Preoperative Assessment of Surgical Patients

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Overview

- Introduction.
- Purpose of pre-operative assessment.
- Assessment (History, physical examination).
- Appropriate tests.

Introduction

- The main goal of preoperative assessment is to improve the outcome of surgery and anaesthesia.
- Consultation by an anaesthetist is essential for the medical assessment of a patient prior to anaesthesia for surgery or any other procedure to ensure that the patient is in optimal condition for the procedure.
- Clinical history & examination based assessment has to be carried out initially followed by the appropriate investigations where indicated.

Purpose of pre-operative assessment

This enables the identification of those patients who require:

- Few or no pre op investigations. to reduce the cost on the hospital and health system

- Targeted investigations. for example patient with cardiac problem do ECHO only

- Further assessment or referral after specific investigations if there is any problem in the ECHO we can do further investigations

Objectives of pre -operative assessment

1

1. Identify potential anaesthetic difficulties.

-intubation
-type of anesthesia

2

2. Identify existing medical conditions.

-DM / HTN (controlled or not)
-HF (compensated or not)

3

3. Improve safety by assessing and quantifying risk.

4

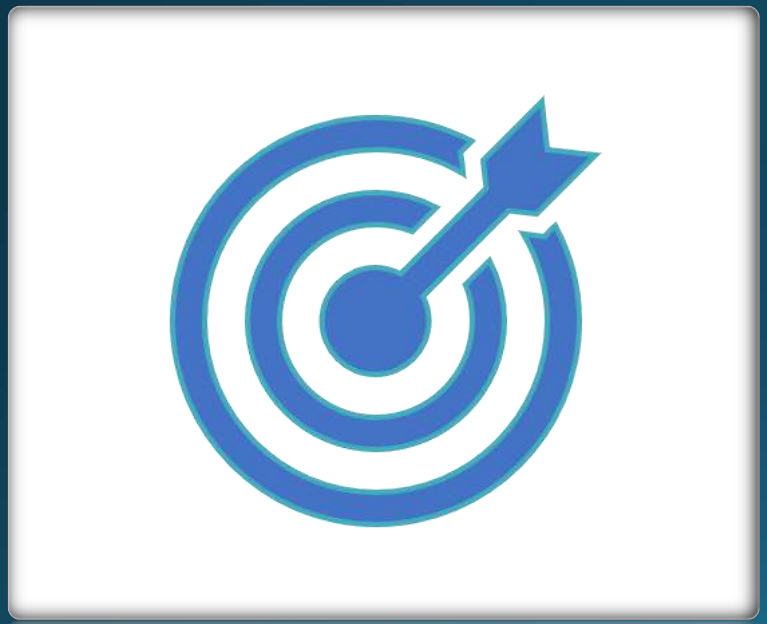
4. Allowing planning of peri -operative care.

-exercises before surgery
- do CATH or angioplasty
- improve nutritional status

5

5. Provide opportunity for explanation and discussion to allay fear and anxiety

The Goal



- The goal of the evaluation of the **healthy patient** is:
-
  - To detect unrecognized disease and risk factors that may increase the risk of surgery above baseline
  - To propose strategies to reduce this risk

The anaesthetic pre- op assessment clinic

- Provides the opportunity for anaesthetist to see patients with potential anaesthetic problems early.
- Should preferably involve a consultant anaesthetist/ a senior medical officer in anaesthesia.
- Should have staff and equipment, facilities for X-ray, ECG, and other pre operative testing

1. Do you usually get chest pain or breathlessness when you climb up two flights of stairs at normal speed
2. Do you have kidney disease
3. Has anyone in your family (blood relatives) had a problem following an anaesthetic
4. Have you ever had a heart attack
5. Have you ever been diagnosed with an irregular heartbeat
6. Have you ever had a stroke
7. If you have been put to sleep for an operation were there any anaesthetic problems
8. Do you suffer from epilepsy or seizures
9. Do you have any problems with pain, stiffness or arthritis in your neck or jaw
10. Do you have thyroid disease
11. Do you suffer from angina
12. Do you have liver disease
13. Have you ever been diagnosed with heart failure
14. Do you suffer from asthma
15. Do you have diabetes that requires insulin
16. Do you have diabetes that requires tablets only
17. Do you suffer from bronchitis


