Pre-operative Evaluations

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Objectives

- Discuss the perioperative cardiopulmonary evaluation and management of patients undergoing non-cardiac surgery
- Objectively estimate and classify various risk
- Be able to use and understand risk calculators

General Considerations

- Evaluate for risk; not clearance for surgery.
- Decision for surgery is up to the surgeon!
- FP's:
  - Best to Assess Risk (low, moderate, high)
  - Best at Communication of Risk
  - "Maximal Medical Management for surgery"

FP Consultation Considerations

- Medical therapy changes / adjustments?
- Co-morbid disease work-up?
- Monitoring required?
- Right facility?
- Right timing?

CV Credits

- FP Audio 445, June 2016
  - Perioperative Cardiovascular Evaluation and Management of Patients Undergoing Noncardiac Surgery
  - B. Wayne Blount, MD, FAAFP

Noncardiac CV Evaluation

- Decision Tree: 7 Steps
- Cardiac Surgery → Cardiology Subspecialist

Step 1: Is it emergent surgery?

- Yes → Risk stratify and proceed to surgery
- Consider less risky anesthesia
- Consider less invasive approach

CV Evaluation

Step 2: Identify high risk CV conditions

- ACS
- Unstable angina
- Non-ST elevation MI
- Atypical Sx's
- Decompensated CHF
- Significant Arrhythmias
  - A Fib with RVR
  - VT
  - Sx Bradycardias
  - 2°or 3° AV Blocks

CV Evaluation

Step 3: Classify surgical risk

- Revised Cardiac Risk Index (RCRI)
- Six predictors worth 1 point each
- Predicts Major Adverse Cardiac Event (MACE)
- 0-1 = <1% risk of MACE
- >1 = 6.6% or greater risk MACE

CV Evaluation

RCRI

1. Surgical type
2. Ischemic HD Hx
3. CHF Hx
3. CVA Hx
4. IDDM Hx
5. CKD (Creat >2)

* 1 point each

CV Evaluation

Surgical Risk: Low or Elevated

- Low: <1% MACE risk
  - Peripheral (cataract, plastic, podiatry)
- Elevated: >1% MACE risk
  - Central (intra-abdominal, intra-thoracic, vascular)

http://riskcalculator.facs.org/

CV Evaluation

Step 4: Low MACE risk (<1%)

- No additional testing
- Proceed to surgery

CV Evaluation

Step 5: Elevated MACE risk
- Duke Activity Status Index (on-line calculator)
- Measures functional capacity (METs)
- Complete 4 METs → surgery

http://www.iheartmyheart.com/

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CV Evaluation

Step 6: Elevated MACE risk and <4 METs
- Will additional testing affect decision? Yes.
- Additional testing: Pharmacologic Stress Test
- Not exercise stress test (unable to achieve HR)
- Normal Pharm Stress Test → Surgery
- Abnormal → Cardiology Consult

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CV Evaluation

Step 7: Elevated MACE risk and <4 METs
- Will additional testing affect decision? No.
- Proceed to Surgery or
- Consider guide-line medical Rx or
- Consider alternative therapies
  - Noninvasive
  - Palliative

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CV Evaluation

??? Questions so far ???

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Pulmonary Credits

- Up-To-Date

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Pulmonary Evaluation
Step 1: Determine Risk

- age >50 years
- COPD
- CHF
- OSA
- Functional dependence
- Current cigarette use
- Pulmonary HTN
- Low oxygen saturation
- Serum albumin <3.5 g/dL

Poor health status: ASA class >2 (~5X)
- ASA 1: Healthy
- ASA 2: Mild systemic disease
- ASA 3: Severe systemic disease.
- ASA 4: Severe systemic disease with a constant threat to life
- ASA 5: Moribund patient not expected to survive without operation
- ASA 6: A declared brain-dead donor patient

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Pulmonary Evaluation

- ASA 1: Healthy.
- ASA 2: Mild systemic disease (eg, well-controlled hypertension, stable, asthma, diabetes mellitus).
- ASA 3: Severe systemic disease (eg, history of angina, COPD, poorly controlled hypertension, morbid obesity).
- ASA 4: Severe systemic disease with a constant threat to life (eg, history of unstable angina, uncontrolled diabetes or hypertension, advanced renal, pulmonary, or hepatic dysfunction).
- ASA 5: Moribund patient not expected to survive without operation (eg, ruptured aortic aneurysm).
- ASA 6: A declared brain-dead patient whose organs are being removed for donor purposes.

