PRE-ANESTHESIA EVALUATION GUIDELINES

Guidelines developed by Divyang R. Joshi, MD

Original endorsed by: Advocate Safer Surgery Council October 2010
Revised by: Advocate Safer Surgery Council and Clinical Effectiveness Laboratory Committee, March 2016. Next revision due March 2018

This document was assembled using information from various sources which are referenced at the end. This document was created as a tool to be used for the preoperative evaluation of the surgical patient based on the best evidence available as of 2016; it is not intended to supersede the judgment and recommendations of the individual patient’s physicians.

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• Purpose and Background

Section I: Guidelines for Primary Care Physicians

• Guidelines Based on Procedure
• Guidelines Based on Medical History
• Medications to Discontinue Prior to Surgery
• Guidelines for Preoperative Fasting
• Guidelines for Cardiac Evaluation
• ASA/Plavix (Clopidogrel)
• Sleep Apnea

Section II: Guidelines for Patients

• Guidelines for Preoperative Smoking Cessation
• Guidelines for Preoperative Fasting

References

Appendix
Use of these guidelines may help avoid “routine” preoperative testing and direct the preoperative evaluation using an evidence-based methodology. They are intended to facilitate and provide a “best evidence basis” for preoperative testing. This should help avoid both delays on the day of surgery and unnecessary cost, while still providing an appropriate workup for the patient presenting for surgery.

The information within this document is a compilation of the best evidence available as well as societal guidelines and expert opinions when evidence is not conclusive or lacking. A list of valuable references (used to prepare this document) is provided at the end where further details may be obtained.

## Background

### Routine preoperative testing

- Numerous studies show that there is a lack of an association between patient benefit and routine testing.
- On average, 1/2000 preoperative tests lead to patient harm secondary to the further investigation warranted by an abnormal result.
- On the other hand, only 1/10,000 preoperative tests is actually of benefit to the patient.
- In a multivariate regression analysis done to determine what risk factors are associated with an adverse outcome, the only two factors consistently found to have such an association were:
  1. ASA PS 3 or greater
  2. The risk of surgery as classified by the ACC/AHA guidelines.
- Age alone is not an indication for any test and tests therefore should be based on the coexisting diseases and invasiveness of the procedure to be performed.
- Laboratory results within 3 months are generally acceptable (unless major abnormalities are present or the patient’s medical condition has changed).
## Low Risk Procedures

These are procedures in which the combined incidence of perioperative MI or death is less than 1%.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Lab Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambulatory Surgery</td>
<td>NO ROUTINE LAB TESTS</td>
</tr>
<tr>
<td>Arthroscopy, diagnostic</td>
<td>Lab tests as indicated by the patient’s medical history <strong>Only exception would be a baseline Cr level in a patient undergoing a procedure involving injection of contrast dye.</strong></td>
</tr>
<tr>
<td>Breast surgery</td>
<td>If diabetic, obtain Accu-Chek(R) glucose. If concerned by medical history, refer to PCP for clearance.</td>
</tr>
<tr>
<td>Cataract Surgery</td>
<td></td>
</tr>
<tr>
<td>Endoscopies</td>
<td></td>
</tr>
<tr>
<td>Superficial procedures</td>
<td></td>
</tr>
</tbody>
</table>

## Intermediate Risk Procedures

These are procedures in which the combined incidence of perioperative MI or death is 1 – 5%.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Lab Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAA Repair, Endoscopic</td>
<td>NO ROUTINE LAB TESTS</td>
</tr>
<tr>
<td>Carotid Endarterectomy</td>
<td>Lab tests as indicated by the patient’s medical history <strong>Only exception would be a baseline Cr level in a patient undergoing a procedure involving injection of contrast dye.</strong></td>
</tr>
<tr>
<td>Head &amp; Neck procedures</td>
<td></td>
</tr>
<tr>
<td>Intraperitoneal or Intrathoracic procedures</td>
<td></td>
</tr>
<tr>
<td>Orthopedic procedures</td>
<td></td>
</tr>
<tr>
<td>Prostate surgery</td>
<td></td>
</tr>
</tbody>
</table>

