Methodist Hospital

Pre-Operative Anesthesia Guidelines 2021

Your guide to scheduling surgeries at Methodist Hospital.

METHODIST

Created in collaboration with Primary Care Physicians, the Department of Cardiology and the Department of Surgery

Preface

Guidelines are systematically developed recommendations that assist the practitioner and patient in making decisions about healthcare.

These recommendations may be adopted, modified or rejected according to clinical needs. Practice guidelines are not intended as standards or absolute requirements. Practice guidelines are subject to revision as warranted by the evolution of medical knowledge, technology, and practice.

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Anesthesia Testing Guidelines

ANESTHESIA PRE-OPERATIVE TESTING GUIDELINES

Procedure Type	Action
Cataract Surgeries	**NO routine lab tests**
GI Lab Procedures	**NO routine lab tests**
Low Risk Procedures	**NO routine lab tests**
Defined as procedures in which the combined incidence of peri-operative MI or death is <1% **Examples:** • Arthroscopies • Breast surgery • MRI/CT scans under anesthesia	**Exceptions:** • Pregnancy testing • Baseline creatinine for contrast dye injections • Lab tests only as indicated by patient's medical history
Intermediate Risk Procedures	**NO routine lab tests**
Defined as procedures in which the combined incidence of peri-operative MI or death is 1-5%, do have significant blood loss or hemodynamic changes **Examples:** • Head & Neck procedures • Total Joint Cases/Ortho cases • Prostate Surgery • IR procedures • Cardiac Cath Lab	**Exceptions:** • Pregnancy testing • Baseline creatinine for contrast dye injections • Lab tests only as indicated by patient's medical history
High Risk Procedures	**Recommended lab tests**
Defined as procedures in which the combined incidence or peri-operative MI or death is >5% or normal physiology is disrupted; commonly requires blood transfusions, invasive monitoring and/or post-op ICU care. **Examples:** • Emergency procedures *** • Aortic, major vascular, Endo AAA repair • Carotid Endartectomy • Cardiac surgery • Procedures with anticipated large blood loss or fluid shift	• CBC with platelets • CMP • Pregnancy testing • EKG ****Lab tests for Emergency procedures only performed if time allows*

CATARACT SURGERIES AND GI LAB PROCEDURES

Require no pre-operative testing for all patients in their usual state of health.

LOW RISK PROCEDURES

Low Risk Procedures	Lab requirements
Examples include, but are not limited to: • Arthroscopies • MRI with anesthesia • Breast biopsies • Non-complex ENT • Non-complex Flap reconstructions • Superficial • MRI port insertions • Cystoscopy • ESWL • Breast reconstruction • Breast augmentation • Breast reduction • Simple hernia repair • TURB/TURP/TURPT • Cardioversion • Lesion removals • Eye Procedures, excluding cataracts • Local Procedures • D&C/D&E • Hysteroscopy • Tubal ligation • Urethral sling • Interstim placement	No routine lab tests are required unless indicated by patient's medical history. ***Please see the pre-operative testing grid for direction on which tests to order.***

INTERMEDIATE RISK PROCEDURES

Intermediate Risk Procedures	Lab requirements
Examples include, but are not limited to: • Minor Head and Neck • Partial & Total thyroidectomy • Parathyroidectomy • Laparoscopic • Robotic • Diagnostic laparoscopies • Interventional Radiology • Cardiac Cath Lab • Ablations • Neck and back surgeries • Hysterectomy with or without repair • Pacemaker/ICD insertions • Major/Recurring hernia repairs • Panniculectomy • Orthopedic procedures	No routine lab tests are required unless indicated by the patient's medical history. ***Please see the pre-operative testing grid for direction on which tests to order.***

HIGH RISK PROCEDURES

High Risk Procedures	Lab requirements
Examples include, but are not limited to: • Emergency Procedures*** • Aortic repairs including endoscopic • Major vascular bypasses • Carotid endarterectomy • Cardiac surgery • Whipple • Esophagectomies • Thoracotomy/VAT • Hepatic • Gastric bypass surgery	• CBC with platelets • CMP • EKG ****Lab tests for Emergency procedures only performed if time allows*

