

# Preoperative evaluation and risk assessment in patients undergoing surgery

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## A surgeon told me...

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- ▶ 56 year old man
- ▶ Height 172 cm
- ▶ Weight 122 kg
- ▶ diagnosed with abdominal wall hernia
- ▶ proposed for surgical repair
- ▶ under general anesthesia

DAY AFTER TOMORROW



**IS IT POSSIBLE???**



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**YES**

**NO**

NOT POSSIBLE IN THE DAY AFTER TOMORROW





# RISK ...

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- ▶ RISK to be canceled
- ▶ RISK of perioperative complications
- ▶ RISK of increased length of stay in ICU
- ▶ RISK of increased length of stay in hospital
- ▶ RISK to spend a lot of money
- ▶ RISK of DEATH





**BEFORE DECISION**



# I need....

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- ▶ Past Medical History
- ▶ Past Surgical History
- ▶ Physical examination
- ▶ Identify risk factors
- ▶ Consider other consultations
- ▶ Paraclinical examinations
- ▶ Laboratory tests
- ▶ Long-term medication





# I need....

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- ▶ **Past Medical History**
- ▶ Past Surgical History
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- ▶ Long-term medication



- ▶ Peripheral vascular disease with claudication
- ▶ Active smoker with 90pk year history
- ▶ HTN (hypertention)
- ▶ DM 2 on metformin and lantus insulin
- ▶ CAD with MI and coronary stent (2 years ago)

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DISLIPIDEMIA the most probable cause



▶ **Peripheral vascular disease with claudication**

▶ Active smoker with 90pk year history

▶ HTN (hypertention)

▶ DM 2 on metformin and lantus insulin

▶ **CAD with MI and cardiac stent (2 years ago)**

▶ 56 year old man

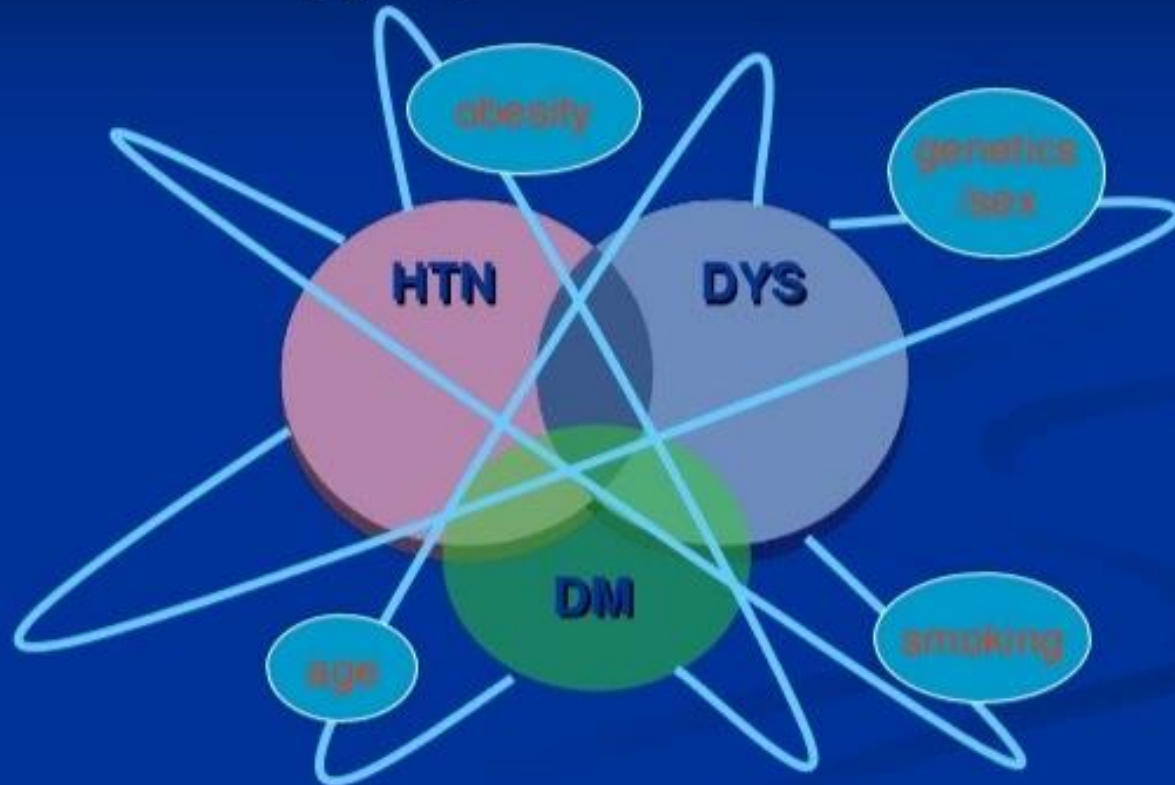
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**DISLIPIDEMIA the most probable cause**