## Vascular, Renal Risk* or Emergent Procedures

These are procedures in which the combined incidence of perioperative MI or death is > 5%.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Lab Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipated prolonged surgery with large fluid shifts &amp;/or blood loss</td>
<td>RECOMMENDED LAB TESTS CBC with platelets CMP ECG Other lab tests as indicated by the patient’s medical history.</td>
</tr>
<tr>
<td>Aortic, Cardiac, Major Vascular</td>
<td></td>
</tr>
<tr>
<td>Emergency procedures</td>
<td>Clearly, lab tests may not be obtainable in emergency procedures and should only be performed if time allows.</td>
</tr>
<tr>
<td>Obstructive jaundice procedures</td>
<td></td>
</tr>
</tbody>
</table>
Communicate any acute change in medical condition to the primary care or referring physician.

### Utility of Existing Lab Tests

- Laboratory results are good for **3 MONTHS** unless abnormal
- **CXR** good for **6 MONTHS** unless acute or active process
- Stop NSAIDS/Cox 2 Inhibitors as soon as possible
- **Electrocardiograms** are good for **6 MONTHS** if normal. **3 MONTHS** if abnormal or if: +CAD

### Risk Factors

- **Historical**
  - Known CAD or change in condition
- **Common**
  - Alcohol Abuse ≥ 2 drinks/day
  - Anemia
  - Bleeding Hx
  - **CV Disease**
  - Cerebrovascular Dx
  - Diabetes
  - Hepatic Disease
  - Malignancy
  - Malnutrition
  - Morbid Obesity
  - PVD
  - Poor Exercise Tolerance
  - Possible Pregnancy
  - Pulmonary Dx
  - Renal Disease
  - Rheumatoid Arthritis
  - Sleep Apnea (age >18 yrs.)
  - Smoking >20pk yr (in last yr)
  - Suspected UTI
  - Systemic Lupus
  - Thyroid Disease

| DISEASE                        | CBC/Plt | T&S | PT/PTT | Chem 7 | LFTs | TFTs | ECG | CXR | U/A | HCG | ALB | (Hgb A1c) |
|-------------------------------|---------|-----|--------|--------|------|------|-----|-----|-----|-----|-----|---------|          |
| Alcohol Abuse ≥ 2 drinks/day  | X       |     |        |        |      |      |     |     |     |     |     |         |          |
| Anemia                        |         | X   |        |        |      |      |     |     |     |     |     |         |          |
| Bleeding Hx                   | X       |     |        |        |      |      |     |     |     |     |     |         |          |
| CV Disease                    |         |     |        |        |      |      |     |     | X   |     |     | X      | 1          |
| Cerebrovascular Dx            |         |     |        |        |      |      |     |     | X   |     |     |         |          |
| Diabetes                      |         |     |        |        |      |      |     |     | X   |     |     |         |          |
| Hepatic Disease               | X       | X   |        |        |      |      |     |     |     |     |     |         |          |
| Malignancy                    |         |     |        |        |      |      |     |     | X   |     |     | X      | 5 Recommend Pulmonary Clearance |
| Malnutrition                  |         |     |        |        |      |      |     |     |     |     |     |         |          |
| Morbid Obesity                | X       | X   |        |        |      |      |     |     |     |     |     |         |          |
| PVD                           |         |     |        |        |      |      |     |     | X   |     |     |         |          |
| Poor Exercise Tolerance       |         |     |        |        |      |      |     |     |     |     |     |         |          |
| Possible Pregnancy            |         |     |        |        |      |      |     |     |     |     |     | X      | 3          |
| Pulmonary Dx                  |         | X   |        |        |      |      |     |     |     |     |     |         |          |
| Renal Disease                 |         |     |        |        |      |      |     |     | X   |     |     |         |          |
| Rheumatoid Arthritis          |         |     |        |        |      |      |     |     | X   |     |     |         |          |
| Sleep Apnea (age >18 yrs.)    |         |     |        |        |      |      |     |     |     |     |     | X      | 1          |
| Smoking >20pk yr (in last yr) |         |     |        |        |      | X   |     |     |     |     |     |         |          |
| Suspected UTI                 |         |     |        |        |      |      |     |     |     |     |     | X      | 1          |
| Systemic Lupus                |         |     |        |        |      |      |     |     | X   |     |     |         |          |
| Thyroid Disease               |         |     |        |        |      |      |     |     | X   |     |     | X      | 9 Not to be drawn on arrival for surgery |

