Preoperative Evaluation

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Objectives

- By the end of the session, learners will have:
  - Reviewed the components of a preoperative evaluation.
  - Utilized the 2014 AHA/ACC guideline and a validated risk prediction tool to assess need for cardiac workup.
  - Reviewed the 2012 American Society of Anesthesiology Practice Advisory on preoperative evaluation.
  - Reviewed the evidence on the benefits of preoperative smoking cessation.

Key Learning Points

- A focused history and physical is key to a preoperative evaluation.
- Cardiac testing prior to surgery is rarely indicated.
- Limiting preoperative testing is a patient-centered approach to effective, efficient care.
- Do not order routine preoperative tests.
  - Utilize the 2012 ASA Practice Advisory on Preanesthesia Evaluation to order appropriately.
- Prioritize smoking cessation prior to surgery.

Case

- 68-yo man with history of myocardial infarction 4 years ago and hypertension. He is seeing you for a “preoperative clearance” for elective right inguinal hernia repair.
  - What do you want to know?
  - What tests do you want to order?
  - What kind of cardiac evaluation does he need?

Steps in Preoperative Evaluation

- History and physical
- Consider need for cardiac evaluation
  - Calculate surgical risk using validated risk prediction tool
- Order indicated preoperative testing
  - Preoperative tests should not be ordered routinely.
- Smoking cessation

Considerations

- Improve patient outcomes
- Prevent harm
- Optimize the patient experience.
- Minimize waste
- Reduce surgical cancellations.
- Remember the IOM Six Aims.
  - Safety
  - Effectiveness
  - Patient-centeredness
  - Timeliness
  - Efficiency
  - Equity

(IOM, 2001; Brown, 2011)

Preoperative Evaluation: History and Physical

- What surgery is planned?
- Is the patient having current symptoms?
  - Cardiac
  - Pulmonary
  - Infectious
- Personal or family history of bleeding, asthma, or problems with anesthesia?
- Smoking status

(King, 2000; ACC/AHA, 2007)

Preoperative Evaluation: History and Physical

- What is the patient's functional status?
  - Climb flight of stairs = 4 mets
- Assess chronic conditions
- Physical exam
  - Cardiac and pulmonary especially if active symptoms

Calculate Surgical Risk Using Validated Risk Prediction Tool

- American College of Surgeons NSQIP
  - www.riskcalculator.facs.org
- Revised Cardiac Risk Index for preoperative risk (RCRI)
  - Available through multiple online medical calculations sites

Preoperative Evaluation:

Consider Need for Cardiac Evaluation—ACC/AHA Guideline 2014

For patient with CAD or known risk factors for CAD and having non-emergent surgery

- Acute coronary syndrome—Treat according to best practice
- If low risk of major adverse cardiac event (<1%) using validated risk prediction tool then proceed with surgery
- If >4 METS functional capacity then proceed with surgery (climbing flight of stairs is 4 METS)
- If poor (<4 METS) or unknown functional capacity AND additional testing will impact decision making
  - Consider non-invasive cardiac testing if it will change management

Adapted from Fleischer LA, et al. ACC/AHA Periop Clinical Guideline. *JACC* 2014; 62(22). Prepare handout with algorithm to give to learners or send link for electronic use. http://www.onlinejacc.org/content/64/22/e77

Preoperative Evaluation: Consider Need for Cardiac Evaluation

- Cardiac testing prior to elective surgery should be rare.
- RCTs shows cardiac intervention prior to elective surgery does not improve outcomes and is unlikely to be beneficial.

(McFalls, 2004; Poldermans, 2007)

Preoperative Evaluation: Order Indicated Tests

- Do not routinely order tests.
- Routine testing is wasteful and unlikely to change management or decrease surgical risk.
  - Up to 93% of testing unindicated
  - Wastes $10 billion annually

(Pasternak, 2009; Smetana, 2003; Munro, 1997; Johnson, 2002; Chung, 2009)

Preoperative Evaluation: Order Indicated Tests

- There is limited evidence on indicated tests.
- 2012 American Society of Anesthesiology Practice Advisory is not explicitly evidence-based.
  - But: It's the best we have and would minimize unnecessary testing and reduce waste if used widely.

