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Preface

These guidelines for Tulane Medical Center are written with equal weight as those defined by the Policy Statement on Practice Parameters of the American Society of Anesthesiologists. “Guidelines are recommendations that may identify a particular management strategy or a range of management strategies.”

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Preoperative Medicine Clinic

Tulane Preoperative Medicine Clinic
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Patients that have two or more of the following medical conditions with evidence of suboptimal management and/or decreased functional capacity, should be referred to the Preoperative Medicine Clinic.

Cardiac
- Hypertension (If uncontrolled hypertension, patient should be referred to PACE clinic even if this is the only existing medical condition)
- Angina
- Arrhythmia
- Pacemaker/AICD
- Heart Failure
- Valvular Heart Disease (excluding mitral valve prolapse)
- Planned or History of Vascular Surgery
- Deep Vein Thrombosis/Pulmonary Embolism

Respiratory
- Chronic Obstructive Pulmonary Disease/Emphysema
- Obstructive Sleep Apnea
- Emergency Room Visit Within Last 12 Months Due to Asthma

Central Nervous System
- Stroke
- Transient Ischemic Attack

Renal
- Renal Insufficiency (Creatinine > 2.0)
- End Stage Renal Disease

Endocrine
- Diabetes
- Adrenal Insufficiency
- Steroid Use
- Hyperthyroidism

Hematology
- Bleeding Disorder
- Sickle Cell Disease

Rheumatology
- Systemic Lupus Erythematosus
- Rheumatoid Arthritis

Obesity
(see Appendix 1)

Age
Age > 75 undergoing a major procedure
Preoperative Laboratory Testing Guidelines

These guidelines imply that there should be minimal preoperative laboratory tests for asymptomatic males under 45 and females under 55 who have a normal history and physical and undergoing minor surgical procedures.

Chemistries

1. No routine chemistries are necessary for the healthy patient

2. Basic Metabolic Panel
   - Diuretics
   - Digitalis
   - Chronic Renal Failure
   - Potassium Supplements
   - Angiotension Receptor Blockers (ARBs)/ACE Inhibitors
   - Hepatic failure
   - Major surgery
   - Major blood loss expected (>1 unit of blood)

3. Liver Function Tests
   - Cirrhosis
   - Recent or Chronic Hepatitis

4. Glucose
   - Diabetes
   - Steroid Use

5. When indicated, the above studies should be obtained within 4 weeks of surgery.

6. Patients on dialysis require a potassium level on the day of surgery.

Hematologic Studies

1. Complete Blood Count
   - Surgical procedure where major blood loss is expected
   - History of anemia, polycythemia, platelet disorder, or bleeding disorder
   - Transfusion therapy is refused
   - History of end stage renal disease
   - History of coronary vascular disease

2. PT/PTT
   - History of a bleeding disorder
   - Known hepatic disease
   - Taking anticoagulation medication on the morning of surgery (lab is not necessary if patient is on an anticoagulant taper for surgery)

Note: There is no reliable screening test to assure adequacy of coagulation in asymptomatic patients other than a thorough history and physical. Patients with a suspected coagulopathy should be referred to a hematologist.

Electrocardiogram*

1. Preoperative ECG’s are not indicated in asymptomatic persons undergoing low-risk (eyes and superficial surgery) procedures

Asymptomatic

- No subjective symptoms of cardiac disease – angina, etc
- Able to climb a flight of stairs

2. A preoperative resting 12-lead ECG should be done on the following:
   - Patients undergoing vascular surgery
   - Patients with any of the following clinical risk factors
     - A history of ischemic heart disease
     - A history of congestive heart failure
     - A history of cerebrovascular or peripheral arterial disease
     - Diabetes
     - Renal Insufficiency (Creatinine > 2.0)
     - Poorly controlled hypertension
     - Sickle cell anemia

3. If there have been no intervening cardiac symptoms (a stable patient), then an EKG within the last 30 days is acceptable.

**Chest X-Ray**
1. Only order if the patient has symptomatic lung disease, for example, clinical signs of pneumonia
2. When indicated a chest x-ray should be done within 6 months of the surgical procedure

**Urinalysis**
Routine urinalysis not necessary

**Drug Levels**
May be considered in symptomatic patients taking theophylline, digoxin, lithium, antiarrythmics, or anticonvulsants

**Pregnancy Test**
Complete the pregnancy questionnaire for all female patient ages 12 to 50. Perform a urine pregnancy test on all female patients that answer, “I don’t think I’m pregnant.”