1. For active, acute processes only (changed within the last 6 months?)
2. Studies do not uniformly support using HbA1c as a predictor of risk for postoperative complications
3. HCG must be within 24 hours of surgery
4. **CV disease includes:** CAD, CHF, dyspnea, chest pain, palpitations, tachycardia, irregular HR, unexplained bradycardia, undiagnosed murmur, S3, ICD, pacemaker, pulmonary hypertension, syncope
5. If malignancy is within the thorax
6. If Radiation is to thorax, chest, breast or lungs
7. Must take NSAIDs/Cox 2 three or more times a week
8. Renal risk: If having high risk procedure see above and has HTN, DM, eGFR < 45, takes ACE Inhibitors, ARBS, or Diuretics
9. TSH within the last 6 months is acceptable
10. Missed AB requires H & H and T & RH, and Rhogam studies for RH negative patients

(Continued on next page)
### Utility of Existing Lab Tests

- Laboratory results are good for **3 MONTHS** unless abnormal
- **CXR** good for **6 MONTHS** unless acute or active process
- Stop NSAIDS/Cox 2 Inhibitors as soon as possible
- **Electrocardiograms** are good for **6 MONTHS** if normal, **3 MONTHS** if abnormal or if: +CAD Risk Factors, known CAD or change in condition

<table>
<thead>
<tr>
<th>MEDICATION</th>
<th>CBC/Plt</th>
<th>T&amp;S</th>
<th>PT/PTT</th>
<th>Glu</th>
<th>Chem 7</th>
<th>LFTs</th>
<th>TFTs</th>
<th>ECG</th>
<th>CXR</th>
<th>U/A</th>
<th>HCG</th>
<th>ALB</th>
<th>IVF</th>
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<tbody>
<tr>
<td>Amiodarone</td>
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<tr>
<td>Anticoagulants</td>
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<td>Anticonvulsants (in last 6 mo.)</td>
<td>Check level if seizures are poorly controlled</td>
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<td>Diuretics</td>
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<td>Immunosuppressent/Chemotherapy</td>
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<tr>
<td>NSAIDs/Cox 2&lt;sup&gt;7&lt;/sup&gt;</td>
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<tr>
<td>Radiation Therapy</td>
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<tr>
<td>Steroids (chronic use)</td>
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<tr>
<td>Theophylline</td>
<td>Check level if patient is wheezing</td>
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<tr>
<td>Thyroid Replacement</td>
<td>X&lt;sup&gt;9&lt;/sup&gt;</td>
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</tbody>
</table>

### PROCEDURE

- EBL > 500 ml *(total joints, head and neck, carotid endarterectomy, AAA, intraperitoneal or thoracic, spinal fusions, prostate surgery)*
- Urologic Procedure | X
- Bowel Prep | X
- Renal Risk<sup>8</sup> *(no locals or cataracts)* | X
- Missed AB | X<sup>10</sup> /RH

**Vascular/Cardiac**: Patients undergo aggressive risk assessment with stress test or coronary angiography. No additional testing needed.