Recommended Labs and Tests

Based on Patient's Medical History

- Lab results are valid for one month unless changes in medical condition/medications
- EKGS are valid for six months unless changes in cardiac condition
- Obtain chest X-ray for acute processes only or unstable pulmonary condition of patient with known lung disease
- Obtain Echo with new onset of murmur and evidence of decreased functional capacity
- Pregnancy testing for all Women of Childbearing Potential (WOCBP)
  - WOCBP is defined as a female who has begun menstruating and not entered menopause (absence of menses for 12 months)
  - Not required if previous tubal ligation or hysterectomy
  - Must be a serum pregnancy within 7 days or will have urine pregnancy the day of OR

ANESTHESIA PRE-OPERATIVE TESTING GUIDELINES

These guidelines identify that there should be minimal pre-operative lab tests for asymptomatic patients who have a normal history and physical and are undergoing low-risk surgical procedures.

Clinical Diagnosis	CBC	PT/INR	Glucose	BMP	CMP	EKG	LFT's	UA
ACE/ARB Usage				X				
Anemia	X							
Bleeding History	X	X			X			
Chronic Hypertension						X		
CV Disease	X			X		X		
Coumadin		X						
Diabetes			X			X		
Digitalis				X				
Diuretics				X				
Hepatic Disease	X	X			X		X	
Blood Loss Expected >1 unit	X			X				
Morbid Obesity BMI ≥ 40						X		
Potassium Supplements				X				
Pulmonary Disease	X					X		
Smoking >1 pack per day						X		
Renal Disease	X			X		X		
Steroids			X	X				
Suspected UTI								X

Chemistries:

1. No routine chemistries are necessary for the healthy patient

2. Basic Metabolic Panel

a. Diuretics

b. Digitalis

c. Chronic renal failure

d. Potassium supplements

e. ACE/ARBs

f. Hepatic failure

g. Major surgery

h. Major blood loss expected >1 unit

i. Steroids

j. Cardiovascular disease

3. Liver Function Tests

a. Cirrhosis

b. Recent or chronic hepatitis

4. Glucose

a. Diabetes

b. Steroid use

Hematologic Studies:

1. Complete Blood Count

a. Major blood loss expected >1 unit

b. History or anemia, polycythemia, platelet disorder, or bleeding disorder

c. No blood patient

d. History of end stage renal disease

e. History of coronary vascular disease

f. Hepatic disease

2. PT/PTT

a. History of bleeding disorder

b. Hepatic disease

c. Taking anticoagulation medications

EKG GUIDELINES

When to obtain an EKG:

1. **Vascular surgery patients with at least one of the following clinical risk factors:**
    a. Coronary artery disease
    b. Congestive heart failure
    c. Diabetes
    d. Myocardial infarction within 6 months
    e. Murmur
    f. Creatinine >2
2. **Patients with known coronary, peripheral, or cerebrovascular disease undergoing intermediate risk surgery.**
3. **Morbidly obese (BMI ≥ 40)**
4. **Vascular/thoracic surgery patients with clinical indications from history and physical**
5. **Intermediate Risk Surgery Patients with at least one of the following clinical risk factors:**
    a. Coronary artery disease
    b. Congestive heart failure
    c. Diabetes
    d. Myocardial infarction within 6 months
    e. Murmur
    f. Creatinine >2
    g. Obesity BMI ≥ 40 or limited activity METS <4
    h. History of atrial fibrillation
6. **Active smoker >1 pack per day undergoing Intermediate or High Risk Surgery**
7. **Patient who has chronic hypertension**

EKG RESULTS

<table>
<tr><th>EKGS</th><th>EKG findings need to be evaluated in conjunction with the patient's history</th></tr>
<tr><td>EKGs
(No need to further evaluate)

**Medical Clearance from PCP or Cardiology must include data to support clearance.

• "Cleared for Surgery" is NOT sufficient without supporting data</td><td>The following do NOT need to be called to the anesthesiologists/cardiologists attention in absence of other cardiac history:
• Low voltage
• Axis deviation
• Atrial enlargement
• LVH
• Accelerated AV condition
• 1st degree AV block
• Early repolarization
• RBBB: No evidence of CV disease and asymptomatic
• Sinus bradycardia <50 and asymptomatic
• Early repolarization
• Pacemaker
• Conduction delay
• Premature atrial contractions
EKG abnormalities do not need to be further evaluated if:
• Patient had medical clearance for this procedure from primary care physician on staff and clearance notes EKG was read. **
• Patient has a cardiac history and has clearance for his procedure from a cardiologist on staff and clearance notes current EKG was read.**
• Patient is having cardiac surgery or ICD placement