# Global Risk: Overlapping CV Risk Factors



▶ Peripheral vascular disease with claudication

▶ **Active smoker with 90pk year history**

▶ HTN (hypertention)

▶ DM 2 on metformin and lantus insulin

▶ CAD with MI and cardiac stent (2 years ago)

▶ 56 year old man

▶ Height 172 cm

▶ Weight 122 kg

DISLIPIDEMIA the most probable cause

# Pack Years Calculator ☆

Calculates pack years in patients with any smoking history.

When to Use ▾

Why Use ▾

Packs of cigarettes smoked per day  
1 pack = 20 cigarettes (e.g. enter 2 for 40  
cigarettes/day)

1

packs

Years the patient has smoked

40

years

**40** pack years

More pack years correlates with higher lung disease risk, including lung cancer; consider screening with low-dose CT in patients  $\geq 55$  years with  $\geq 30$  pack year history; counsel patients on smoking cessation

Copy Results 📋

Next Steps >>>

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Cardiac & pulmonary risk???





# I need....

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- ▶ Past Surgical History
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- ▶ Tonsilectomy 32 years ago
- ▶ Colectectomy 9 years ago

In both cases GA without some peculiarity

# I need....

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- ▶ Past Medical History
- ▶ Past Surgical History
- ▶ **Physical examination**
- ▶ Identify risk factors
- ▶ Consider other consultations
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- ▶ Long-term medication



# Physical examination


- ▶ Height 172 cm
- ▶ Weight 122 kg
- ▶ BMI 41

**Body mass index (BMI)**



☒ MALE ☐ FEMALE

Height

 **Obese (BMI 30 +)**

Your BMI



Classification	BMI (kg/m <sup>2</sup> )	Risk of comorbidities
Underweight	<18.5	Low (but risk of other clinical problems increased)
Normal range	18.5–24.9	Average
Overweight (preobese)	25.0–29.9	Mildly increased
Obese	≥30.0	
Class 1	30.0–34.9	Moderate
Class 11	35.0–39.9	Severe
Class 111	≥40.0	Very severe



# Physical examination

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## RESPIRATORY

- ▶ heavy smoker
- ▶ morning coughing
- ▶ dyspnea
- ▶ snoring
- ▶ RR – 22/min
- ▶ auscultation/ slight wheezing



# Physical examination

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## CARDIOVASCULAR

- ▶ BP 185/95 mmHg
- ▶ HR 72/min (sinus rhythm)
- ▶ Auscultative (fine systolic murmur on MV)
- ▶ Intermittent claudication