1. For active, acute processes only (changed within the last 6 months?)
2. Studies do not uniformly support using HbA1c as a predictor of risk for postoperative complications
3. HCG must be within 24 hours of surgery
4. CV disease includes: CAD, CHF, dyspnea, chest pain, palpitations, tachycardia, irregular HR, unexplained bradycardia, undiagnosed murmur, S3, ICD, pacemaker, pulmonary hypertension, syncope
5. If malignancy is within the thorax
6. If Radiation is to thorax, chest, breast or lungs
7. Must take NSAIDs/Cox 2 three or more times a week
8. Renal risk: If having high risk procedure see above and has HTN, DM, eGFR < 45, takes ACE Inhibitors, ARBS, or Diuretics
9. TSH within the last 6 months is acceptable
10. Missed AB requires H & H and T & RH, and Rhogam studies for RH negative patients
Continue all medications **EXCEPT** those listed below

Medications may be taken on the day of surgery with a sip of water.

1. **Aspirin/Plavix** require decision making. [Click here for detailed instructions.](#)

2. **Autoimmune Medications**
   - Adalimumab (Humira) 8 weeks before surgery
   - Ertanercept 2 weeks before surgery
   - Infliximab (Remicade) 6 weeks before surgery

3. **Coumadin**: Discontinue 5 days prior to surgery except for cataract surgery w/o bulbar block

4. **Diabetic Medications (Oral)** all oral hypoglycemics should be discontinued on day of surgery and the last dose of Metformin should be no earlier than 12 hours before surgery.

5. **Diet pills**: Fenfluramine (Pondimin), Dexfenfluramine (Redux), Phenteramine (Adipex, Fastin, Oby-cap, Obenix, Oby-triZantryl, Lonamine). These should be discontinued for 2 weeks prior to surgery.

6. **Diuretics**: Discontinue on day of surgery except Triamterene or HCTZ if used as antihypertensive agents.

7. **Heparin/LMWH**
   - Heparin discontinued 4-6hrs before surgery
   - LMWH discontinued 24 hrs before surgery

8. **Herbal medications and supplements/Vitamin E**: Discontinue 7 days prior to surgery.

9. **Insulin/Diabetic patients**
   - Giargine Users: Take 80-90% of their dose on the evening before surgery
   - Insulin Pump Users: Reduce their basal rate by 10% on the morning of surgery
   - Insulin NPH Users: Take 75% of their usual dose on the morning of surgery
   - Insulin: Regular Users: No regular insulin on the morning of surgery
   - Measure blood sugar every two hours, and call pre-surgery if > 180 ng/dl or <90 ng/dl

10. **MAOi**
    These include Isocarboxazid, Phenelzine, Tranylepramine, Nardil, Parnate, Marplan, Furazolidone (Furaxone), Procarbazine (Matulane), and Selegiline (Eldepryl). **These medications should be discontinued 3 weeks prior to surgery and should be discussed with an anesthesiologist.**

11. **NSAIDs**: Discontinue 48 hours prior to surgery.

12. **Premarin/Estrogens**: Discontinue on day of surgery if used for menopause/osteoporosis. Continue BCPs and Estrogen for Cancer Therapy.

13. **Topical Medications (except eye drops)** D/C on day of surgery.

14. **Vitamins/Iron**: Discontinue on day of surgery.
Preoperative Smoking Cessation

The literature has left many questions unanswered regarding perioperative smoking but has provided the following information regarding smokers undergoing surgery:

- Increased postoperative pulmonary complications
- Predictor of stroke for those undergoing CABG
- Higher rate of ST-segment depression
- Increased nonunion rate after spinal fusion
- Increased infection rate after amputation
- Increased need for reoperation
- Higher rate of anastomotic leaks after colorectal surgery
- Poorer wound healing

**VHA Guideline:** Smoking Cessation 8 weeks prior to surgery in patients with COPD/Asthma

**Australia/New Zealand College of Anesthetists:** 6-8 weeks preop cessation. 12 hr preop.

**CDC recommendation:** Cessation for at least 30 days preoperatively.

**Advocate Recommendations**

1. All smokers scheduled for surgery encouraged to quit.
2. Formal support given: [www.smokefree.gov](http://www.smokefree.gov) (1-800-QUIT-NOW), NicoDerm® patch, etc.
3. **NO SMOKING 12 HOURS** prior to surgery.
Advocate’s Guidelines for NPO status: **NPO after midnight** *except:* 

<table>
<thead>
<tr>
<th>NPO/FASTING GUIDELINES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Liquids**</td>
<td>4 hours</td>
</tr>
<tr>
<td>Breast Milk</td>
<td>4 hours</td>
</tr>
<tr>
<td>Infant Formula</td>
<td>6 hours</td>
</tr>
</tbody>
</table>

* If patient objects, call anesthesia.

