Pre-op Risk Assessment

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Objectives:

- Identify and manage patients with known or suspected CAD and other cardiac diseases who are at risk of cardiac complications during non-cardiac surgery.
- Identify appropriate noninvasive tests in pts with known or suspected CAD who are at risk for cardiac complications in non-cardiac surgery.
- Select and adjust perioperative medical therapies to reduce risk of cardiac complications during and after non-cardiac surgery.
Approach

• Risk Assessment
  • Non-invasive testing
    • Non-ischemic heart disease
  • Perioperative medical therapy
Risk Assessment
Stepwise approach

• #1 - Emergent surgery?
  Yes – SURGERY

• #2 – Acute coronary syndrome?
  TREAT ACS
Risk Assessment
Stepwise approach

• #3 Calculate combined **Clinical** and **Surgical** Risk

Can use risk calculators:

- riskcalculator.facs.org
- surgicalriskcalculator.com/miorcardiacarrest
Risk Assessment: Clinical Factors

Cardiac Risk Index:

☐ CAD
☐ CHF
☐ Creatinine ≥2
☐ CVA
☐ IDDM

≥2 = ELEVATED RISK
Risk Assessment: Surgical Risk

• **High Risk (>5%)**
  - Vascular surgery (except asymptomatic CEA)
  - Thoracic surgery
  - Transplant

• **Low Risk (<1%)**
  - CEA or CAS surgery
  - EYE surgery
  - Breast surgery
  - Minor orthopedic
  - TURP
  - GYN: minor
Risk Assessment: Surgical Risk (cont.)

• **Intermediate Risk (1 – 5%)**
  - Intraperitoneal
  - Head and neck
  - Peripheral arterial angioplasty
  - Orthopedic, Neurological - major hip and spine
  - Urological / Gynecological
Risk Assessment: Combined

Calculate combined risk:

• Low (<1%) → to OR

• If risk ≥1 % → What is their functional status?
Risk Assessment:

- Climb 2 flights of stairs?
- Walk 4 blocks on level ground?
- Rake leaves, push a lawnmower?

→ YES ≥ 4 METS
Risk Assessment
METS

• > 4 Mets
  – Walk up a hill
  – Housework

• > 10 METS
  – Running
  – Swimming
  – Tennis
Risk Assessment
Stepwise approach

• Calculated combined Risk
• Functional Status
  – >10 METS - to OR
  – > 4 METS - also to OR
  – < 4 METS ???
Risk Assessment
Stepwise Approach

< 4 METS

Will further testing impact decision making or perioperative care?

NO  →  TO OR

YES  →  Proceed with Stress Testing
Remember

Periop events may be caused by:

– Catecholamine surges
– Pro-thrombotic state
– Blood loss and volume shifts
– Coronary plaque destabilization
– Fixed coronary artery stenosis
Non-Invasive Testing

- High negative predictive value
- Low positive predictive value
- Resting abnormalities are important
- More ischemia = greater risk
- Higher risk patients, more accurate test
Stress testing - Pharmacological

- Avoid routine use in low risk patients
- Reasonable in patients with elevated risk and poor functional capacity if it will change management
Stress Testing - Exercise

• Can forgo testing in patients with elevated risk but excellent functional capacity
• Avoid routine use in low risk
• Then it gets wordy . . .
  – Consider in pts with elevated risk and unknown functional capacity
  – Forgo in pts with elevated risk and moderate functional capacity
  – Consider exercise imaging stress test in higher risk and poor or unknown capacity
Stress Testing

European Society of Cardiology (ESC)

- **HIGH RISK SURGERY**
- \( \geq 2 \) Clinical Risk Factors
- Poor functional capacity

- **INTERMEDIATE OR HIGH RISK**
- 1-2 Clinical risk Factors
- < 4 Mets

\[\text{Stress test}\]
Risk Assessment Recap

- Emergent surgery – To OR
- Acute Coronary Syndrome – Rx for ACS
- Calculate Risk - <1% -- To OR
- Functional Capacity - ≥ 4 METs – To OR
- Consider non invasive stress testing
Non ischemic Heart Disease

- Severe Aortic Stenosis
  - Asymptomatic
  → OK, but..
  "appropriate intra-op and hemodynamic monitoring"

- Severe Mitral stenosis
  - Asymptomatic
  → May be considered if valve morphology is not amenable to PBMV
Non Ischemic Heart Disease

- Asymptomatic Severe MR and AR
  → Is reasonable in patients, particularly in the setting of normal EF.

- CHF
  → Optimize therapy, and continue beta blockers
Perioperative Meds

- Beta Blockers
  - Continue therapy
  - Start only if have time to assess safety and tolerability

- Statins
  - Continue therapy

- Anti platelets
  - Hold P2 Y12 if:
    - BMS – wait 30 days
    - DES – prefer to wait 6 months
  - Continue ASA
Perioperative Meds – (cont.)

- Coumadin → Hold for 5 days

- DOAC → Depends on drug, renal function, bleeding risk of procedure. All with short half lives.
Summary

- Risk assessment
- Non-invasive testing
- Non-ischemic heart disease
- Perioperative medical therapy
Which patient is best candidate for preoperative stress test?

A. Sedentary 65 yo male with insulin dependent DM, htn, prior cva scheduled for ileofemoral bypass.

B. 88 yo female with htn, T2DM, undergoing CEA for asymptomatic stenosis – no symptoms, uses a walker

C. 70 yo male with T2DM, CAD, scheduled for left THA, does swim a mile a day

D. 68 yo asymptomatic female undergoing AAA repair. Active, walks 18 holes, does her own yard work