"Preoperative tests should not be ordered routinely…(but) may be ordered, required, or performed on a selective basis for purposes of guiding or optimizing perioperative management. There is insufficient evidence to identify explicit decision parameters or rules for ordering preoperative tests on the basis of specific clinical characteristics."	
Test	Indication
Electrocardiogram	May be indicated for patients with known cardiovascular risk factors. No consensus on specific minimum age in patients without specific risk factors.
Chest x-ray	Clinical characteristics to consider include extremes of age, smokers, stable chronic obstructive pulmonary disease, stable cardiac disease, recent resolved upper respiratory infection. These are not unequivocal indications for chest x-ray.
Hemoglobin and hematocrit	Consider type and invasiveness of procedure, liver disease, extremes of age, history of anemia, bleeding, and other hematologic disorders. Routine not indicated.
Prothrombin time or partial thromboplastin time	Consider in known liver dysfunction, renal dysfunction, bleeding disorders, on warfarin, and type and invasiveness of procedure.
Chemistries	Consider for known endocrine disorders, risk of renal or liver dysfunction, and use of certain medications (esp. diuretics) or alternative therapies.
Urinalysis	Possibly for urologic procedures, prosthesis implantation.
Pregnancy test	May be offered for all female patients of childbearing age for whom the result would alter management.

2012 Practice Advisory for Preanesthesia Evaluation

A report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation Tests to consider on patients with no active issues identified on history and physical

Adapted from: Practice Advisory for preanesthesia evaluation. *Anesthesiology* 2012;116(3):522-538.

Pre-Surgical Visit

- No patient can be “cleared” for surgery.
  - Letter to surgical team
    - Phrases
      - “Medical conditions are optimized.”
      - “Patient is at low risk of major adverse cardiac event per ACS NSQIP” (can list exact percentage)
      - “Recommend proceeding with surgery.”
      - “No contraindication to surgery.”
    - “Further cardiac evaluation is not indicated per 2014 ACC/AHA guideline.”
    - “Chest x-ray, PT/PTT, etc, is not indicated per 2012 ASA guideline.”

Consider Preoperative Smoking Cessation

Much more important than preoperative testing!

- High yield to reduce complications
  - 30%–40% relative decrease in complications
    - Fewer complications with longer abstinence
- Evidence supports brief or intensive smoking cessation interventions, nicotine replacement therapy.
- Start 4–8 weeks before surgery.

(Thompson, 2009; Cochrane, 2010; Mills, 2011; Khullar, 2013)

Other Interventions to Consider

- Managing antiplatelet and anticoagulants
  - Use 2012 ACCP guideline
- What about perioperative beta blockade?
  - Refer to 2014 ACC/AHA focused update
  - Consider in high-risk patients having high-risk surgery.

(Douketis, 2012; Fleisher, 2009)

Case Revisited

- 68-yo man with history of myocardial infarction 4 years ago and hypertension. He is seeing you for a “preoperative clearance” for elective right inguinal hernia repair.
  - What do you want to know?
  - What tests do you want to order?
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Optional: Why Do Physicians Order Unnecessary Preoperative Tests? (Systems-Based Practice)

- Practice traditions/ingrained habits
- Medicolegal concerns
- Belief that other physicians want the tests done
- Concern about surgical delay or cancellation
- Lack of knowledge of evidence and guidelines

(Brown, 2011)

Optional: What Can be Done in Our Local Environment to Minimize Waste and Improve the Preoperative Process? (Systems-Based Practice)

- Education
- Communication
- Collaboration
- System-wide policies
- EMR templates

There's an App for That!

- PreOpEval by J. Steinberg
- Download (free!) from iTunes App store
- Uses many of the same references from this talk

Summary

- A preoperative evaluation assesses chronic conditions and optimizes health prior to surgery.
- A preoperative evaluation addresses cardiac and pulmonary systems and reviews functional status.
- The 2014 AHA/ACC guideline should be used to assess the need for cardiac workup.
- Do not order routine preoperative tests.
  - Utilize the 2012 ASA Practice Advisory on Preanesthesia Evaluation to order appropriate testing.
- Physicians should help motivated patients quit tobacco use before surgery.
- Systems should be designed to minimize waste and optimize the patient experience.