

Preoperative evaluation: “A Systematic approach”



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- A 50-year-old woman with a 2 cm. thyroid nodule is scheduled for an elective thyroidectomy next week.
 - How will you assess her perioperative risks?
 - What kind of laboratory tests should you order preoperatively?
 - How will you prepare this patient for an operation?



Preoperative evaluation & preparation :

- A 50-year-old woman with a 2 cm. thyroid nodule is scheduled for an elective thyroidectomy next week.

How will you assess her perioperative risks?

“Relevant information”

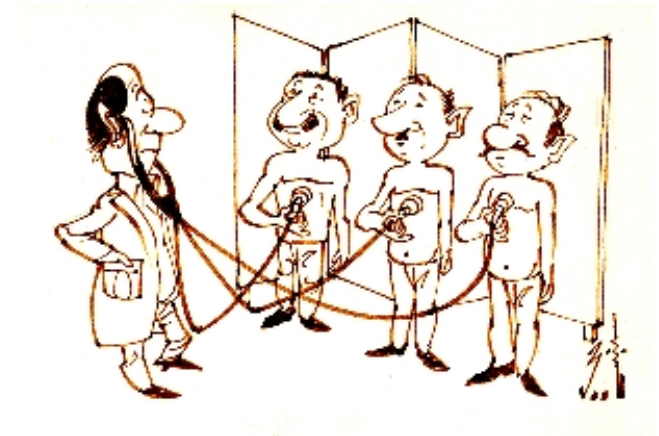




Preoperative evaluation & preparation :

General Approach:

- History taking
- Physical examination
- Medical review



Relevant information

- Laboratory test



ASA Classification

MR

Class I	A normal healthy individual	0.1
Class II	A patient with mild systemic disease	0.2
<hr/>		
Class III	A patient with severe systemic disease that is not incapacitating	1.8
Class IV	A patient with incapacitating systemic disease that is constant treat to life	7.8
Class V	A moribund patient who is not expected to survive 24 h with or without operation	9.4
Class VI	Organ donor subject	

E added as a suffix for emergency situation



Preoperative features associated with perioperative complication & mortality

Demographic /Surgical	Physiological	Laboratory
Age > 70 yrs	Dyspnea at rest or on minimal exertion	Plasma Urea > 20 mmol /L
Smoking	MI < 6 months previously	Serum albumin < 30 g/L
Diabetes	Cardiac symptom requiring medical treatment	Hemoglobin < 10 g/dL
Cytotoxic /Corticsteroid	Confusional state	
Major thoracic, abdominal or CVS surgery	Clinical jaundice	
Intestinal obstruction	Sig. wt. loss (> 10%) in 1 month	
Perforated viscus, pancreatitis , intraperitoneal abscess	Productive cough with sputum, esp. If persistent	
Palliative surgery	Hemorrhage or anemia requiring transfusion	



Preoperative evaluation & preparation :

- A 50-year-old woman with a 2 cm. thyroid nodule is scheduled for an elective thyroidectomy next week.

How will you assess her perioperative risks?

- Patient risk

General assessment: ASA Class: I-II

Specific assessment: Thyroid function
Airway problem

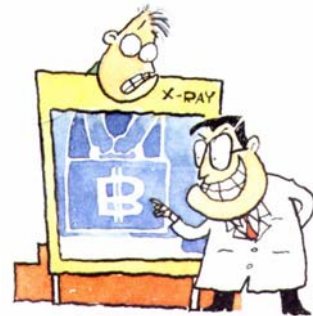
- Surgical risk



Preoperative evaluation & preparation :

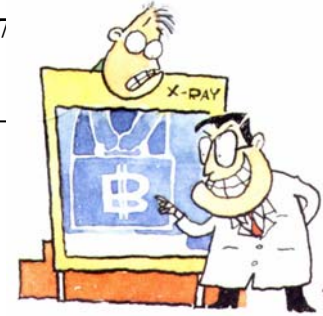
- A 50-year-old woman with a 2 cm. thyroid nodule is scheduled for an elective thyroidectomy next week.

What laboratory tests be ordered preoperatively?



ASA PRACTICE ADVISORY FOR PREANESTHESIA EVALUATION

(Approved by House of Delegates on October 14, 1987
and last amended on October 15, 2003)



Anesthesiology 2002; 96:485-496

Preoperative tests, be indicated including but not limited to:

- 1) discovery or identification of a disease or disorder
- 2) verification or assessment of an already known disease or disorder
- 3) formulation of specific plans and alternatives for perioperative care.

~~Routine
test~~

No routine laboratory is necessary
for the preanesthetic evaluation of patients.

