتوقيع طبيب التخدير التاريخ ..... الوقت.....
Patient's/ Guardian's Signature اسم وتوقيع المريض / الوصي القانوني	
Patient Guardian's Relationship to Patient and his/her name صلة الوصي القانوني بالمريض واسمه يرجى التوضيح	

CLN 0232

مستشفى الجامعة الأردنية
Jordan University Hospital

Patient ID Label
Patient Name : .....
File no.: .....

WRITTEN CONSENT FOR ANAESTHESIA	الموافقة الخطية على التخدير
I (Name) ..... Address ..... confirm that Dr. ..... has explained to me that I will require: Anesthesia under the care of anesthesia team Headed by..... For (operation/procedure) ..... To be performed on ..... (date of operation/ procedure)	أقر أنا (الاسم)..... العنوان ..... أن الطبيب..... قد شرح لي أنني بحاجه إلى: التخدير تحت اشراف فريق التخدير برئاسة الدكتور ..... من اجل (العملية/ الإجراء)..... وذلك بتاريخ.....
The Anesthesia proposed for this operation / procedure is: (tick as appropriate). ☐ General Anesthesia ☐ Combined Spinal Epidural (CSE) ☐ Spinal Anesthesia ☐ Epidural Anesthesia ☐ Peripheral Nerve Block (Plexus) ☐ Sedation ☐ Local Anesthesia I understand that Anesthesia through the plan might change according to the condition of operation and patient's safety.	الرجاء وضع علامة على نوع التخدير المقترح للعملية /الإجراء. ☐ التخدير العام ☐ تخدير فوق الجافية المزدوجة ☐ تخدير الحبل الشوكي ☐ تخدير فوق الجافية ☐ تخدير الاعصاب الطرفية ☐ التسكين الدوائي والتنويم العميق ☐ تخدير موضعي . علما بانه قد يتغير نوع التخدير المقترح , ويتحول الى نوع أخر حسب متطلبات العملية وسلامه المريض.
The Anesthetist has fully explained to me the technique and the associated risks (both during the administration of the anesthesia and during the recovery period), benefits and possible alternatives. I have been given an opportunity to ask questions and all of my questions have been answered fully.	لقد شرح لي طبيب التخدير شرحا وافيا عن كيفية التخدير المشار اليه والمخاطر المتعلقة به أثناء إعطاء التخدير وأثناء الإفاقة من التخدير وفوائد التخدير والبدائل الممكنه . ولقد تم إعطائي الفرصة لطرح الإسئلة وتمت الإجابة على اسئلتي بشكل وافي.
The following specific high risks were explained in my case :	لقد شرح لي طبيب التخدير المخاطر المحددة المتعلقة بحالتي التالية : ....

Prevention of aspiration ASA Fasting Guidelines

Clear fluid	**2 hours**	Water , Fruit juice without pulp,
Milk		
Human	**4 hours**	
Infant formula	**6 hours**	
Light Foods	**6 hours**	Fruits , juice with pulp, Vegetables
Heavy foods	**8 hours**	Fatty meals , meats

Premedication

- Anxiolysis
- Prevention of aspiration
- DVT / PE prophylaxis
- Antibiotics prophylaxis

Anxiolysis

- Visit and interview and establishing good rapport with patient.
- Medications:
  - Benzodiazepines:
    - Diazepam,
    - Midazolam: I.V. (shorter acting than Diazepam) (oral liquid form for children)
  - Opioids:
    - Morphine
    - Pethidine

Perioperative Aspiration

- Risk factors:
  - Fasting state: incomplete
  - Surgical condition:
    - Intestinal obstruction
    - Severe Pain
  - Medications: opioid use
  - Patient related
    - Obesity
    - Gastro-esophageal Reflux disease (GERD)
    - Hiatus Hernia
    - Pregnancy

Drugs used to decrease incidence of aspiration

❑H2 Blockers

- Classes include Cimetidine, Ranitidine (Zantac), Famotidine.
  - They block histamine receptor ability to induce acid secretion by proton pump.
    - ➢ they consequently reduce gastric fluid volume and acidity

❑Antacids

- Given ½ an hour before induction : 30 ml of sodium citrate
  - ➢ Reduce gastric acidity only

❑PPI

- Omeprazole, lansoprazole, and esomeprazole .
  - ✓ Binds to H+ / K+ pump on parietal cell.
  - ✓ Given 40 mg IV 30 min before surgery .
  - ✓ Reduce both volume and acidity

❑Metoclopromide

- ➢ Act on dopamine receptors
- ➢ increase gastric motility & lower esophageal sphincter tone
- ➢ Reduce gastric fluid volume only

Risk factors for intraoperative DVT

- History of DVT
- Hypercoagulable states: Antithrombin III defieceincy, Protein C deficiency, Protein S deficiency, Plasminogen activator deficiency.
- Prolonged preoperative immobility.
- Oral contraceptives, pregnancy, post-partum state.
- Long bone fractures.
- Pelvic and lower extremity surgeries.
- Cancer
- Heart failure
- Obesity
- Smoking
- Prolonged surgery
- *Etc. ……*

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AMERICAN SOCIETY OF PLASTIC SURGEONS®

THROMBOSIS RISK FACTOR ASSESSMENT

VTE
ASPS CAMPAIGN FOR AWARENESS

CHOOSE ALL THAT APPLY

EACH RISK FACTOR REPRESENTS 1 POINT

- ❒ Age 41-60 years
- ❒ Minor surgery planned
- ❒ History of prior major surgery (< 1 month)
- ❒ Varicose veins
- ❒ History of inflammatory bowel disease
- ❒ Swollen legs (current)
- ❒ Obesity (BMI > 25)
- ❒ Acute myocardial infarction
- ❒ Congestive heart failure (<1 month)
- ❒ Sepsis (<1 month)
- ❒ Serious lung disease including pneumonia (<1 month)
- ❒ Abnormal pulmonary function (COPD)
- ❒ Medical patient currently at bed rest
- ❒ Other risk factors