Other considerations may extend the above recommendations due to increased risk for aspiration and include:

- Obesity
- Pregnancy
- Diabetes Mellitus
- Gastroesophageal Reflux
- History of a Difficult Airway
- Opioid Use

** Acceptable Clear liquids: Water, Sprite, 7-up, Plain coffee or tea without milk products or lemon. 

Unacceptable Clear liquids: Coffee or Tea with milk products, orange juice, alcohol.
What follows is a step by step guideline based on the most recent ACC/AHA Guidelines. Start with Step 1 and continue on until you reach a decision to either go to the operating room, conduct more testing, or begin HR control.

**STEP 1 Is this an Emergent Surgery?**

<table>
<thead>
<tr>
<th>YES?</th>
<th>NO?</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATING ROOM Postoperative risk stratification and management by Cardiology</td>
<td>Go to STEP 2</td>
</tr>
</tbody>
</table>

**STEP 2 Does the patient have Active Cardiac Conditions?**

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>EXAMPLE OF CONDITION</th>
</tr>
</thead>
</table>
| UNSTABLE CORONARY SYNDROMES | • Angina occurs on walking 1-2 blocks on level ground or climbing 1 flight of stairs at a normal pace. (CCS III – see additional table for more info.)  
• Inability to perform any physical activity without discomfort. May have anginal symptoms at rest. (CCS IV—see additional table for more info.)  
• Stable angina if sedentary  
• Recent MI > 7 days but <30 days |
| DECOMPENSATED HEART FAILURE | • Worsening Heart Failure  
• New Onset Heart Failure  
NYHA IV – severe limitation: symptoms at rest, any physical activity increases discomfort, cannot do or complete any activity requiring > 2 METS. (see additional table for more info.) |
| SIGNIFICANT ARRHYTHMIAS | High grade atrioventricular block  
Mobitz II block  
3rd degree block  
Symptomatic ventricular arrhythmias  
SVT > 100 bpm at rest  
Symptomatic bradycardia  
Newly recognized ventricular tachycardia |
| SEVERE VALVULAR DISEASE | Aortic stenosis with: mean pressure gradient > 40 mmHg or valve area < 1 cm or patient is symptomatic  
Symptomatic **Mitral Stenosis**: dyspnea on exertion, heart failure, exertional pre-syncope |

<table>
<thead>
<tr>
<th>YES?</th>
<th>NO?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further Cardiac testing</td>
<td>Go to STEP 3</td>
</tr>
</tbody>
</table>
## SECTION I: Guidelines for Primary Care Physicians

### Cardiac Evaluation

#### STEP 3 Is this a Low Risk Surgery?

<table>
<thead>
<tr>
<th>LOW RISK PROCEDURES</th>
<th>NO ROUTINE LAB TESTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>These are procedures in which the combined Incidence of perioperative MI or death is less than 1%.</td>
<td>Lab tests as indicated by the patient’s medical history &lt;br&gt;<strong>Only exception would be a baseline Cr level in a patient undergoing a procedure involving injection of contrast dye.</strong></td>
</tr>
<tr>
<td>Endoscopies</td>
<td></td>
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<tr>
<td>Diagnostic arthroscopy</td>
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<tr>
<td>Superficial procedures</td>
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<tr>
<td>Cataract surgery</td>
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<tr>
<td>Breast surgery</td>
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<tr>
<td>Ambulatory Surgery</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES?</th>
<th>NO?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Room</td>
<td>Go to STEP 4</td>
</tr>
</tbody>
</table>

