





PREOPERATIVE EVALUATION


Dr.Milad Minagar

Fellowship of Neuroanesthesia

- 
- 
- The anesthesia preoperative evaluation, which is the clinical foundation for guiding perioperative patient management, reduces perioperative morbidity and enhances patient outcome




The fundamental purpose of preoperative evaluation is to obtain:

- ▶ Patient's medical history
 - ▶ Formulate an assessment of the patient's perioperative risk
 - ▶ Develop a plan for any requisite clinical optimization
- 






The preanesthesia evaluation should include:



- ▶ Focused clinical examination
 - ▶ Documentation of comorbid illness
 - ▶ Reduction of patients' anxiety through education
 - ▶ Assurance that preexisting medical conditions are optimally managed
 - ▶ Selective referrals to medical specialists
 - ▶ Ordering of preoperative investigations
 - ▶ Initiation of interventions intended to decrease risk
 - ▶ Discussion of aspects of perioperative care
 - ▶ Arrangements for appropriate postoperative care
 - ▶ Recommendations to delay or cancel the surgical procedure
- 



The anesthesiologist-led preoperative evaluation:

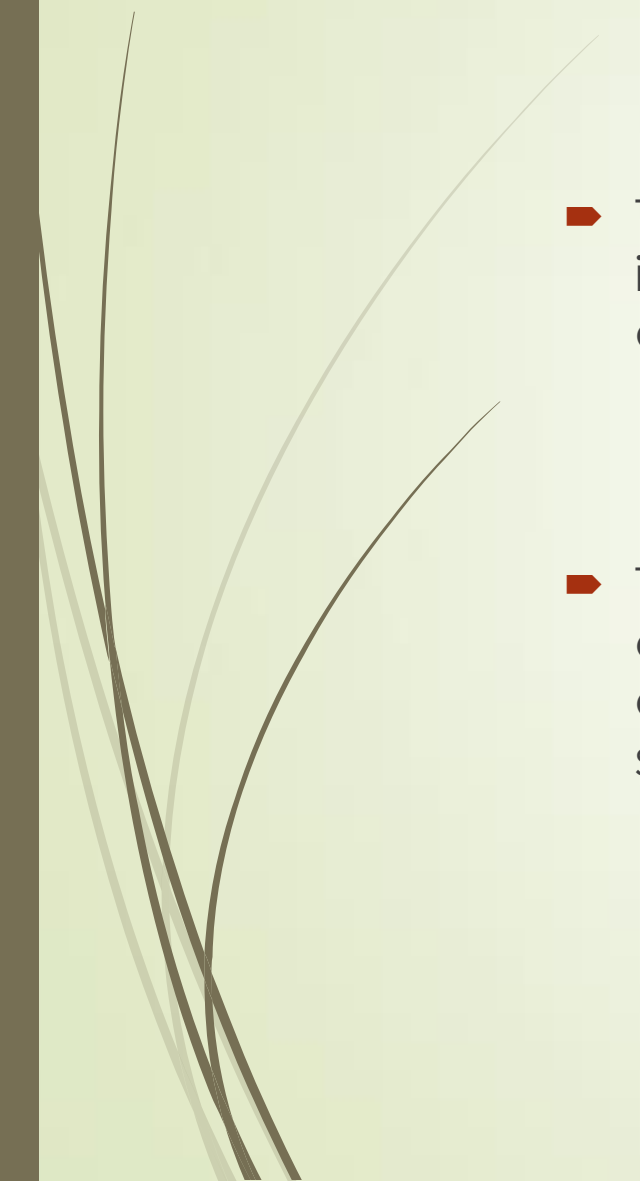
- ▶ Enhance operating room efficiency
 - ▶ Decrease day-of-surgery cancellations or delays
 - ▶ Reduce hospital costs
 - ▶ Enhance the quality of patient care
- 

- 
- 
- ▶ The anesthesiologist is the perioperative medical specialist and thus is uniquely positioned to **evaluate the risks associated with anesthesia or surgery**, discuss these risks with the patient, and manage them perioperatively in collaboration with the surgical team, referring physician, and other medical specialists.