# Physical examination

## FUNCTIONAL CAPACITY

Light <3.0 METs	Moderate 3.0-6.0 METs	Vigorous >6.0 METs
<ul style="list-style-type: none"><li>• Walking slowly</li><li>• Sitting using computer</li><li>• Standing light work (cooking, washing dishes)</li><li>• Fishing sitting</li><li>• Playing most instruments</li></ul>	<ul style="list-style-type: none"><li>• Walking very brisk (4 mph)</li><li>• Cleaning heavy (washing windows, vacuuming, mopping)</li><li>• Mowing lawn (power mower)</li><li>• Bicycling light effort (10-12 mph)</li><li>• Bad minton recreational</li><li>• Tennis doubles</li></ul>	<ul style="list-style-type: none"><li>• Hiking</li><li>• Jogging at 6 mph</li><li>• Shoveling</li><li>• Carrying heavy loads</li><li>• Bicycling fast (14-16 mph)</li><li>• Basketball game</li><li>• Soccer game</li><li>• Tennis singles</li></ul>

**NB.** 1 MET the resting metabolic rate of a person



# Physical examination

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## GASTROINTESTINAL

- ▶ Functional dyspepsia
- ▶ Constipation



# Physical examination

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## GENITO-URINARY

- ▶ Nocturia
- ▶ Erectile dysfunction



# I need....

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Let's to stratify the risks



## **COPD?**

**STOP** smoking 4-8 weeks before surgery

- ▶ **heavy smoker**
- ▶ **morning coughing**
- ▶ dyspnea
- ▶ snoring
- ▶ RR – 22/min
- ▶ **auscultation/ slight wheezing**



# Pulmonary risk

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- ▶ heavy smoking
- ▶ morning coughing
- ▶ dyspnea
- ▶ **snoring**
- ▶ RR – 22/min
- ▶ auscultation/ slight wheezing



STOP-Bang Questionnaire	
<u>S</u> noring	Do you snore loudly (louder than talking or loud enough to be heard through closed doors)?
<u>T</u> ired	Do you often feel tired, fatigued, or sleepy during the daytime?
<u>O</u> bserved apnea	Has anyone observed you stop breathing during your sleep?
Blood <u>P</u> ressure	Do you have or are you being treated for high blood pressure?
<u>B</u> MI	BMI more than 35 kg/m <sup>2</sup> ?
<u>A</u> ge	Age over 50 years old?
<u>N</u> eck Circumference	Are you a male with a neck circumference greater than 17 inches, or a female with a neck circumference greater than 16 inches?
<u>G</u> ender	Are you a male?

✓.  
✓.  
✓.  
✓.  
✓.  
✓.  
✓.  
✓.