Please try to obtain previous EKGs for comparison, notes, and cardiac workups including Echos and stress tests to assist in the evaluation of patient.</td></tr>
<tr><td>EKGs (Requiring further evaluation. May need to see primary care provider, pre-surgery clinic or anesthesiologist for day of procedures)</td><td>• MI, including history and age undetermined or cannot rule out
• Acute ischemic changes
• 2nd, 3rd degree heart block
• Left bundle branch block
• Left anterior fascicular block
• ST and/or T wave abnormalities
• New onset atrial fibrillation
• RBBB: Evidence of CV disease or CV symptoms</td></tr>
</table>

EKG RESULTS

Peri-operative Cardiovascular Evaluation & Care for Non-Cardiac Surgery

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)
- Unstable or severe angina

Decompensated Congestive Heart Failure

- Severe limitations
- Worsening heart failure
- New-onset heart failure

Severe Valvular Disease

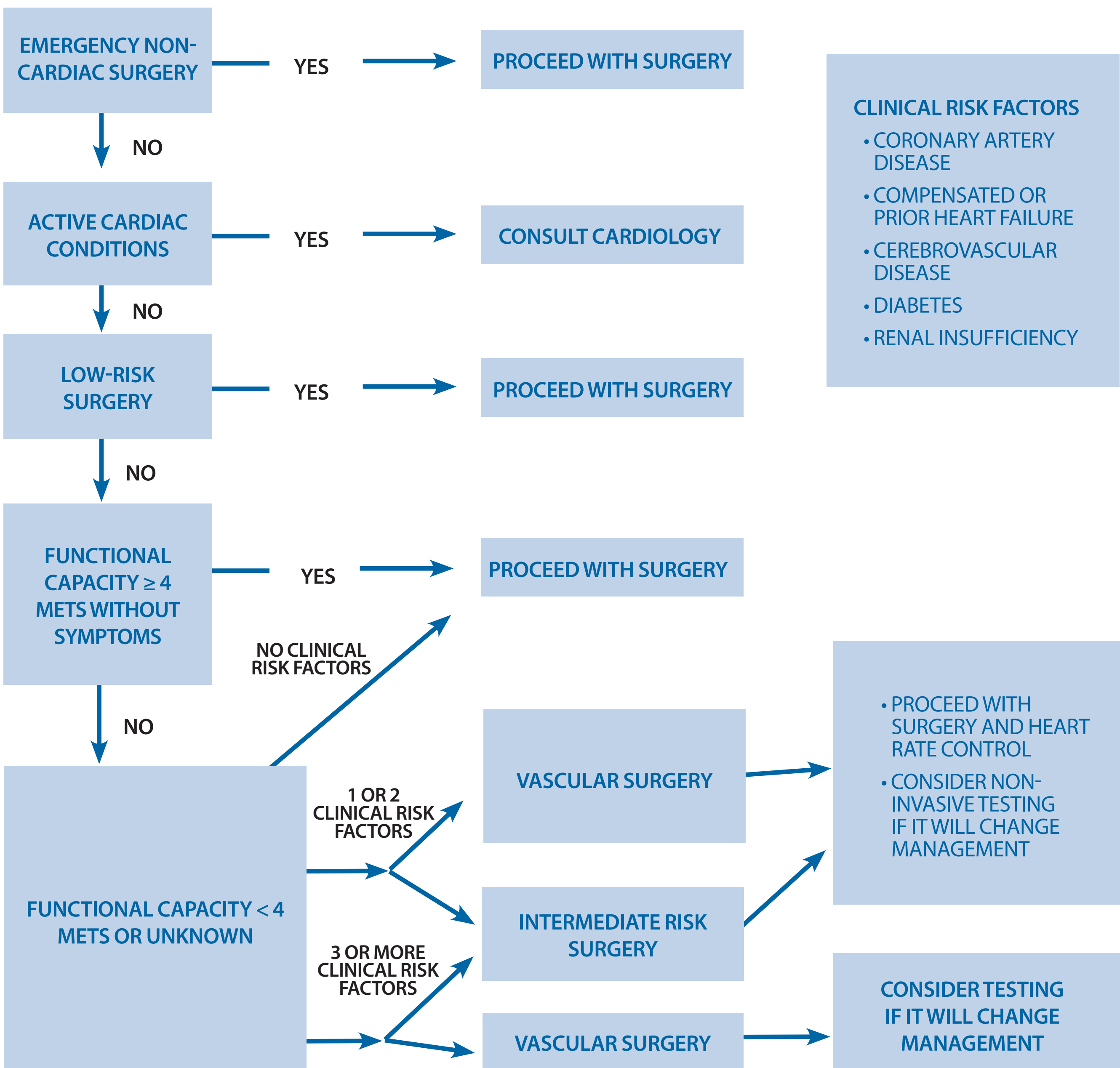
- Severe aortic stenosis
  - Mean pressure gradient >40mm Hg
  - Aortic valve area < 1 cm2
  - Symptomatic
- Symptomatic mitral stenosis
  - Progressive dyspnea on exertion
  - Exertional presyncope
  - Heart failure