Routine refers to a policy of performing a test or tests
without regard to clinical indications in an individual patient

PRACTICE ADVISORY FOR PREANESTHESIA EVALUATION

(Approved by ASA the House of Delegates on October 17, 2001)

Who ? For selected preoperative test

ECG : Advanced age, CVS disease, Respiratory disease

Chest X-ray : Smoking, COPD, Cardiac disease,
Recent respiratory infection

Serum chemistries : Endocrine disorders, Medications,
Renal dysfunction

Hb/Hct : Advanced age, Very young age, Anemia



ง. ข้อแนะนำการส่งตรวจห้องปฏิบัติการ (Screening laboratory tests)*

- * 1. การส่งตรวจห้องปฏิบัติการนี้เป็นเพียงแนวแนะนำ เพื่อตรวจหาความผิดปกติก่อนการผ่าตัดที่อาจพบได้ โดยมีข้อมูลจากประวัติและการตรวจร่างกายเป็นข้อบ่งชี้ มิได้มีจุดประสงค์เพื่อการวินิจฉัยโรคที่ผู้ป่วยมารับการผ่าตัด
2. ไม่จำเป็นต้องส่งตรวจห้องปฏิบัติการใหม่ ถ้าผลการตรวจอยู่ใน ระยะเวลา 3 เดือน ที่ผ่านมา โดยไม่มีข้อบ่งชี้ หรือไม่คาดว่าจะมีการเปลี่ยนแปลง

	CBC	CXR	EKG	E'lytes	BUN ,Cr	BS	Coag	LFTs	Others
<input type="checkbox"/> 1. อายุ \leq 45 ปี แข็งแรง ไม่มี โรคประจำตัว	✓								
<input type="checkbox"/> 2. อายุ $>$ 45 ปี แข็งแรง ไม่มีโรคประจำตัว	✓	✓	✓						
<input type="checkbox"/> 3. อายุ $>$ 60 ปี แข็งแรง ไม่มีโรคประจำตัว	✓	✓	✓	✓	✓	✓			
<input type="checkbox"/> 4. ผู้ป่วยที่มารับการผ่าตัดใหญ่ *	✓	✓	✓	✓	✓	✓			
<input type="checkbox"/> 5. มีประวัติเลือดออกง่าย หรือ ได้รับยากันเลือดแข็ง							✓		
<input type="checkbox"/> 6. ผู้ป่วยโรคตับ							✓	✓	
<input type="checkbox"/> 7. การส่งตรวจอื่นๆตามข้อบ่งชี้									

* การผ่าตัดใหญ่ หมายถึงการผ่าตัดที่มีระยะเวลานาน \geq 3 ชม. หรือ การผ่าตัดที่มีการเสี่ยงต่อการเกิดภาวะแทรกซ้อน



Preoperative evaluation & preparation :

- A 50-year-old woman with a 2 cm. thyroid nodule is scheduled for an elective thyroidectomy next week.

How will you prepare this patient for an operation?

Physical / Physiological preparation

Mental Preparation



Preoperative evaluation & preparation :

- **Establish doctor-patient relationship**
- History taking & physical examination
- Laboratory investigation
- Risks of anesthesia & surgery
- Preoperative management
& consultations with other specialists
- **Premedication & Surgical/ Anesthetic plan**
- **Informed consent**

Preoperative evaluation & Preparation: “A Systematic approach”

“The very first step to succeed”





- A 65-year-old woman with aortic stenosis with a history of chest pain on exertion for 2 months is scheduled for a total knee replacement of right knee.
 - Is it safe to operate on this patient?
 - How should we prepare this patient for an operation?



- A 65-year-old woman with aortic stenosis with a history of chest pain on exertion for 2 months is scheduled for a total knee replacement of right knee.

Is it safe to operate on this patient?





Perioperative Cardiac Evaluation & Care for Noncardiac Surgery

Multifactorial index of cardiac risk in noncardiac surgery.

(Goldman L et al, N Eng Med J 1977; 297:845.)

Multifactorial cardiac risk index of Detsky and colleagues.

(Detsky AS. et al . Arch Intern Med 1986; 146:2131.)

ACC/AHA guidelines:

Perioperative CVS evaluation for noncardiac surgery.

(original version 1996, update 2002, revised 2007.)





ACC/AHA 2007 Guideline

- **Clinical predictor**
(Active Cardiac condition/
Clinical risk factors)
- **Surgical risk**
- **Functional capacity**



ACC/AHA 2007 Guideline

Active Cardiac conditions:

Condition	Examples
Unstable coronary syndrome	Unstable or severe angina (CCS class III or IV) Recent MI
Decompensated HF (NYHA IV)	
Significant arrhythmias	High grade AV block Symp. ventricular arrhythmias Supravent. Arrhythmias with uncontrolled rate Symp. Bradycardia
Severe valvular HD	Severe Aortic stenosis Symp. Mitral stenosis



ACC/AHA 2007 Guideline

Canadian Heart Association angina classification:

Class I	Ordinary physical activity,
Class II	Slight limitation of ordinary activity..
Class III	Marked limitation of ordinary physical activity.
Class IV	Inability to carry on any physical activity without discomfort – anginal syndrome may be present at rest.