- 
- 
- ▶ Compared to preoperative evaluations performed by surgeons or primary care physicians alone, anesthesiologist-led preoperative evaluation is associated with more selective ordering of laboratory tests and referral to specialists, thereby leading to reduced healthcare costs.
 - ▶ Within the context of an anesthesiologist-led preoperative evaluation clinic, preanesthesia evaluations also associated with reduced anxiety, improved acceptance of regional anesthesia, fewer day-of-surgery case cancellations, shorter hospital length-of-stay, and lower hospital costs.



Clinical Examination During Preoperative Evaluation

- ▶ The clinical examination, consisting of the history and physical examination, is a fundamental component of preoperative evaluation by anesthesiologists.
 - ▶ The baseline clinical examination of all surgical patients should include a consistent set of components, with opportunities for more detailed examination of one or more of these components (e.g., cardiovascular system) based on the findings from the standardized initial examination.
- 

COMPONENTS OF THE MEDICAL HISTORY

Patient's name _____ Age _____ Sex _____ Date of surgery _____

Planned operation _____ Surgeon _____

Primary care doctor/phone # _____ Other physicians/phone #s _____

1. Please list **all operations** (and approximate dates)

- a. _____ d. _____
 b. _____ e. _____
 c. _____ f. _____

2. Please list any **allergies** to medicines, latex, or other (and your reactions to them)

- a. _____ c. _____
 b. _____ d. _____

3. Please list **all medications** you have taken in the last month (include over-the-counter drugs, inhalers, herbals, dietary supplements, and aspirin)



Name of Drug	Dose and How Often	Name of Drug	Dose and How Often
a. _____	_____	f. _____	_____
b. _____	_____	g. _____	_____
c. _____	_____	h. _____	_____
d. _____	_____	i. _____	_____
e. _____	_____	j. _____	_____

(Please check YES or NO and circle specific problems)

- | | YES | NO |
|--|--------------------------|--------------------------|
| 4. Have you taken steroids (prednisone or cortisone) in the last year? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Have you <i>ever</i> smoked? (Quantify in _____ packs/day for _____ years) | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you still smoke? | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you drink alcohol? (If so, how much?) _____ | <input type="checkbox"/> | <input type="checkbox"/> |
| Do you use or have you ever used any illegal drugs? (we need to know for your safety) | <input type="checkbox"/> | <input type="checkbox"/> |
| 6. Can you walk up one flight of stairs without stopping? | <input type="checkbox"/> | <input type="checkbox"/> |
| 7. Have you had any problems with your heart? (circle) (chest pain or pressure, heart attack, abnormal ECG, skipped beats, heart murmur, palpitation, heart failure [fluid in the lungs], require antibiotics before routine dental care) | <input type="checkbox"/> | <input type="checkbox"/> |
| 8. Do you have high blood pressure? | <input type="checkbox"/> | <input type="checkbox"/> |
| 9. Have you had any problems with your lungs or your chest? (circle) (shortness of breath, emphysema, bronchitis, asthma, TB, abnormal chest x-ray) | <input type="checkbox"/> | <input type="checkbox"/> |
| 10. Are you ill now or were you recently ill with a cold, fever, chills, flu or productive cough? | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe recent changes _____ | | |

(Please check YES or NO and circle specific problems)