_____

EACH RISK FACTOR REPRESENTS 2 POINTS

- ❒ Age 60-74 years
- ❒ Arthroscopic surgery
- ❒ Malignancy (present or previous)
- ❒ Major surgery (> 45 minutes)
- ❒ Laparoscopic surgery (> 45 minutes)
- ❒ Patient confined to bed (> 72 hours)
- ❒ Immobilizing plaster cast (< 1 month)
- ❒ Central venous access

EACH RISK FACTOR REPRESENTS 3 POINTS

- ❒ Age over 75 years
- ❒ History of DVT/PE
- ❒ Family history of thrombosis*
- ❒ Positive Factor V Leiden
- ❒ Positive Prothrombin 20210A
- ❒ Elevated serum homocysteine
- ❒ Positive lupus anticoagulant
- ❒ Elevated anticardiolipin antibodies
- ❒ Heparin-induced thrombocytopenia (HIT)
- ❒ Other congenital or acquired thrombophilia
  If yes:

Type:_____

** most frequently missed risk factor*

EACH RISK FACTOR REPRESENTS 5 POINTS

- ❒ Elective major lower extremity arthroplasty
- ❒ Hip, pelvis or leg fracture (< 1 month)
- ❒ Stroke (< 1 month)
- ❒ Multiple trauma (< 1 month)
- ❒ Acute spinal cord injury (paralysis) (< 1 month)

FOR WOMEN ONLY (EACH REPRESENTS 1 POINT)

- ❒ Oral contraceptives or hormone replacement therapy
- ❒ Pregnancy or postpartum (< 1 month)
- ❒ History of unexplained stillborn infant, recurrent spontaneous abortion ≥3), premature birth with toxemia or growth-restricted infant

TOTAL RISK FACTOR SCORE

2005 Caprini Risk Assessment Model
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Interpretation:

Total Risk Factor Score	Risk Level	DVT Incidence	Prophylaxis Regimen*
0 - 1	Low	<10%	No specific measures; early ambulation
2	Moderate	10 - 20%	ES, IPC, LDUH (5000U BID), or LWMH (<3400 U)
3 - 4	High	20 - 40%	IPC, LDUH (5000U TID), or LMWH (>3400U)
≥5	Highest	40 - 80% with 1 - 5% mortality	Pharmacological: LDUH, LMWH (>3400 U), Warfarin, or FXa I alone or in combination with ES or IP

*Where: ■ ES – elastic stockings ■ IPC – intermittent pneumatic compression ■ LDUH – low dose unfractionated Heparin ■ LMWH – low molecular weight Heparin ■ FXa I – Factor X inhibitor

Antibiotics Prophylaxis

- Prevention of surgical site infection.
- Prevention of infection in immunocompromised patients.
- Best time for administration is 60 minutes before the surgery (better tissue concentration).
  - Two exceptions for this rule
    - Vancomycin: before 2 hours
    - Use of Tourniquet : prior to inflation
- Re-dosing in very long surgeries.

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Prevention of surgical site infection (SSI)

- Choice of antibiotic is surgery dependent, patient dependent (kidney and liver function), and Hospital dependent (specific types of antibiotics depends on presence of local strains of bacteria resistant/susceptible to common antibiotics).

Table 1. Antibiotic Prophylaxis to Prevent Surgical Site Infections

Surgery	*Common pathogens*	*Recommended antimicrobials**
Cardiothoracic	*Staphylococcus aureus,* coagulase-negative staphylococci	Cefazolin, cefuroxime sodium (Zinacef), or vancomycin
Gastrointestinal	Enteric gram-negative bacteria, anaerobes, enterococci	Cefoxitin (Mefoxin), cefotetan (Cefotan), ampicillin/sulbactam (Unasyn), or cefazolin plus metronidazole
Gynecologic (vaginal, abdominal, or laparoscopic hysterectomy)	Enteric gram-negative bacteria, group B streptococci, enterococci, anaerobes	Cefoxitin, cefotetan, cefazolin, or ampicillin/sulbactam
Orthopedic	*S. aureus,* coagulase-negative staphylococci	Cefazolin, cefuroxime sodium, or vancomycin
Vascular	*S. aureus,* coagulase-negative staphylococci, enteric gram-negative bacilli	Cefazolin or vancomycin

**—Antibiotics are given intravenously within one hour before surgery, except for vancomycin or fluoroquinolones (infusion should start one to two hours before incision). Some authors recommend weight-based dosing of cephalosporins and vancomycin: cephalosporins, 1 g for patients weighing < 176 lb (80 kg) and 2 g for patients weighing ≥ 176 lb; vancomycin, 1 g or 15 mg per kg for patients weighing > 165 lb (75 kg) up to a maximum of 1.5 g. Ampicillin/sulbactam should be administered as a standard 3 g dose. Metronidazole can be administered as a 0.5 g to 1.0 g dose. For patients with normal renal function, an additional intraoperative dose of antibiotic can be administered for surgeries lasting more than four hours or if blood loss > 1,500 mL occurs. Redosing intervals should be based on one to two times the half-life of the drug. Vancomycin can be used when methicillin-resistant* S. aureus *or coagulase-negative staphylococci are common causes of postoperative wound infections, for patients allergic to beta-lactam antibiotics, or when clindamycin (Cleocin) is not appropriate therapy. For patients allergic to penicillins and cephalosporins, clindamycin with ciprofloxacin (Cipro), levofloxacin (Levaquin), or aztreonam (Azactam) is a reasonable alternative.*

Information from references 8 and 9.


Thank You!