Surgical risk

High risk

Vascular : Aortic & other major vascular surgery
Peripheral vascular surgery

Intermediate risk

Intraperitoneal and intrathoracic surgery
Carotid endarterectomy
Head and neck surgery
Orthopedic & Prostate surgery

Low risk

Endoscopic & Superficial procedures,
Cataract surgery, Breast surgery
Ambulatory surgery



Functional capacity

Table 2. Estimated Energy Requirements for Various Activities*

1 MET	Can you take care of yourself? Eat, dress, or use the toilet? Walk indoors around the house? Walk a block or two on level ground at 2 to 3 mph or 3.2 to 4.8 km per h?	4 METs	Climb a flight of stairs or walk up a hill? Walk on level ground at 4 mph or 6.4 km per h? Run a short distance?
↓	Do light work around the house like dusting or washing dishes?	↓	Do heavy work around the house like scrubbing floors or lifting or moving heavy furniture?
4 METs		↓	Participate in moderate recreational activities like golf, bowling, dancing, doubles tennis, or throwing a baseball or football?
		↓	Participate in strenuous sports like swimming, singles tennis, football, basketball, or skiing?
		Greater than 10 METs	

MET indicates metabolic equivalent.

*Adapted from the Duke Activity Status Index (7) and AHA Exercise Standards (27).

ACC/AHA guidelines

Functional capacity

(metabolic equivalent (MET) levels)

(1 MET = O₂ consumption in a resting state/min.)

excellent : (> 10 METs)

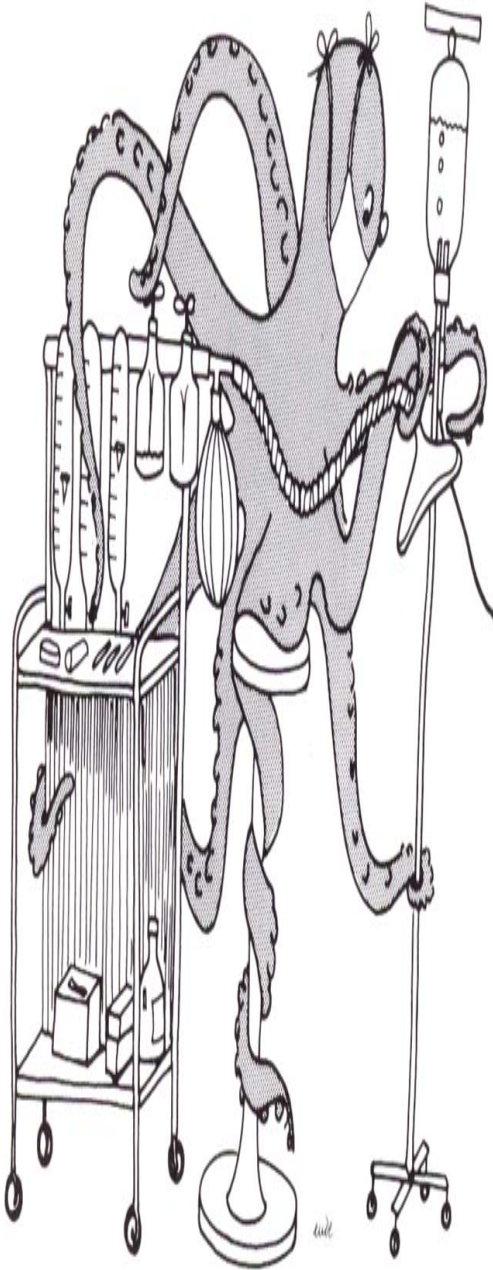
good : (7-10 METs)

moderate : (4-7 METs)