**Type and Screen**
Patients undergoing procedures with anticipated blood loss

**UTOX**
Current or remote history of recreational drug use

**Thyroid Function Test**
History of thyroid disease

**Echocardiogram**
Patients with new onset murmur and evidence of decreased functional capacity

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## NPO Guidelines**

**Applies to All Patient Ages**

**Ingested Material** | **Minimum Fasting Period**
---|---
Clear liquids (water, fruit juices without pulp, carbonated beverages, clear tea, black coffee, sport drinks) | 2 hours
Breast milk | 4 hours
Infant formula | 6 hours
Non-human milk | 6 hours
Light meal 6 hours
(toast and clear liquids)

Full meal 8 hours
(fried or fatty foods, meat or a large meal)


"Intervention is rarely necessary to simply lower the risk of surgery unless such intervention is indicated irrespective of the preoperative context…. No test should be performed unless it is likely to influence patient treatment." *Circulation*. 2007;116:e418-e499.

The history should seek to identify active cardiac conditions. The following active cardiac conditions require cardiac consultation and may result in case delay or cancellation.

**Unstable Coronary Syndromes**
- Recent myocardial infarction (> 7 days but ≤ 30 days ago)
- Unstable/severe angina

** Decompensated Congestive Heart Failure**
- Severe limitations
- Worsening heart failure
- New-onset heart failure

**Severe Valvular Disease**
- Severe aortic stenosis
  - mean pressure gradient >40 mm Hg
  - aortic valve area < 1 cm²
  - symptomatic
- Symptomatic mitral stenosis
  - progressive dyspnea on exertion
  - exertional presyncope
  - heart failure

** Significant Arrhythmias**
- High grade atrioventricular block
- Mobitz II atrioventricular block
- Third degree atrioventricular block
- Symptomatic ventricular arrhythmias
- Supraventricular arrhythmias (includes atrial fibrillation) with uncontrolled ventricular rate (heart rate > 100 bpm at rest)
- Symptomatic bradycardia
- Newly recognized ventricular tachycardia
**CARDIAC EVALUATION AND CARE ALGORITHM**

**Emergency Noncardiac Surgery?**
- Yes: Proceed with Surgery
- No
  **Active Cardiac Conditions?** (see previous page)
  - Yes: Consult Cardiology
  - No
    **Low Risk Surgery?**
    - Yes: Proceed with Surgery
    - No
      **Functional Capacity ≥4 METs without symptoms?** (see next page)
      - Yes: Proceed with Surgery
      - No
        **No Clinical Risk Factors**
        **Vascular Surgery**
        **1 or 2 Clinical Risk Factors**
        **Intermediate Risk Surgery**
        **3 or more Clinical Risk Factors**
        **Vascular Surgery**

**Low Risk Surgery**
- Cataract, Superficial, Endoscopic, Breast, and Ambulatory
- **Intermediate Surgery**
  Intraperitoneal, intrathoracic, carotid endarterectomy, head & neck, orthopedic, and prostate

**Vascular**
- Aortic and other major vascular surgery, peripheral vascular surgery

**Clinical Risk Factors**
- Coronary Artery Disease
- Compensated or Prior Heart Failure
- Cerebrovascular Disease
- Diabetes
- Renal Insufficiency

- Proceed with surgery and heart rate control
- Consider noninvasive testing if it will change management
- Consider testing if it will change management
### Functional Capacity (Metabolic Equivalents – METs)

<table>
<thead>
<tr>
<th>Function: Can you . . .</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>take care of yourself?</td>
<td>1</td>
</tr>
<tr>
<td>walk indoors around the house?</td>
<td></td>
</tr>
<tr>
<td>walk a block or 2 on level ground?</td>
<td></td>
</tr>
<tr>
<td>do light work around the house?</td>
<td></td>
</tr>
<tr>
<td>climb a flight of stairs or walk up a hill?</td>
<td>4</td>
</tr>
<tr>
<td>run a short distance?</td>
<td></td>
</tr>
<tr>
<td>do heavy work like lifting or moving furniture?</td>
<td></td>
</tr>
<tr>
<td>participate in moderate activities like golf, bowling or dancing?</td>
<td></td>
</tr>
<tr>
<td>participate in strenuous sports like swimming, tennis, football, baseball or skiing?</td>
<td>&gt;10</td>
</tr>
</tbody>
</table>