FORUM

Validation of a pre-anaesthetic screening questionnaire

Assessment

for elective or semi elective patient in clinics

for emergency département --> the assessment is ABCDE

History

Physical examination

Investigation

History

- A review of patient's present and past medical and surgical history.
- A review of drugs and anaesthetic related problems in the patient and in the immediate family circle

Age

should not be used as a criteria to guide pre op testing
patient 85 year old may go on major surgery
patient 40 year old with comorbidities may cant go minor surgery

- Much of the risk associated with age is due to increasing numbers of comorbidities (as cognitive or functional impairment, malnutrition, and frailty).

- Age should not be used as the sole criterion to guide preoperative testing or to withhold a surgical procedure.

Famliy History

Malignant Hyperthermia

Pseudo cholinesterase deficiency

Bleeding disorders

Social History

Smoking:

Short term :

Increadesd myocardial oxygen demand and decreased oxygen delivery

Long term:

decreased immune function and decreased clearance

Past medical & surgical Hx

Many diseases have direct effect on general and anesthetic treatment and outcome

Any previous operation or bleeding tendency

Any previous reaction to anaesthetic agent

Drugs and Allergic Hx

interaction with anesthesia (MAOI)

Related with sudden withdrawal(steroids)

Drugs for HTN, IHD to be continued over perioperative period

Anticoagulant drugs (aspirin, warfarin)

HRT

Physical Examnaton

- general examination
- focused examination

- Includes a full physical examination

- Don't rely on the ex. of others. Surgical signs may change and others may miss imp pathology

  "What mind doesn't know, eyes cant see"

- No step is omitted and added advantage of familiarizing what is normal so that abnormalities can be more recognised

- General Ex. Including vitals.
- Cardiac ex. (JVP, HS)
- Respiratory Ex. (trachea, accessory ms, percussion, auscultation)
- Abdominal Ex.
- CNS
- Musculoskeletal system
- Peripheral vasculature
- Local Ex
- Body orifices

Emergency Physical Examination

- The routine examination must be altered to fit the circumstances.
- A,B,C,D,E primary survey
- Secondary survey(head to toe)
- When a number of emergencies present at same time- Triage

Overall risk of surgery

- …is extremely low in healthy individuals

Assessment of risk of surgery

- There are few patients who have no risk for surgery
- It is important to quantify the risks involved so they be discussed with the patients
- Two main prognostic scoring systems which are in current use are

❑ **APACHE SYSTEM**

❑ **ASA SYSTEM**

ASA System

- " American Society of Anaesthesiologist"
- It is very simple and widely accepted
- 50% patients presenting for elective surgery are in ASA Gr I
- Operative mortality rate for these patients is less than 1 in 10,000

ASA Grading and Predictive Mortality

ASA Grade	Definition	Mortality %
I	Normal healthy individual	0.06
II	Mild systemic disease that doesn't limit activity	0.4
III	Severe systemic disease that limits activity	4.5
IV	Severe systemic disease that is constant threat to life	23
V	Moribund, not expected to survive 24hrs with or without surgery	51

we can detect it from the history and PE

Clinical Predictors of increased risk

Major predictors

Acute or recent MI

Unstable or Severe Angina

Strongly positive stress test

Decompensated heart failure

Severe Valvular disease

Significant Arrythmias

Intermediate predictors

Mild angina

Previous MI by history or by Q waves

Compensated heart failure

Diabetes

Renal insufficiency (Cr >2.0)