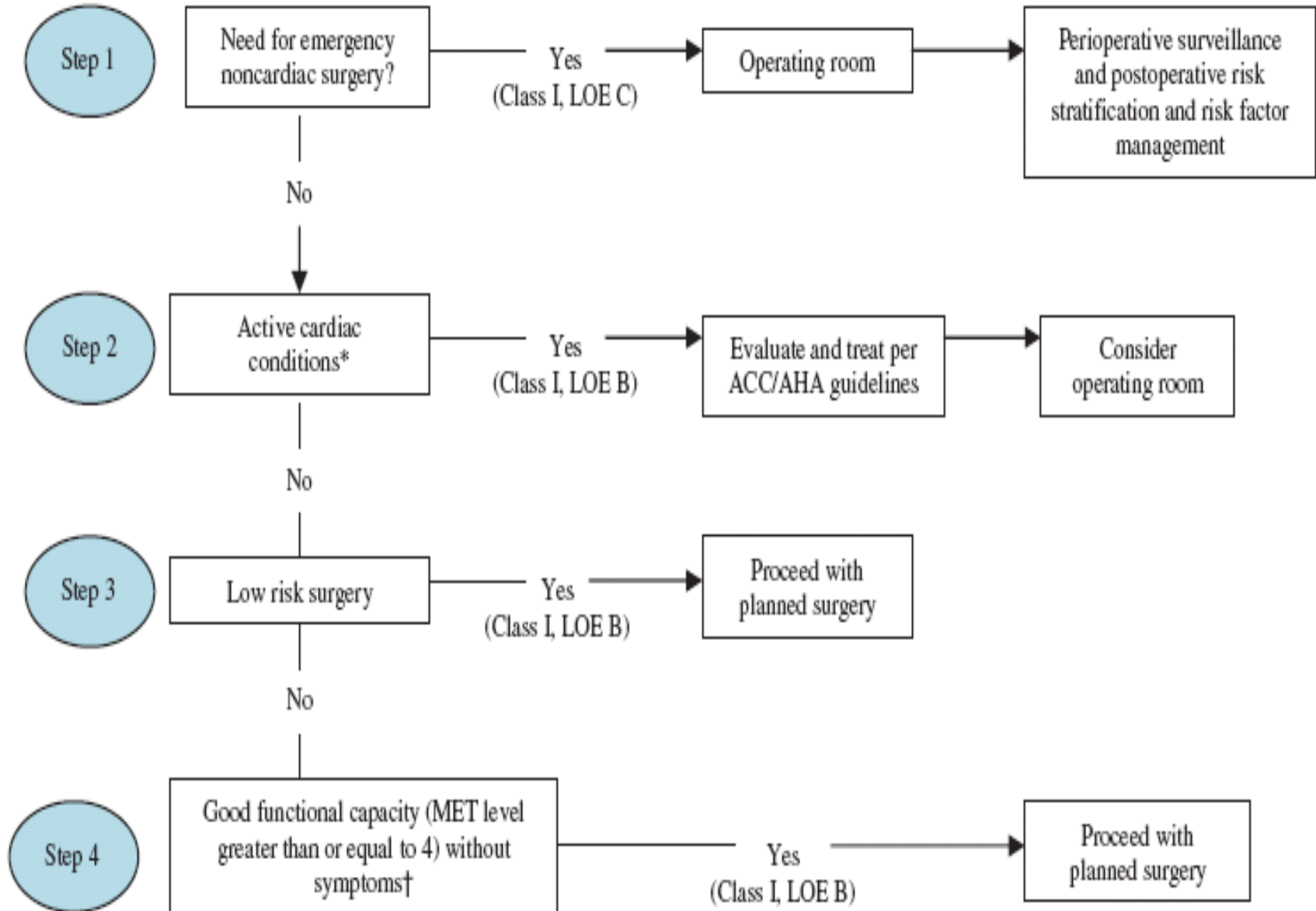
poor (< 4 METs):