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 (> 100 bpm at rest)
- Symptomatic bradycardia
- Newly recognized ventricular tachycardia

CARDIAC EVALUATION CARE ALGORITHM

After initial evaluation: Is further testing needed?



* See following page for "METS" scoring

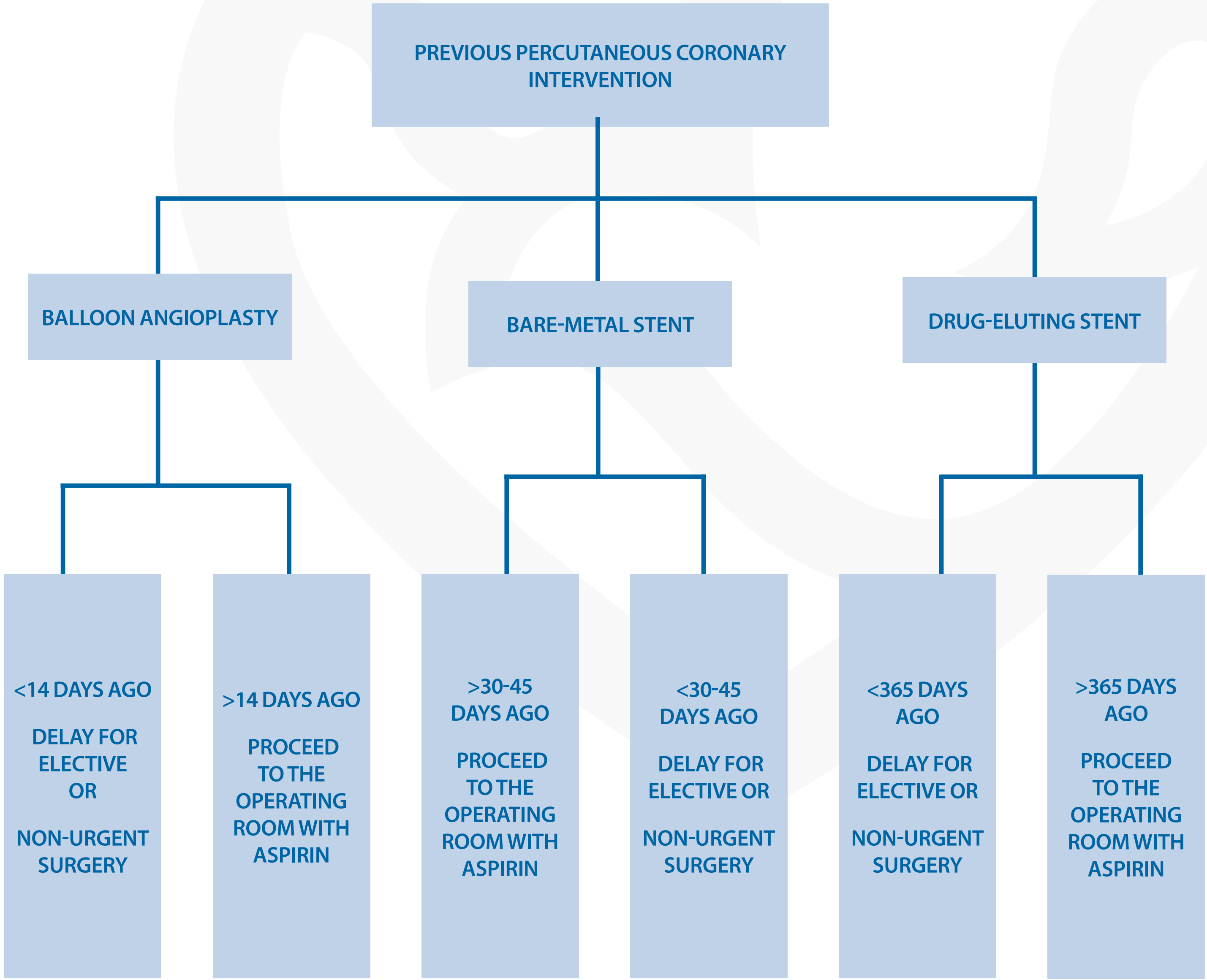
FUNCTIONAL CAPACITY (METABOLIC EQUIVALENTS –METS)