Minor predictors

Advanced Age

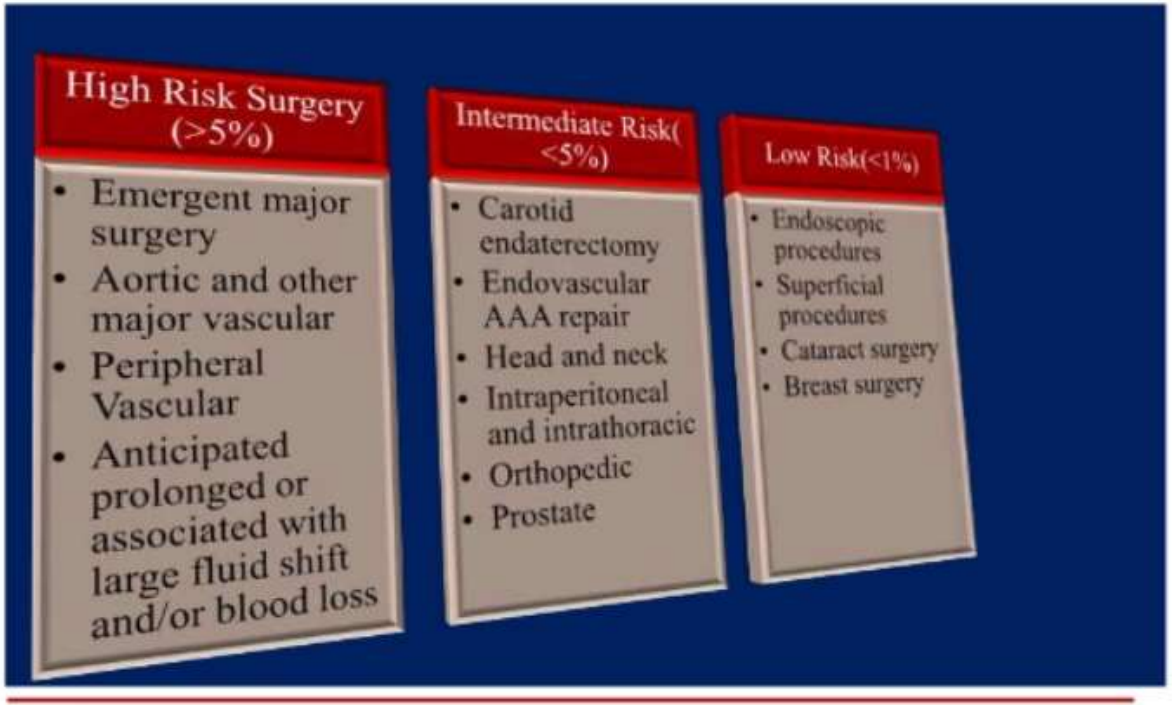
Abnormal ECG(LVH,LBBB,ST changes)