unknown

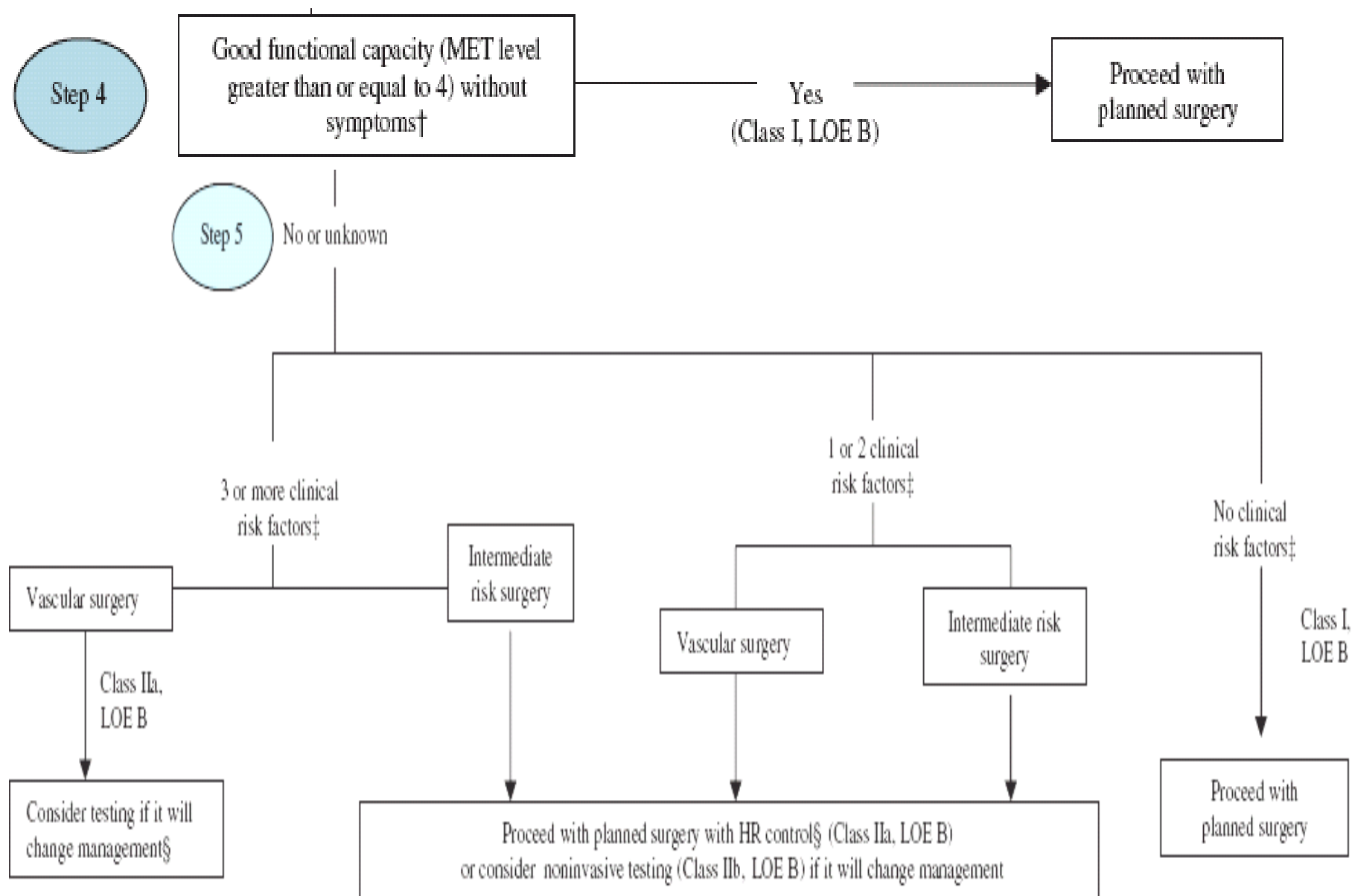
*Perioperative cardiac & long term risks
are increased in patients who are unable
to meet a 4-METs demand during daily activities*