#### STEP 4 Is the Functional Capacity > 4 METS Without Symptoms?

<table>
<thead>
<tr>
<th>METS</th>
<th>ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Care for yourself &lt;br&gt; Eat, dress, use the toilet &lt;br&gt; Walk around the house &lt;br&gt; Walk a block or 2 on level ground</td>
</tr>
<tr>
<td>4</td>
<td>Do light housework: dusting, wash dishes &lt;br&gt; Climb a flight of stairs or walk up a hill</td>
</tr>
<tr>
<td>&gt;10</td>
<td>Walk on level ground at 4 mph &lt;br&gt; Run a short distance &lt;br&gt; Heavy housework: scrub floors, move furniture &lt;br&gt; Golf, bowling, dancing, doubles tennis &lt;br&gt; Swimming, singles tennis, football, basketball, skiing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YES?</th>
<th>NO?</th>
<th>UNKNOWN?</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 4 METS</td>
<td>&lt; 4 METS</td>
<td>Poor historian, bedridden patient, unable to perform activity due to injury, etc.</td>
</tr>
<tr>
<td>Go to STEP 5</td>
<td>Go to STEP 5</td>
<td>Go to STEP 5</td>
</tr>
</tbody>
</table>
### Cardiac Evaluation

**STEP 5: Action Based on Risk Factors/Surgery**

**Clinical Risk Factors**
- History of Ischemic Heart Disease
- History of Compensated or Prior CHF
- History of Cerebrovascular Disease
- Diabetes Mellitus
- Renal Insufficiency

<table>
<thead>
<tr>
<th>Number of Risk Factors</th>
<th>Intermediate Risk Surgery</th>
<th>Vascular Surgery</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Operating Room</td>
<td>Operating Room</td>
</tr>
<tr>
<td>1-2</td>
<td>Operating Room with HR Control or Consider Testing If It Will Change Management</td>
<td>Operating Room with HR Control or Consider Testing If It Will Change Management</td>
</tr>
<tr>
<td>≥3</td>
<td>Operating Room with HR Control or Consider Testing If It Will Change Management</td>
<td>Further Testing and Consider Initiation of HR Control</td>
</tr>
</tbody>
</table>

**HR Control:** Should begin days to weeks before surgery via use of a B-blocker unless allergies or contraindications exist.

HR should be titrated to **Resting HR of 50 - 60 BPM**

If evaluation is done on day of or day before surgery:
May give TOPROL XL 50 mg PO if not already on a beta-blocker or may titrate IV B-blocker to HR of 65 - 80 if not already on a beta-blocker and/or if HR is not already between 65 - 80 bpm.
Universal Safety Measures for All Patients with Cardiac Implanted Electronic Device (CIED)

1. Review CIED evaluation/recommendation from cardiologist
2. Continuous EKG monitoring throughout procedure
3. Continuous plethesmography via waveform pulse oximeter or arterial line
4. Magnet immediately available
5. Defibrillator with pacing capabilities available

ALL PROCEDURES BELOW THE UMBILICUS OR ALL PROCEDURES USING JUST BIPOLAR CAUTERY

PACEMAKER

ICD
ICD/PACEMAKER

NO MAGNET OR REPROGRAMMING NEEDED
SECTION I: Guidelines for Primary Care Physicians

Cardiac Evaluation

PERI-OPERATIVE CIED MANAGEMENT ALGORITHM 2 OF 3

ALL PROCEDURES ABOVE THE UMBILICUS AND UTILIZING MONOPOLAR CAUTERY

1. Cautery return pad placed as far from CIED system and as close to surgical site as possible
2. Cautery return pad placed to prevent the path of EMI crossing over system
3. Electrocautery bursts limited to < 5 seconds with short pauses between applications
4. Electrocautery power settings minimized
5. If reprogramming of device is undertaken, apply and connect defibrillator/pacing pads