Low functional capacity

h/o of stroke

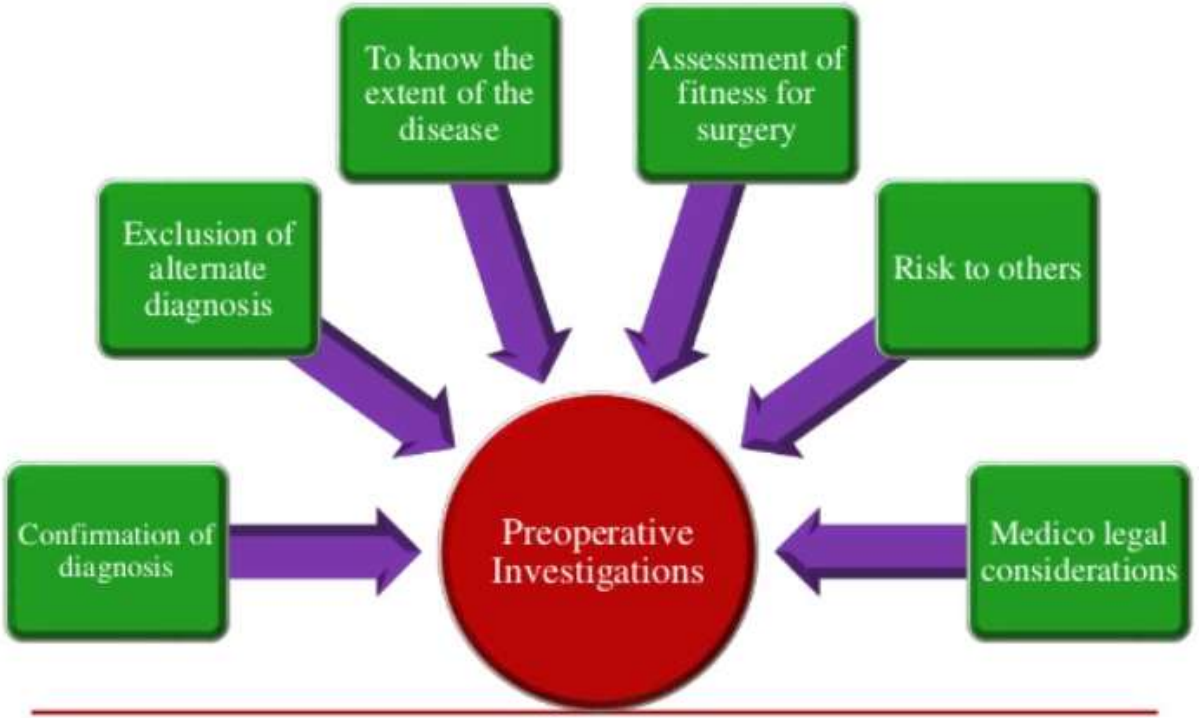
Uncontrolled systemic hypertension

Surgery Related Risk



- Assessment should be completed by classifying the patients according to ASA physical status and grading of surgery so that high risk patients with poor reserves will require consultation with specialists to help optimize the physical status for surgery and anaesthesia.

Preoperative Investigations



Blood tests:

investigations before surgery

- **Full blood count** (when to perform?)
  - All emergency preoperative cases
  - All elective preoperative cases over 60 years
  - All elective preoperative cases in adult females
  - If surgery is likely to result in significant blood loss
  - Suspicion of blood loss, anemia, sepsis, CKD, coagulation problems

due to menstrual cycle cause anemia

Blood tests

- **Urea and electrolytes** (when to perform?)
  - All preoperative cases over 65 years
  - All patients with cardiopulmonary disease or taking diuretics or steroids
  - All patients with h/o renal/liver disease or abnormal nutritional state
  - All patients with h/o diarrhea, vomiting other metabolic/endocrine disease
  - All patients with IVF for more than 24 hrs.

Blood Tests:

- **Amylase:** for acute panceratitis
  - Perform in all adult emergency admissions with abdominal pain, prior to consideration of surgery

- **Random Blood Glucose:** part of kidney function test
  - Acute abdomen suspect keto acidosis (DKA)
  - Elective cases with DM, malnutrition, obesity
  - Elective cases over 60

obese patient have source of glucose impairment metabolism

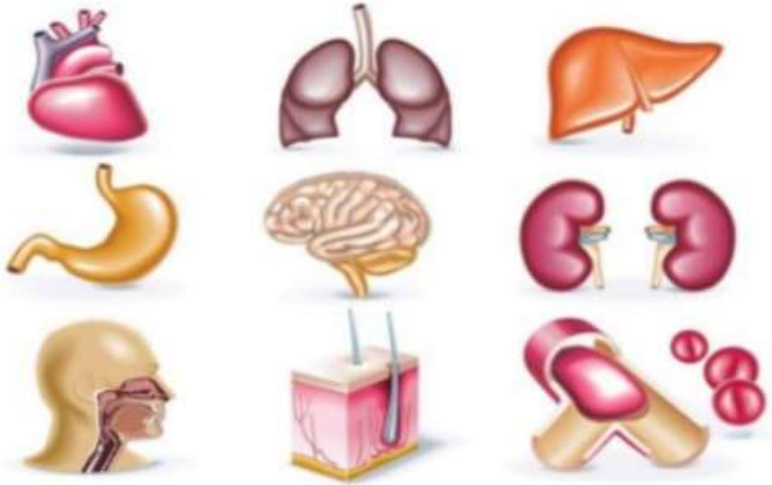
- **Coagulogram studies:**

cause liver damage

  - h/o of bleeding disorder, liver disease or excessive alcohol use
  - Patients receiving anticoagulants(PT/INR done on the morning of surgery for patients instructed to discontinue warfarin)
  - Cardiothoracic surgery
  - Vascular surgery
  - Angiographic procedures
  - Craniotomy procedures