Function: Can Patient --	Rating
Walk slowly, less than 2 mph	2
Garden, light	2
General house cleaning	3
Walk briskly, 3 mph	3.3
Heavy yard work or gardening	4
Climb stairs	4
Ride a bicycle, less than 10 mph 4	4
Dance (ballet or modern)	4.8
Snorkel	5
Mow the lawn with a hand mower	5.5-6.0
Shovel snow	6
Hike, strenuous	6-7
Kayak or row	6-8
Ski, downhill	6.8
Ride a bicycle, 10-16 mph	6-10
Aerobic calisthenics	6-10
Play tennis (singles)	7-12
Swim, crawl, slow	8
Run, 8 mph	13.5

STENTS/CARDIAC CATH INFORMATION

Recommendation per cardiology staff:

- Cardiologist to be contacted regarding recommendations for stopping antiplatelet therapy
  - Complex stenting may be an issue that precludes stopping any antiplatelet medication



Pre-operative NPO Guidelines for non-emergent surgery in healthy patients without clinical concerns

For patients in whom there does not appear to be reason for clinical concern about increased risk for aspiration, the following guidelines should be observed in non-emergent or "elective" situations:

Up until 8 hours prior to surgery: Food and fluids as needed

Between 4 and 8 hours prior to surgery: Clear liquids (examples below) only. Note clinical concern below for exceptions and strict NPO.

**Infants may have breast milk until 4 hours prior to surgery.*

4 hours prior to surgery: No solids or liquids.

Examples of acceptable and unacceptable clear liquids are:

a. **Acceptable:** Water, Sprite, Coffee or Tea (no milk or lemon), fruit juice without pulp

b. **Unacceptable:** Milk, Coffee or Tea with Milk, Infant Formula, any alcoholic beverage

For infants not at increased risk for aspiration of gastric contents, breast milk may be ingested up to 4 hours prior to surgery.

The individual anesthesiologist should weigh risks and benefits when determining the appropriate fasting interval in these situations.

Pre-operative NPO guidelines in non-emergent situations where there is clinical concern regarding increased risk of aspiration is at least 8 hours. This includes the following patient conditions:

Some examples of reasons for clinical concern regarding increased risk of aspiration are:

a. Obesity

b. Diabetes Mellitus with Gastroparesis

c. Pregnancy

d. A history of gastroesophageal reflux/hiatal hernia

e. Bowel obstruction

f. Potential difficult airway management

g. Opiate analgesics

PRE-OPERATIVE MEDICATION MANAGEMENT

Drug Class	Action	Reason
Anti-hypertensives and cardiovascular drugs:		
• **Angiotension Converting Enzyme (ACE) Inhibitors**	**HOLD** day of surgery	
• **Angiotension Receptor Blockers (ARB)**	**HOLD** day of surgery	
• **Beta blockers**	Continue day of surgery	
• **Digoxin**	Continue day of surgery	
• **Diuretics and diuretic combinations**	**HOLD** day of surgery	**Increased risk of hypokalemia and hypovolemia**
• **Renin inhibitor**	Continue day of surgery	
• **Statins**	Continue day of surgery	
Anti-Reflux:		
• **H2 blockers, proton pump inhibitors**	Continue day of surgery	
• **Antacids** (e.g. Tums, Mylanta, Carafate)	**HOLD** day of surgery	
Analgesics:		
• **Nonsteroidal anti-inflammatories (NSAIDS)**	**HOLD** day prior to surgery	**Increases risk of bleeding and renal complications**
• **Cox-2 inhibitors**	**HOLD** at least 3 days prior to surgery	
Chronic Amphetamines:		
• **Adderall (amphetamine/ dextroamphetamine), Vyvanse (lisdexamfetamine), and Dexadrine (dextroamphetamine)**	**HOLD** for 2 days prior to surgery	
Diet Meds:		
• **Fenfluramine, dexfenfluramine, phentermine, HCG**	**HOLD** 1 week prior to surgery	
Opiate Antagonists:		
• **Contrave**	**HOLD** 72 hours prior to surgery	
• **Naltrexone**	**HOLD** 72 hours prior to surgery	
• **Suboxone**	**HOLD** day of surgery	
TNF Blocking Agent		
• **Humira (adalimumab)**	**HOLD** 2 weeks prior to surgery	