PACEMAKER

Access to chest
No Access to chest

Pacemaker Dependent
Non-Pacemaker Dependent

Apply magnet as needed
Reprogram per cardiologist

NO MAGNET OR REPROGRAMMING NEEDED

RETURN TO PREVIOUS SETTINGS IMMEDIATELY POST-PROCEDURE
PERI-OPERATIVE CIED MANAGEMENT ALGORITHM 3 OF 3

ALL PROCEDURES ABOVE THE UMBILICUS AND UTILIZING MONOPOLAR CAUTERY

1. Cautery return pad placed as far from CIED system and as close to surgical site as possible
2. Cautery return pad placed to prevent the path of EMI crossing over system
3. Electrocautery bursts limited to < 5 seconds with short pauses between applications
4. Electrocautery power settings minimized
5. If reprogramming of device is undertaken, apply and connect defibrillator/pacing pads

ICD/ PACEMAKER

ICD ONLY

Reprogram per cardiologist

No Access to chest

Access to chest

RETURN TO PREVIOUS SETTINGS IMMEDIATELY POST-PROCEDURE

Apply magnet
## Advocate Healthcare

### Cardiac Implanted Electrical Device Patient Information

#### Operative Team Information

<table>
<thead>
<tr>
<th>Patient Sticker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgery Date and Procedure</td>
</tr>
<tr>
<td>Physician following pacemaker/ICD</td>
</tr>
<tr>
<td>Information retrieved by date</td>
</tr>
</tbody>
</table>

*Please Fax this form upon completion to pre-admitting at your hospital.*

#### CIED Team Information

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>Date of last Interrogation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Device - pacemaker, ICD, CRT-D, CRT-P, ILR, implantable hemodynamic monitor</td>
<td></td>
</tr>
<tr>
<td>Function/indication for device --</td>
<td></td>
</tr>
<tr>
<td>Estimated battery life</td>
<td></td>
</tr>
<tr>
<td>Patient pacemaker dependent Yes</td>
<td>No</td>
</tr>
<tr>
<td>Pacemaker- Pacing rate</td>
<td>ICD- Pacing rate</td>
</tr>
<tr>
<td>Does this device need to be followed up by CIED team or evaluated by manufacturer representative- Yes</td>
<td>No</td>
</tr>
<tr>
<td>If yes, within what timeframe</td>
<td></td>
</tr>
</tbody>
</table>

#### CIED Team Recommendations

- □ Nothing needed
- □ Apply Magnet
- □ Device needs to be reprogrammed pre and post procedure

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>signature</th>
</tr>
</thead>
</table>
SECTION I: Guidelines for Primary Care Physicians

ASA/Plavix (Clopidogrel) Guidelines

ASA Use Only

<table>
<thead>
<tr>
<th>Primary Prevention</th>
<th>RISK OF BLEEDING IN CLOSED SPACE</th>
<th>Secondary Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA Use Only</td>
<td>• Intracranial surgery</td>
<td>After MI, Acute Coronary Syndrome, Stent, Stroke, Peripheral Vascular Disease</td>
</tr>
<tr>
<td></td>
<td>• Intramedulary canal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Posterior eye chamber</td>
<td></td>
</tr>
<tr>
<td>STOP ASA 7 DAYS PRIOR TO SURGERY AS NEEDED</td>
<td>STOP ASA 7 DAYS PRIOR TO SURGERY AS NEEDED</td>
<td>CONTINUE ASA</td>
</tr>
</tbody>
</table>

Managing the patient with a coronary artery stent in place

Drug Eluting Stent (DES): Do NOT discontinue ASA or Plavix for 12 months after stent insertion unless discussed with surgeon and cardiologist beforehand. In patients taking Plavix for DES it is strongly recommended to have elective surgery delayed for at least 12 months if possible.

Bare Metal Stent (BMS): Do NOT discontinue ASA or Plavix for 1 month after stent insertion unless discussed with surgeon and cardiologist beforehand.