### Patients With History of Balloon Angioplasty, Bare-Metal Stents and Drug-Eluting Stents

- **Previous Percutaneous Coronary Intervention**
  - **Balloon Angioplasty**
    - < 14 days ago
      - Delay for elective or Nonurgent surgery
    - >14 days ago
      - Proceed to the Operating Room with Aspirin
  - **Bare-Metal Stent**
    - >30-45 days ago
      - Proceed to the Operating Room with Aspirin
    - <30-45 days ago
      - Delay for elective or nonurgent surgery
  - **Drug-Eluting Stent**
    - <365 days ago
      - Delay for elective or nonurgent surgery
    - >365 days ago
      - Proceed to the operating room with Aspirin
Guidelines for Preoperative, Intraoperative and Postoperative Care of the Patient with a Permanent Pacemaker or Implanted Cardioverter Defibrillator†

Preoperative

- Ask the patient to bring their Pacemaker/ICD identification card with them on the day of surgery (or if in the hospital, be sure that the ID card is available at the time of the evaluation). Contact manufacturer to verify patient’s specific default settings when a magnet is utilized
- If the patient does not have the identification card for their device, the name of the manufacturer of the device can be obtained from the health care provider that placed it. In the alternative, contact the following manufacturers with the patient’s name, date of birth, and social security number. Each manufacturer should be able to state whether the patient has its device and how it should be managed in the perioperative period.
  - Biotronik 800.547.0394
  - Boston Scientific 800.237.3422
  - Sorin Ela 800.352.6466
  - Medtronic 800.328.2518
  - St. Jude Medical 800.722.3774
- Documentation of last interrogation should be noted in the chart and have occurred within the last six months.
- ICD patients will have the tachycardia therapy (antitachycardia pacing and shocks) deactivated before surgery where electromagnetic interference may occur.
  
  The potential sources for electromagnetic interference are:
  1. Unipolar electrocautery
  2. Radiofrequency ablation
  3. Lithotripsy
  4. MRI
  5. Radiation therapy

  Note: Bipolar electrocautery or ultrasonic (harmonic) scalpels are safe.

- Patients that are pacemaker dependent will be programmed to VOO or DOO at 80 bpm. This mode provides asynchronous pacing (no sensing) and prevents pacing inhibition during electrocautery.

Intraoperative

For emergent surgery with no time to program the implanted device:

Implanted Cardioverter Defibrillator (ICD)
- Place a doughnut magnet directly over the device, which suspends the anti-tachycardia pacing and shock therapy.
- Some ICD patients are also pacemaker dependent. Magnet application does not render the pacemaker function of the ICD asynchronous.
- When the magnet is removed, the ICD is active and will provide therapy if a tachycardia is detected.
- Some Guidant ICD devices may be deactivated with magnet application, depending on how the device is programmed.

Pacemakers
- If there is a concern about possible pacemaker inhibition during electrocautery, place a doughnut magnet directly over the device.

†Adapted from Michigan Heart Guidelines 5/05
Doughnut magnet application on a pacemaker provides VOO or DOO asynchronous pacing at the magnet pacing rate for that particular manufacturer.

Postoperative
- All ICDs should be interrogated post-operatively to document restoration of function.
- If no changes were made to a pacemaker’s settings pre-operatively (i.e., patient was noted to NOT be pacemaker dependent), there is no need to page the company representative for reprogramming.

Screening for Obstructive Sleep Apnea Prior to Surgery

STOP Questionnaire:

Height_________________ Weight_________________

Age_________________ BMI_________________

1. **Snoring**
   Do you snore loudly (louder than talking or loud enough to be heard through closed doors?)
   - Yes
   - No

2. **Tired**
   Do you often feel fatigued, tired, or sleepy during daytime?
   - Yes
   - No

3. **Observed**
   Has anyone observed you stop breathing during your sleep?
   - Yes
   - No

4. **Blood pressure**
   Do you have or are you being treated for high blood pressure?
   - Yes
   - No

**High Risk of OSA**: answering yes to two or more questions.
**Low Risk of OSA**: answering yes to less than two questions.