- **Liver function tests**
  - All patients with upper abdominal pain, jaundice, hepatic disease
  - Alcoholic
  - Screening for Hepatitis B and Hepatitis C
- **Blood group/ cross match**
  - Emergency preoperative case
  - Suspicion of blood loss, anemia, coagulation defects
  - Procedure on pregnant ladies

- **Chest X-ray:**
  - All elective preoperative cases over 60 years
  - All cases of cervical, thoracic or abdominal trauma
  - Acute respiratory symptoms or signs — reactive respiratory disease / COPD / pneumonia
  - Previous CRD or no recent CXR
  - Thoracic surgery
  - Malignant disease — for metastasis
  - Viscous perforation — air under diaphragm (to know the diagnosis) to know the underlaying cause of perforation
  - Recent h/o TB
  - Thyroid enlargement — to see the retrosternal extension of the thyroid



SYSTEM WISE APPROACH TO PREOPERATIVE EVALUATION

CARDIOVASCULAR SYSTEM

- The contribution of cardiovascular disease to perioperative mortality in noncardiac surgery is significant
- In US, about 30% of patients undergoing surgery have significant coronary artery disease or other cardiac co morbid condition
- Much of the preoperative risk assessment and patient preparation centers on cardiovascular disease

Cardiac Risk Indices

- Various assessment tools for stratification of the cardiovascular portion of anesthetic risk have been devised:

❑ **Goldman Cardiac Risk Index, 1977**

❑ Detsky Modified Multifactorial Index. 1986

❑ Eagle's Criteria for Cardiac Assess,ent,1989

❑ **Revised Cardiac Risk Index**

Goldman Cardiac Risk Index

•Third heart sound or jugular venous distension	11
•Recent myocardial infarction	10
•Nonsinus rhythm or premature atrial contraction on ECG	7
•>5 premature ventricular contractions	7
•Age >70 yrs	5
•Emergency operations	4
•Poor general medical condition	3
•Intrathoracic, intraperitoneal or aortic surgery	3
•Important valvular aortic stenosis	3

Cardiac complication rate

0-5 points = 1%

6-12 points = 7%

13-25 points = 14%

>26 points = 78%

Revised Cardiac Risk Index

•Ischemic heart disease	1
•Congestive heart failure	1
•Cerebral vascular disease	1
•High risk surgery	1
•Preoperative insulin treatment of diabetes	1
•Preoperative creatinine level >2 mg/dl	1

Each increment in points increases risk for postoperative myocardial morbidity

- A joint committee of ACC and AHA have developed a stepwise approach to preoperative cardiac assessment for non cardiac surgery

- This methodology takes into account:
  - Previous coronary revascularization
  - Clinical risk assessment: major, intermediate, minor
  - Functional capacity

- Surgeon and the consultants
  - weigh the benefits vs. risk of the procedure
  - whether the perioperative intervention is beneficial

- Perioperative intervention includes:
  - Coronary revascularization (bypass or percutaneous transluminal angioplasty)
  - Modification of choice of anesthetic
  - Invasive intraoperative monitoring

- Patients having PCI with stenting should defer the elective procedure **for 4 – 6 weeks** (or less depending on the type of stent)

- **In case of MI, elective surgery should be postponed for 4-6 weeks**

- Medical therapy with beta blockers have been recommended as per ACC/AHA guidelines:

on PE
-Hip-waist ratio
-triceps fold
-loss fat on the checks
- ascites / liver disease
-BMI =(weight / high)
- poor wound healing
-respiratory and GI systems complications

Nutritional assesment

- Malnutrition increases increases risk of
  - morbidity, wound infection, sepsis, pneumonia, delayed wound healing, anasmotic complication.
- Assesment include careful history and examination.
- Usual weight, recent wt loss, loss of muscle bulk, change in bowel habit.
- IBS,DM,bulmia and anorexia nervosa.
- **Nutritional risk assesement (15.19x sr albumin g/dl+41.7x present wt/usaual weight.**
- NRI < 83% indicates increased mortality.

on investigation
- compromised immune system
-albumin / pre albumin
-WBCs

Thank you