- ASA and Plavix should be continued UNLESS the risk of bleeding is greater than the risk of Thrombosis
- There is no need to discontinue ASA and Plavix for cataract surgery under topical or general anesthesia. However, if a retrobulbar block is to be used then the ophthalmologist should be consulted and Plavix discontinuation should be discussed.
- ASA and Plavix should be discontinued 5 – 7 days prior to surgery if reversal of platelet inhibition is required. If Plavix is discontinued, strong consideration needs to be given to starting or continuing ASA.

ASA + Clopidogrel

<table>
<thead>
<tr>
<th>HIGH RISK</th>
<th>HIGH RISK</th>
<th>LOW RISK</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 6 weeks after MI/PCI/BMS/CVA</td>
<td>HIGH RISK + RISK OF BLEEDING IN CLOSED SPACE</td>
<td>LOW RISK &gt;3 months after:</td>
</tr>
<tr>
<td>&lt;12 months after DES High Risk Stents</td>
<td>• Intracranial surgery</td>
<td>• BMS</td>
</tr>
<tr>
<td>• &gt;36mm length</td>
<td>• Intramedulary canal</td>
<td>• CVA</td>
</tr>
<tr>
<td>• Proximal stents</td>
<td>• Posterior eye chamber</td>
<td>• Uncomplicated MI</td>
</tr>
<tr>
<td>• Overlapping stents</td>
<td></td>
<td>• PCI without stent</td>
</tr>
<tr>
<td>• Multiple stent implantation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Stents in chronic total</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• occlusions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Stents in small vessels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Stents in bifurcated lesions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VITAL SURGERY ONLY</td>
<td>VITAL SURGERY ONLY</td>
<td>ALL SURGERY</td>
</tr>
<tr>
<td>CONTINUE ASA CONTINUE CLOPIDOGREL</td>
<td>DISCONTINUE ASA CONTINUE CLOPIDOGREL Initiate ASA Early Postop</td>
<td>CONTINUE ASA DISCONTINUE CLOPIDOGREL</td>
</tr>
</tbody>
</table>
SECTION I: Guidelines for Primary Care Physicians

Sleep Apnea

Importance of Preoperative Identification/Evaluation
- 42 million adults have sleep disordered breathing
- Only 20 million of these exhibit signs of OSA
- 24% of men and 9% of women (middle-aged) have OSA
- 30-80% of patients with CV disease have OSA
- Patients with OSA are at increased risk for perioperative morbidity and mortality due to potential difficulty maintaining a patent airway
- Due to their propensity for airway collapse and sleep deprivation, OSA patients are especially susceptible to the respiratory depressant and airway effects of sedatives, opioids, and inhaled anesthetics.
- 85% of those with Sleep Disordered Breathing are NOT diagnosed

Therefore this questionnaire should be used as a tool to screen for Sleep Apnea and if the answer to 3 or more questions is yes, the patient should be referred for further evaluation

STOP-Bang Screening for Sleep Apnea
Have you been diagnosed with sleep apnea by a sleep study? □ Yes □ No
Have you received treatment for sleep apnea, such as CPAP or Bi-PAP? □ Yes □ No

Please answer the following four questions with a yes or no answer:
1) Do you snore loudly (louder than talking or loud enough to be heard through closed doors)? □ Yes □ No
2) Do you often feel tired, fatigued, or sleepy during daytime? □ Yes □ No
3) Has anyone observed you stop breathing during your sleep? □ Yes □ No
4) Do you have or are you being treated for high blood pressure? □ Yes □ No

FOR STAFF USE ONLY. DO NOT WRITE IN THIS SECTION.

5) Is the BMI ≥ 35 kg/m2? □ Yes □ No
6) Is the patient ≥ 50 years of age? □ Yes □ No
7) Is the neck circumference greater than 15.7 inches (40 cm)? □ Yes □ No
8) Is the patient male? □ Yes □ No

Total number of questions answered YES:_____ Is the patient at high risk for OSA? □ Yes □ No

High risk of OSA: Yes to 3 or more items