- | | YES | NO |
|--|--------------------------|--------------------------|
| 11. Have you or anyone in your family had serious bleeding problems? (circle) (prolonged bleeding from nosebleed, gums, tooth extractions, or surgery) | <input type="checkbox"/> | <input type="checkbox"/> |
| 12. Have you had any problems with your blood (anemia, leukemia, sickle cell disease, blood clots, transfusions)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 13. Have you ever had problems with your: (circle) | <input type="checkbox"/> | <input type="checkbox"/> |
| Liver (cirrhosis, hepatitis, jaundice)? | <input type="checkbox"/> | <input type="checkbox"/> |
| Kidney (stones, failure, dialysis)? | <input type="checkbox"/> | <input type="checkbox"/> |
| Digestive system (frequent heartburn, hiatus hernia, stomach ulcer)? | <input type="checkbox"/> | <input type="checkbox"/> |
| Back, neck or jaws (TMJ, rheumatoid arthritis)? | <input type="checkbox"/> | <input type="checkbox"/> |
| Thyroid gland (underactive or overactive)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 14. Have you ever had: (circle) | <input type="checkbox"/> | <input type="checkbox"/> |
| Seizures, epilepsy, or fits? | <input type="checkbox"/> | <input type="checkbox"/> |
| Stroke, facial, leg or arm weakness, difficulty speaking? | <input type="checkbox"/> | <input type="checkbox"/> |
| Cramping pain in your legs with walking? | <input type="checkbox"/> | <input type="checkbox"/> |
| Problems with hearing, vision or memory? | <input type="checkbox"/> | <input type="checkbox"/> |
| 15. Have you ever been treated for cancer with chemotherapy or radiation therapy? (circle) | <input type="checkbox"/> | <input type="checkbox"/> |
| 16. Women: Could you be pregnant? | <input type="checkbox"/> | <input type="checkbox"/> |
| Last menstrual period began: _____ | | |
| 17. Have you ever had problems with anesthesia or surgery? (circle) (severe nausea or vomiting, malignant hyperthermia [in blood relatives or self], prolonged drowsiness, anxiety, breathing difficulties, or problems during placement of a breathing tube) | <input type="checkbox"/> | <input type="checkbox"/> |
| 18. Do you have any chipped or loose teeth, dentures, caps, bridgework, braces, problems opening your mouth, swallowing or choking? (circle) | <input type="checkbox"/> | <input type="checkbox"/> |
| 19. Do your physical abilities limit your daily activities? | <input type="checkbox"/> | <input type="checkbox"/> |
| 20. Do you snore? | <input type="checkbox"/> | <input type="checkbox"/> |
| 21. Please list any medical illnesses not noted above: | | |
| _____ | | |
| _____ | | |
| _____ | | |
| 22. Additional comments or questions for nurse or anesthesiologist? | | |
| _____ | | |
| _____ | | |

- 
- 
- ▶ The **assessment of the patient's cardiopulmonary fitness or functional capacity** is an integral component of the preoperative clinical examination.
 - ▶ This information is typically used to **estimate a patient's risk for major postoperative morbidity or mortality**, and to determine whether further preoperative testing is required.
 - ▶ **Poor exercise capacity and cardiopulmonary disease have a bidirectional relationship.** Specifically, lack of exercise may increase the risk of developing cardiopulmonary disease but preexisting cardiopulmonary disease can also prevent an individual from exercising.




- 
- 
- ▶ Anesthesiologist will inquire about a **patient's general activity** levels during the preoperative interview, and on that basis, make a subjective **assessment of the patient's functional capacity**.
 - ▶ Functional capacity is typically quantified in using the **metabolic equivalent of task (MET)**, where one MET is approximately the rate of energy consumption at rest (3.5 mL/kg/min).

TABLE 31.1 Metabolic Equivalents* of Functional Capacity

METs	Equivalent Level of Exercise
1	Eating, working at computer, or dressing
2	Walking down stairs or in your house, or cooking
3	Walking 1 or 2 blocks on level ground
4	Raking leaves, gardening
5	Climbing 1 flight of stairs, dancing, or bicycling
6	Playing golf, or carrying clubs
7	Playing singles tennis
8	Rapidly climbing stairs, or jogging slowly
9	Jumping rope slowly, or moderate cycling
10	Swimming quickly, running or jogging briskly
11	Skiing cross country, or playing full-court basketball
12	Running rapidly for moderate to long distances

*One metabolic equivalent of task (MET) is the amount of oxygen consumed while sitting at rest, and is equivalent to an oxygen consumption of 3.5 mL/min/kg body weight.




There are important limitations to the usual clinical approach for this integral component of the preoperative evaluation.

- ▶ First, subjective assessment does not accurately estimate the patient's true exercise capacity.
- ▶ Second, subjective assessment has generally shown poor performance in predicting postoperative morbidity and mortality.
- ▶ To improve preoperative evaluation of functional capacity, anesthesiologists should consider instead using structured questionnaires, such as the **Duke Activity Status Index (DASI)**.