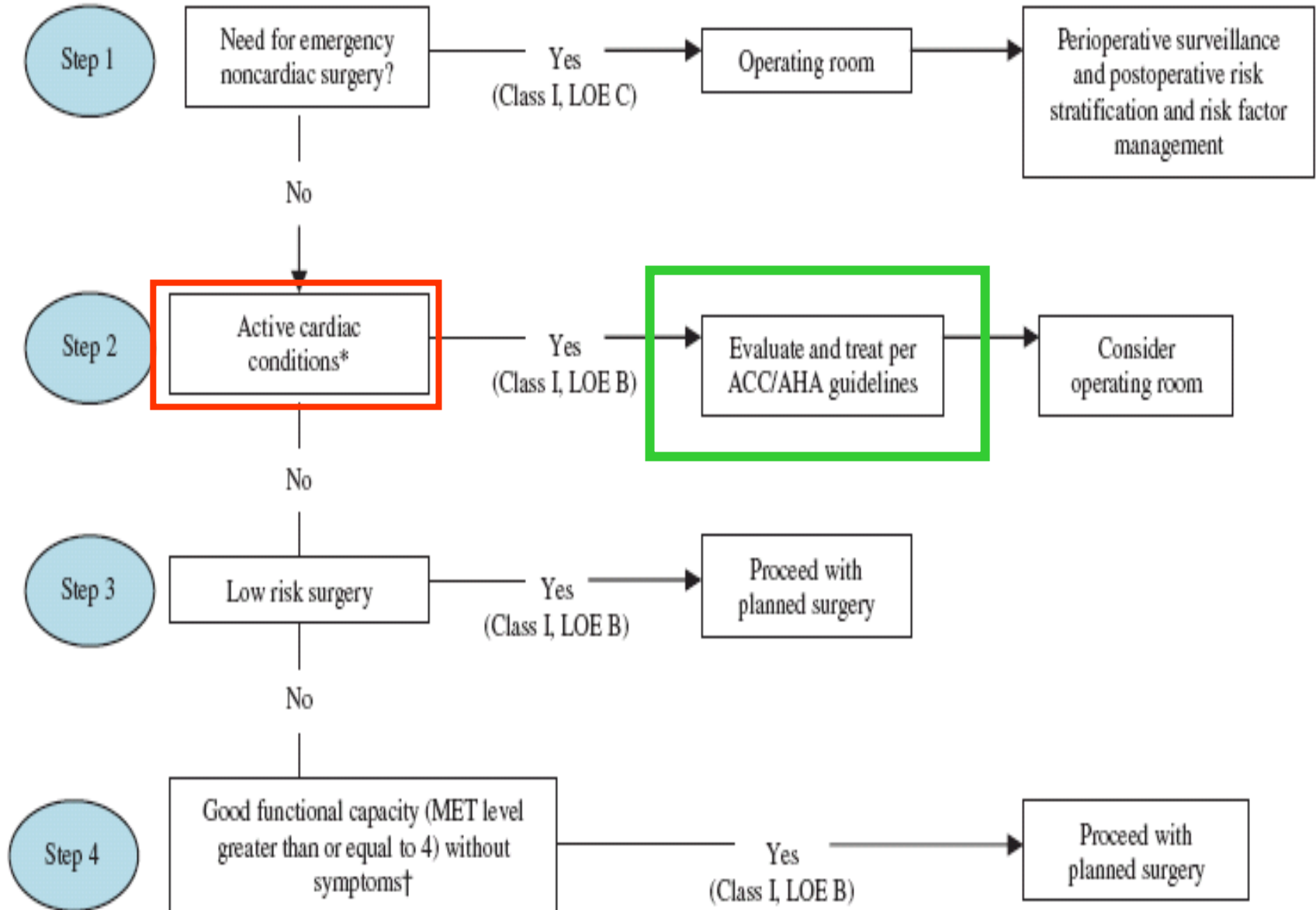
ACC/AHA 2007 Guideline



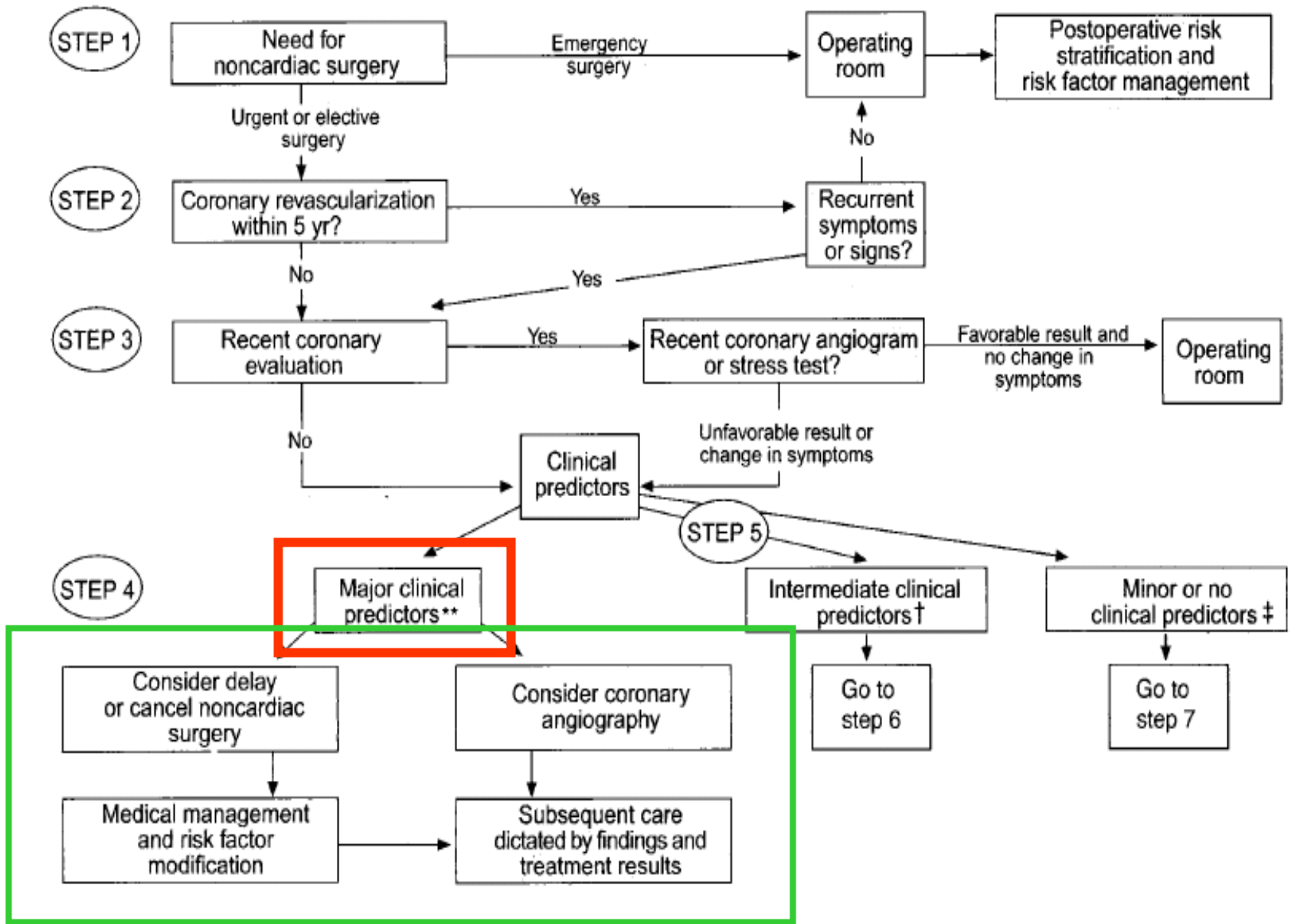
ACC/AHA 2007 Guideline



ACC/AHA 2007 Guideline



ACC/AHA 2002 Guideline





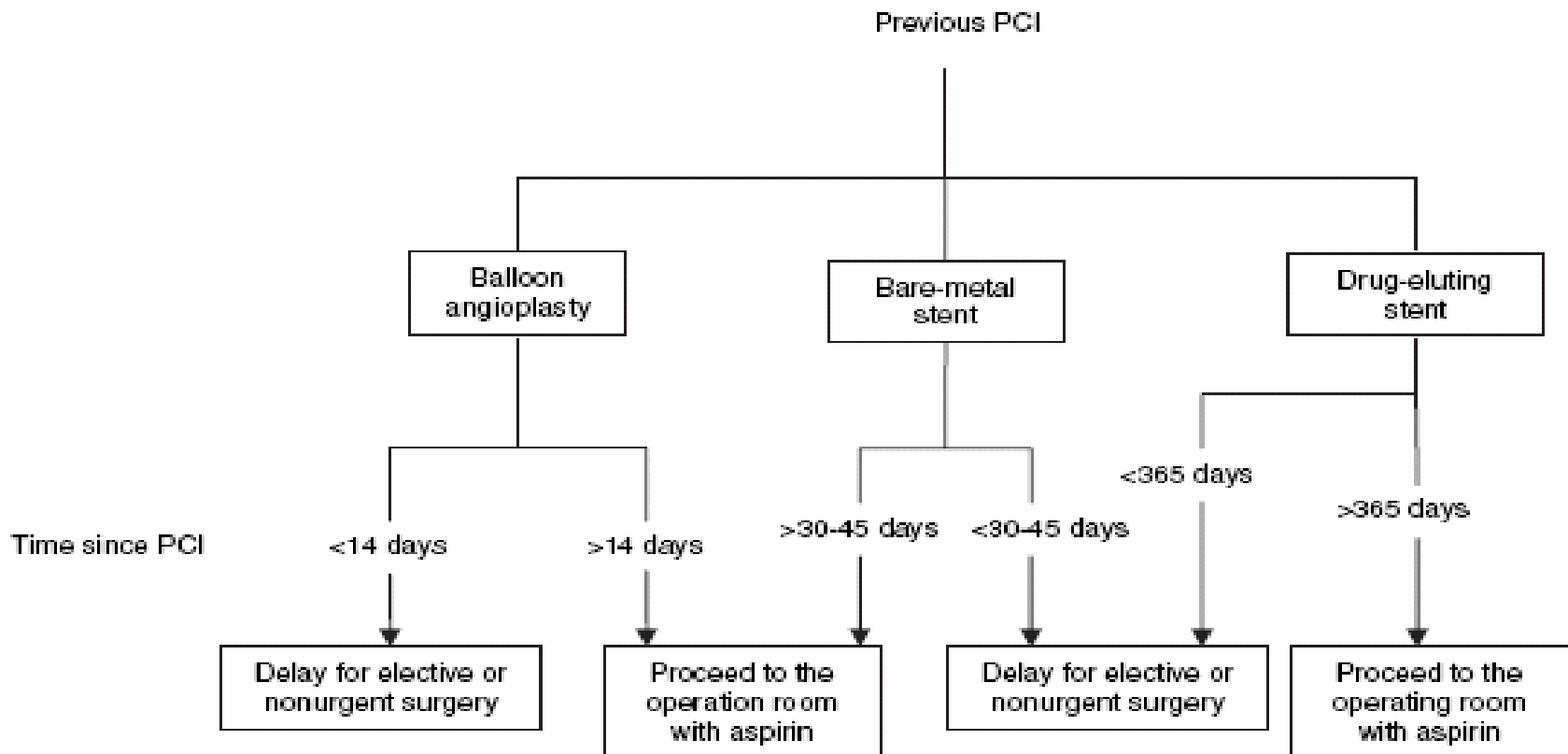
- A 65-year-old woman with aortic stenosis with a history of chest pain on exertion for 2 months is scheduled for a total knee replacement of right knee.



How should we prepare
this patient
for an operation?



ACC/AHA 2007 Guideline





Suggest reading:

- ACC/AHA 2006 Guidelines for the Management of Patients With Valvular Heart Disease *J Am Coll Ca* 2006; 48: e 1-148.
- AHA Guidelines for Prevention of Infective Endocarditis. *Circulation* 2007; 116: 1736-54.
- Guidelines for the management of arterial hypertension (2007) The Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC) *European Heart Journal* 2007; 28:1462-536.