**< 3 points, low risk OSAS**

**> 3 points, high risk OSAS**

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COPD & OSAS & SMOKING



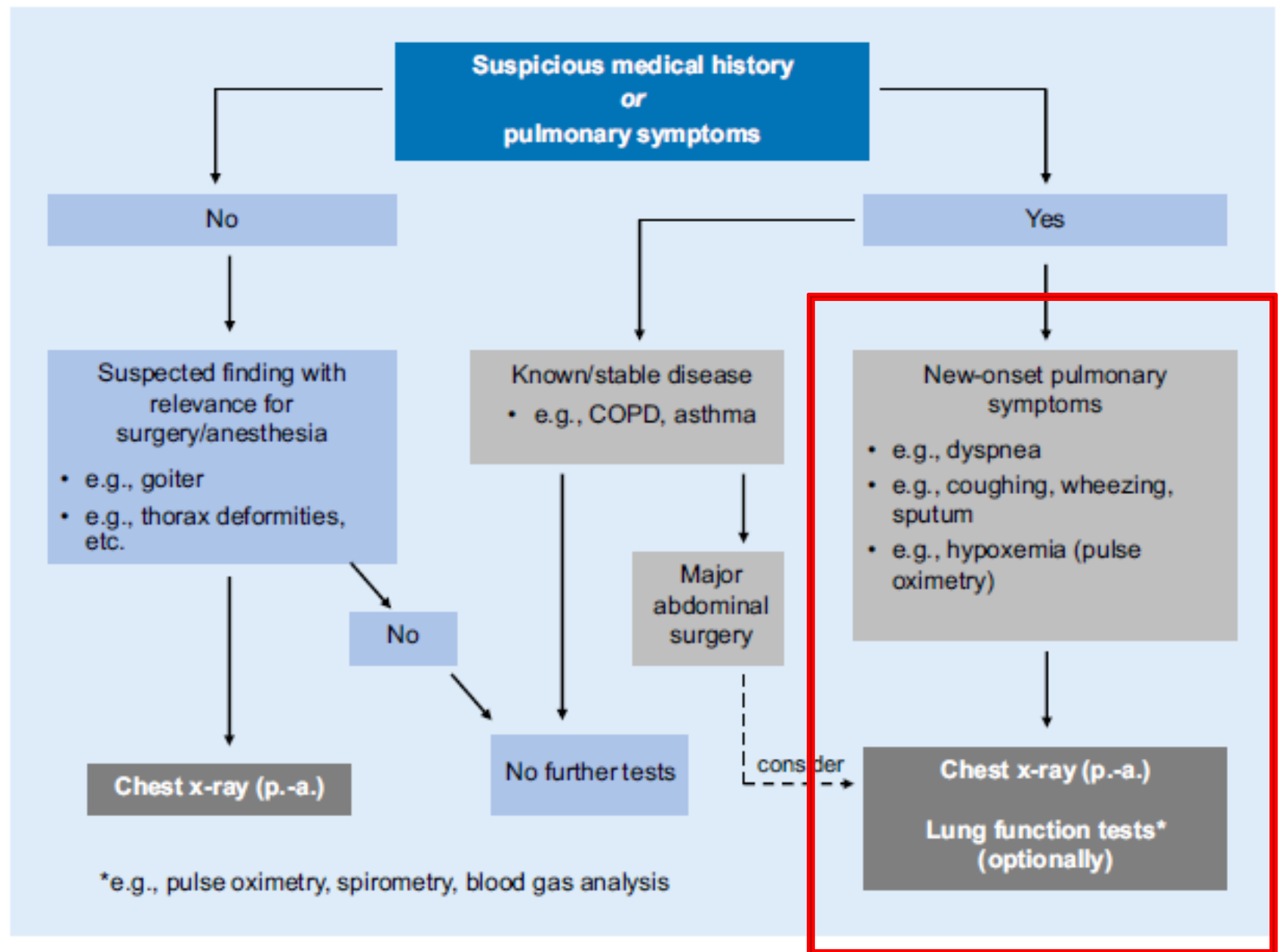
Pulmonary function testing & arterial  
blood gases



Somnolog consultation ???







# Cardiovascular risks

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Surgery related risk

Patient related risk

## CARDIOVASCULAR

- ▶ BP 185/95 mmHg
- ▶ HR 72/min (sinus rhythm)
- ▶ Auscultative (fine systolic murmur on MV)
- ▶ Intermittent claudication



**Table 2** Cardiac risk of different interventions [8]

High risk	Aortic surgery/major arterial vascular interventions
	Open peripheral artery vascular surgery and amputations of the lower extremities
	Thromboembolectomy <sup>2</sup>
	Duodenopancreatectomy
	Liver and bile duct surgery
	Esophagectomy
	Surgery for intestinal perforation <sup>2</sup>
	Adrenal gland removal
	Cystectomy (total)
	Pneumonectomy
	Lung and liver transplantation <sup>2</sup>
Moderate risk	Intraperitoneal interventions
	Carotid surgery (patients with neurologic symptoms)
	Endovascular aortic surgery
	Surgery in the head and neck region
	Major neurosurgical, urologic, gynecologic, and orthopedic interventions
	Kidney transplantation
	Minor intrathoracic interventions
Low risk	Superficial interventions
	Dental surgery
	Thyroid gland surgery
	Eye surgery
	Plastic reconstructive interventions
	Carotid surgery (patients without neurologic symptoms)
	Minor urologic (TURP), gynecologic, and orthopedic (knee arthroscopy) surgery
	Breast surgery