TABLE 31.2 Duke Activity Specific Index questionnaire

Can You	Points
1. Take care of yourself, that is, eat dress, bathe, or use the toilet?	2.75
2. Walk indoors, such as around your house?	1.75
3. Walk 200 yards on level ground?	2.75
4. Climb a flight of stairs or walk up a hill?	5.50
5. Run a short distance?	8.00
6. Do light work around the house like dusting or washing dishes?	2.70
7. Do moderate work around the house like vacuuming, sweeping floors, or carrying groceries?	3.50
8. Do heavy work around the house like scrubbing floors or lifting or moving heavy furniture?	8.00
9. Do yard work like raking leaves, weeding, or pushing a power mower?	4.50
10. Have sexual relations?	5.25
11. Participate in moderate recreational activities like golf, bowling, dancing, doubles tennis, or throwing a ball?	6.00
12. Participate in strenuous sports like swimming, singles tennis, football, basketball, or skiing?	7.50

Total score:

- 
- ▶ This 12-item self-administered questionnaire about activities of daily living has demonstrated correlation with gold-standard measures of functional capacity in surgical patients.
 - ▶ Furthermore, DASI scores have been shown to improve prediction of postoperative cardiac complications following noncardiac surgery.
 - ▶ While there is some varying opinion as to how DASI scores should be converted to METs, the original formula is presented below:

$$\text{Estimated METS} = \frac{(0.43 \times \text{DASI score}) + 9.6}{3.5}$$

Preoperative Risk Assessment

- ▶ The most commonly used method by anesthesiologists to assess overall perioperative risk is the **ASA-PS classification system**.

TABLE 31.19 American Society of Anesthesiologists Physical Status Classification

Category*	Definition
ASA-PS 1	A normal, healthy patient
ASA-PS 2	A patient with mild systemic disease
ASA-PS 3	A patient with severe systemic disease
ASA-PS 4	A patient with severe systemic disease that is a constant threat to life
ASA-PS 5	A moribund patient who is not expected to survive without the operation
ASA-PS 6	A declared brain-dead patient whose organs are being removed for donor purposes

*The addition of "E" to the classification category indicates emergency surgery.


- 
- ▶ The ASA-PS classification system seeks to describe a patient's preoperative medical status, but it does not consider risks inherent to the planned surgical procedure.
 - ▶ In addition to patients' preoperative medical status, which is described by the ASA-PS system, the operative procedure is an important determinant of perioperative risk.
 - ▶ Ambulatory surgical procedures are very safe with respect to risks of postoperative mortality and major adverse events.
 - ▶ Classification schemes have been proposed for assessing operative risk, such as the Johns Hopkins risk classification system, elevated surgical risk category in the Revised Cardiac Risk Index.

TABLE 31.5 Components of the Revised Cardiac Risk Index and Expected Cardiac Event Risk

Components of Revised Cardiac Risk Index*	Points Assigned
High-risk surgery (intraoperative, intrathoracic, or suprainguinal vascular procedure)	1
Ischemic heart disease (by any diagnostic criteria)	1
History of congestive heart failure	1
History of cerebrovascular disease	1
Diabetes mellitus requiring insulin	1
Creatinine > 2.0 mg/dL (176 μmol/L)	1
Revised Cardiac Risk Index Score	Risk of Major Cardiac Events^{†,‡}
0	0.4%
1	1.0%
2	2.4%
≥3	5.4%

TABLE 31.20 Johns Hopkins Surgery Risk Classification System

Category	Description
1	Minimal risk to the patient independent of anesthesia. Minimally invasive procedure with little or no blood loss. Procedures are often done in an office setting, with the operating room used principally for anesthesia and monitoring.
2	Minimal to moderately invasive procedure, with expected blood loss not exceeding 500 mL. Mild risk to patient independent of anesthesia.
3	Moderately to significantly invasive procedure, with expected blood loss of 500-1500 mL. Moderate risk to patient independent of anesthesia.
4	Highly invasive procedure, with expected blood loss exceeding 1500 mL. Major risk to patient independent of anesthesia.
5	Highly invasive procedure, with expected blood loss exceeding 1500 mL. Critical risk to patient independent of anesthesia. Usually requires postoperative critical care unit stay with invasive monitoring.



Thanks!