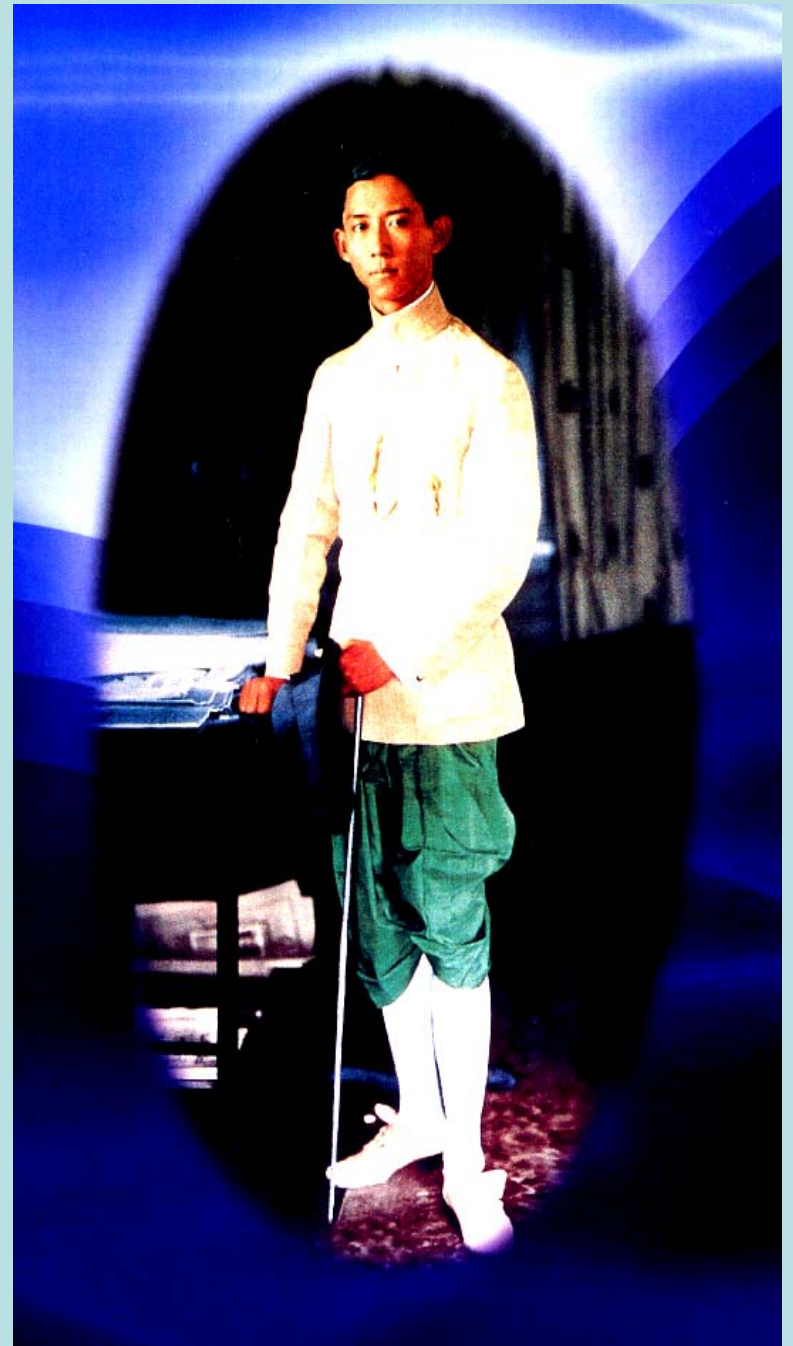


Suggest reading:

- Baxendale BR. Preoperative assessment and premedication. In Textbook of Anaesthesia. Aitkenhead AR, Smith G, Rowbotham DJ, eds. Elsevier Churchill Livingstone Edinburgh. 5th edition 2007; 280-96.
- Bassett A. Patient assessment. In A Textbook of Perioperative Care. Woodhead K, Wicker P, eds. Elsevier Churchill Livingstone Edinburgh. 2005; 135-46.
- Reed AP, Yudkowitz FS eds. Clinical Cases in Anesthesia. 3rd edition Elsevier Churchill Livingstone Edinburgh. 2005
- ASA Practice Advisory for Preanesthesia Evaluation. Anesthesiology 2002 ;96:485-96.
- ACC/AHA Guidelines on Perioperative Cardiovascular Evaluation for Noncardiac Surgery 2007 *Circulation* 2007; 116: e 418-99.

“ True success is not
in the learning,
But in it’s application
to the mankind ”

“ ความสำเร็จที่แท้จริง
มิได้อยู่ที่การเรียนรู้
แต่อยู่ที่การนำมาใช้
เป็นประโยชน์แก่มนุษยชาติ ”





Questions?

Preoperative evaluation & Preparation: “A Systematic approach”

“The very first step to succeed”