*TURP* transurethral resection of the prostate

<sup>2</sup>The vast majority of these interventions are nonelective (and therefore not subject to the recommendations presented herein); they are included here for the sake of completeness

Surgery related risk

## NYHA classification

- Class I No limitation of physical activity. Ordinary physical activity does not cause undue fatigue, palpitation or dyspnoea.
- Class II Slight limitation of physical activity. Comfortable at rest but ordinary physical activity results in fatigue, palpitation or dyspnoea.
- Class III Marked limitation of physical activity. Comfortable at rest but less than ordinary activity results in fatigue, palpitation or dyspnoea.
- Class IV Unable to carry out any physical activity without discomfort. Symptoms at rest. If any physical activity is undertaken, discomfort is increased.

Patient related risk

Clinical Parameter	RCRI Point
Prior TIA or CVA	1
Diabetes mellitus requiring insulin therapy	1
Serum creatinine $\geq 2$ mg/dL	1
History of coronary artery disease	1
High-risk surgery (chest, abdominal or suprainguinal vascular surgery)	1

Abbreviations: TIA = transient ischemic attack; CVA = cardiovascular accident.

Low risk = 0-1; moderate risk = 2; high risk  $\geq 3$ . Event rates increase as RCRI score increases.

Suspicious medical history  
or  
cardiac symptoms

No

Yes

12channel ECG and Doppler cardiography

No ECG

low

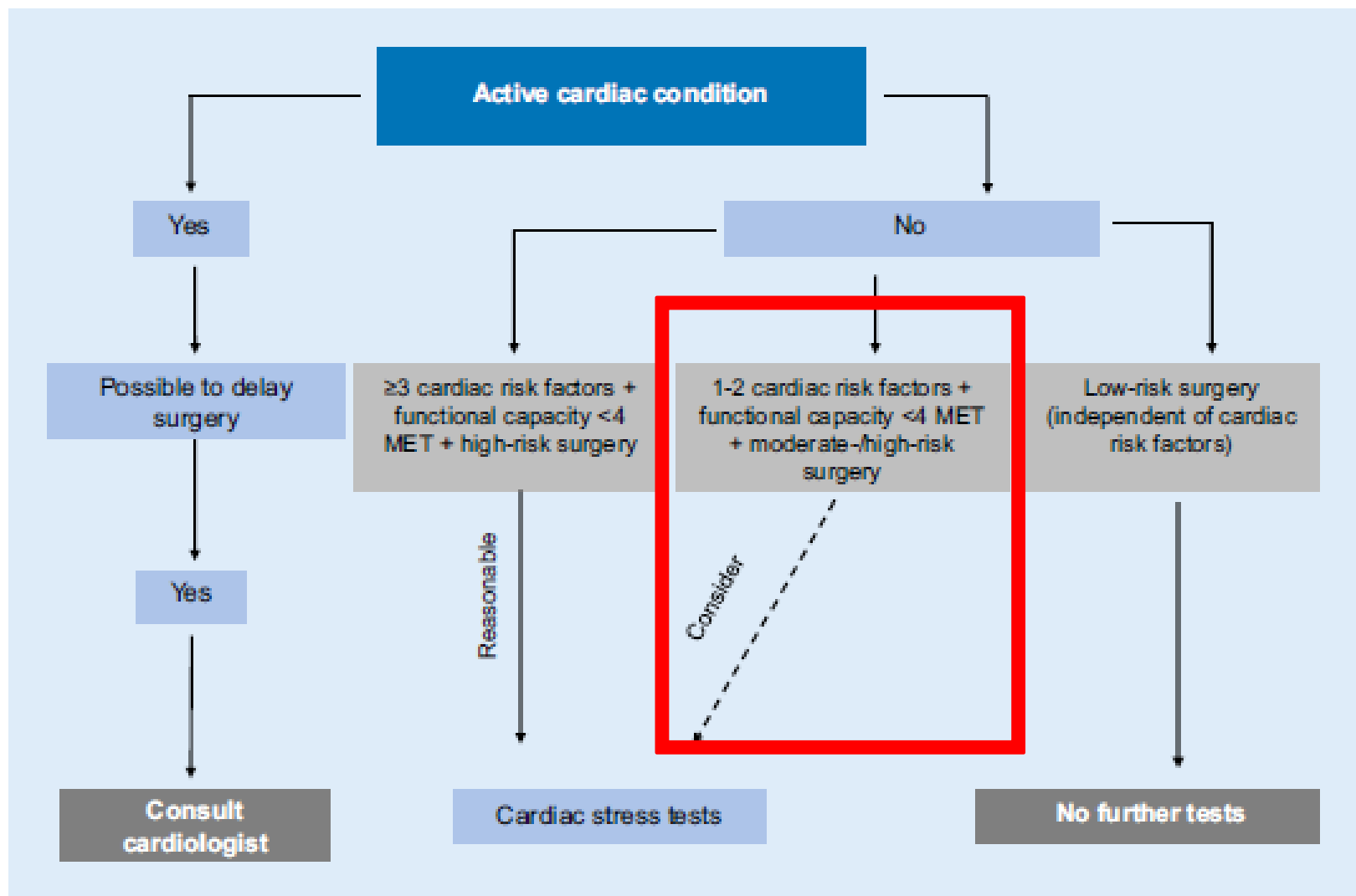
moderate or high

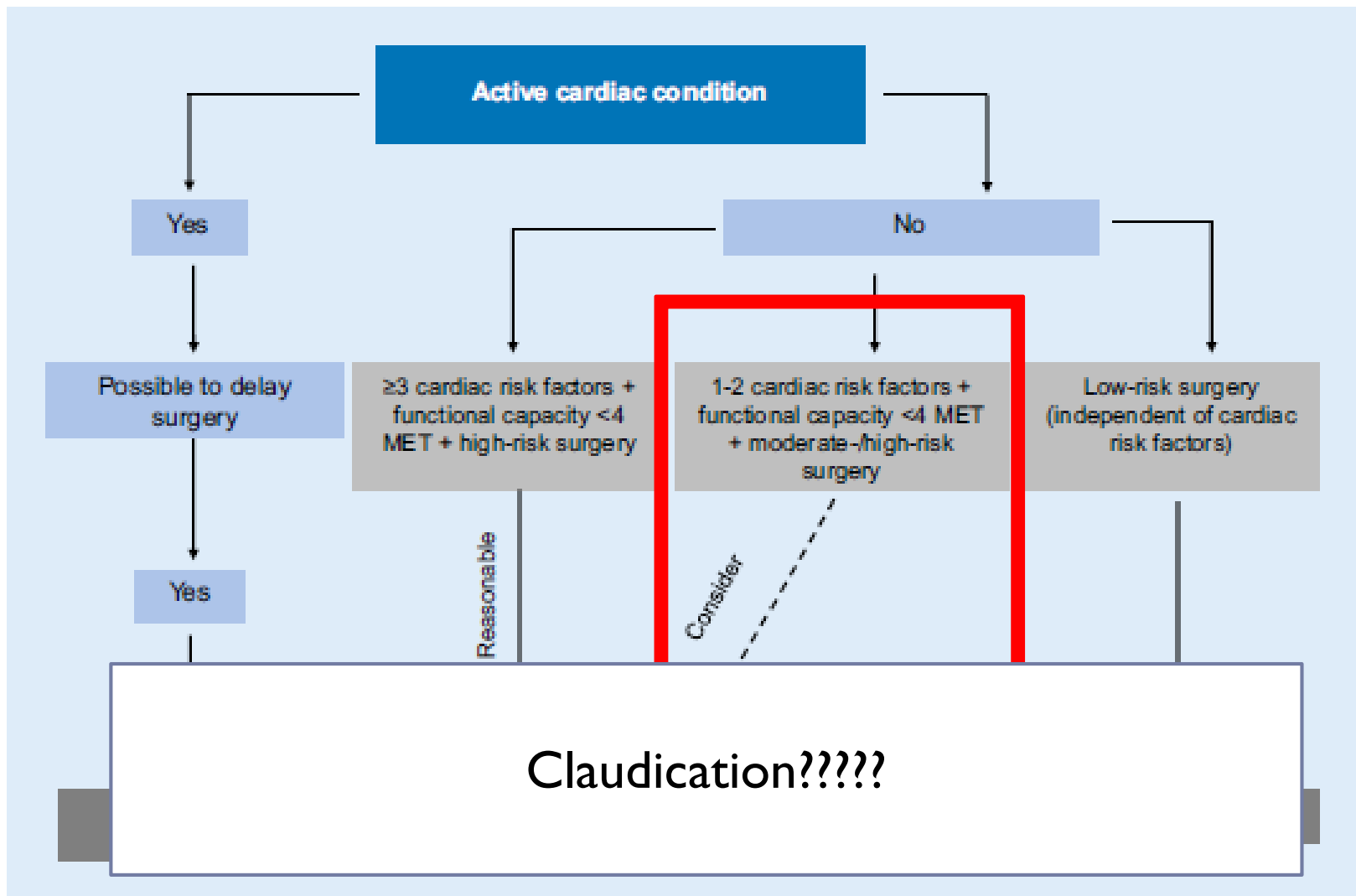
12-channel ECG

In patients with c  
symptoms

With regular  
pacemaker mon

No ECG





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# Coronary and peripheral angiography





# LAB tests

**Table 8** Indications for perioperative blood tests (minimal standard)

	(Suspected) organ disease			
Parameter	Heart/lung	Liver	Kidney	Blood
Hemoglobin	+	+	+	+
Leucocytes				+
Thrombocytes		+		+
Sodium, Potassium	+	+	+	+
Creatinine	+	+	+	+