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Pulmonary Evaluation - ARISCAT

Age		
	≤50 years old	(0 points)
	51 to 80 years old	(3 points)
	>80 years old	(16 points)
Preoperative oxygen saturation		
	≥96%	(0 points)
	91 to 95%	(8 points)
	≤90%	(24 points)
Other clinical risk factors		
	URI in last month	(17 points)
	Preoperative Hgb ≤10 g/dL	(11 points)
	Emergency surgery	(8 points)
Surgical incision		
	Upper abdominal	(15 points)
	Intrathoracic	(24 points)
Duration of surgery		
	≤2 hours	(0 points)
	2 to 3 hours	(16 points)
	>3 hours	(23 points)

Complication Rate

0 to 25 points: Low risk: 1.6% pulmonary
26 to 44 points: Intermediate risk: 13.3%
45 to 123 points: High risk: 42.1% pulmonary complication rate

* ARISCAT score: Assess Respiratory Risk in Surgical Patients in Catalonia score

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Pulmonary Evaluation

- ASA Classification
- ARISCAT Risk Index
- Arozullah Respiratory Failure Index
  https://www.qxmd.com/calculate/calculator_261/postoperative-respiratory-failure-risk-calculator
- Gupta Calculator - Postoperative Respiratory Failure
  - https://www.uptodate.com/external-redirect.do?target_url=http%3A%2F%2Fwww.surgicalriskcalculator.com%2Fpostoperative-pneumonia-risk-calculator&TOPIC_ID=6917

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Pulmonary Evaluation

- Step 2: Low Risk → surgery

  Increased Risk: Ancillary Testing?
  - PFT if uncertain COPD/asthma best baseline
  - CXR if >50 yo and high risk surgery
  - ABG's if SpO2 <95%, abnormal serum bicarbonate, and severe abnormalities on PFTs
  - Cardiopulmonary exercise testing (CPET) or 6 minute walk test (400-700 meters normal) for lung resection

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Pulmonary Evaluation

Step 3: Normal tests → Moderate Risk
- Maximize medical management → surgery
- Consult pulmonologist
- Consult anesthesia prior to surgery

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Pulmonary Evaluation

- Step 4: Abnormal Tests → High Risk
  - Consultants and reconsider surgery
  - Consider spinal or epidural analgesia, or regional block
  - Consider shorter procedure
  - Maximize medical management

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Pulmonary Evaluation

??? Questions so far ???

Special Considerations

EKG?

- Yes: Heart Disease Hx, Arrhythmias, PAD, or CVA
- No: Low risk surgery and no Sx's

Special Considerations

- Statins
  - Taking statin and non-CV surgery → continue
  - Do not start day of surgery (DOS)
  - Other than DOS, start if evaluation indicates benefit per on-line calculator http://www.cvriskcalculator.com/

Special Considerations

- Beta Blockers
  - Taking w/o SE's & non-CV surgery → continue
  - Pt's at intermediate or high risk MI, or ischemia on stress testing → start at least 2 weeks in advance
  - Low risk: no benefit
  - Never start on Day of Surgery (CVA↑ and ↓BP)

Special Considerations

- ACE's
  - Taking w/o SE's & non-CV surgery → continue
  - No evidence of peri-operative initiation benefit
  - If borderline or ↓BP, likely ACE will be held and resumed after surgery

Special Considerations

- Antiplatelet Drugs
  - If for CV reasons → consult cardiologist
  - Recurrent MI risk is highest between 30 days and 90 days afterwards
  - Angioplasty → surgery ~2 weeks afterwards
  - Bare metal (1-3 mths) and DE stents (6 mths)?

Special Considerations

- Smoking
  - Stop ASAP!
  - Best if at least 30 days prior
- Jehovah's Witnesses

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Q&A

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