ASAT, Bilirubin, aPTT, and INR		+		

**+ sugar level, HbA1c**

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# Chronic medication

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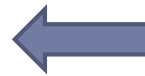
- ▶ Bisoprolol 5 mg/day
- ▶ Cardiomagnil 75 mg/day
- ▶ Valsacor 160 mg /day
- ▶ Indapamid 1,5 mg/day
- ▶ Cardiket 20mg twice a day
- ▶ Metformin and lantus insulin
- ▶ Rosuvastatin 10 mg /day



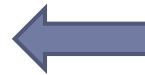
# Chronic medication

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**STOP a day before**



**STOP a day before**

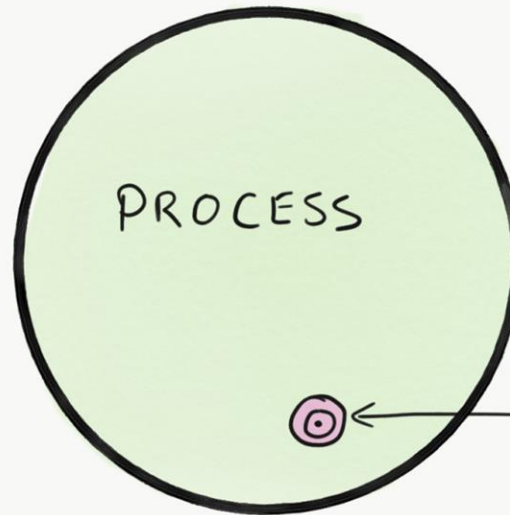




# Take home messages

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DECISION  
MAKING



← DECISION

DARIUS FOROUX



## Should be taken in account

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- ▶ Patient's PMH
- ▶ Physical examination
- ▶ Risk factors (cardiac, respiratory)
- ▶ Individualized investigation
- ▶ Long-term medication