Drug Class	Action	Reason
Anti-coagulants:		
• **Abciximab** (Reopro)	**HOLD** 36-48 hours prior to surgery	**Increased risk of bleeding**
• **Aggrenox**	**HOLD** 7 days prior to surgery	
• **Aspirin, aspirin containing compounds**	**HOLD** 2-5 days prior to surgery	
• **Clopidogrel** (Plavix)	**HOLD** 7 days prior to surgery	
• **Dabigatran** (Pradaxa)	**HOLD** 24 hours prior to surgery for crcl 15-30; 48 hours for crcl 31-50; 72 hours for crcl >50	
• **Dipyridiamole** (Presantine)	**HOLD** 48 hours prior to surgery	
• **Direct thrombin inhibitors**		****Check PTT prior to surgery**
Argatroban**	**HOLD** 2 hours prior to surgery	
Bivalirudin**	**HOLD** 4 hours prior to surgery	
• **Eliquis**	**HOLD** 24 hours prior to surgery for low bleeding risk procedures; 48 hours prior for moderate to high bleeding risk	
• **Eptifibatide** (Integrilin)	**HOLD** 8 hours prior to surgery	
• **Heparin ****	**HOLD** 4 hours prior to surgery	****Check PTT prior to surgery**

PRE-OPERATIVE MEDICATION MANAGEMENT

Drug Class	Action	Reason
Anti-coagulants: (continued)		
• Low molecular weight heparin (Fragmin, Lovenox)	HOLD 24 hours prior to surgery	**Check anti-Xa prior to surgery**
• Pragurel (Effient)	HOLD 7 days prior to surgery	
• Ticlopidine (Ticlid)	HOLD 10-14 days prior to surgery	
• Warfarin (Coumadin)	HOLD 5 days prior to surgery	**Check a PT/INR prior to surgery**
• Xarleto	HOLD 24 hours prior to surgery, longer with renal or hepatic impairment	
Herbals	HOLD all herbals 2 weeks prior to surgery	**Increased risk of bleeding**
Antidepressants:		
• Isocarboxazid (Marplan) • Monoamine oxidase inhibitors (MAO-I) • Phenelzine (Nardil) • Selegiline (Emsam) • Tranylcypromine (Parnate)	**TAPER OFF** 2 weeks prior to surgery, if approved by prescribing physician	**Possible hypertensive crisis, interactions with peri-operative medications**
Erectile Dysfunction Drugs:		
• Viagra (Sildenafil) • Levitra (Vardenafil)	HOLD 24 hours prior to surgery	**Unsafe drop in blood pressure**
• Cialis (Tadalfil)	HOLD 36 hours prior to surgery	**Unsafe drop in blood pressure**

METHODIST/WOMEN'S HOSPITAL – ANTICOAGULATION GUIDELINES FOR ANESTHESIA PERCUTANEOUS NEURAXIAL PROCEDURES

Guidelines to prevent Spinal Hematoma following Epidural/Intrathecal/Spine Procedures

Medications:	Time interval for placement of catheter after last dose: *longer in patients with renal impairment (see recommendations below)	Use of antithrombotic agent in patients with indwelling neuraxial catheters:	Time interval for removal of catheter after last dose of medication:	Time interval to restart medication after catheter is removed:
Heparin – full dose IV	When PTT<38 (check at approximately 4 hours after stopping heparin infusion)	CONTRAINDICATED while catheter in place		4 hours
Heparin 5000units subcutaneous q8hr/q 12hr (prophylaxis)	6 hours	May be given with catheter in place, wait 1 hr after needle placement	6 hours	1 hour
	No time restrictions for catheter placement after initial one time pre-op dose			
Apixaban (Eliquis), rivaroxaban (Xarelto), edoxaban (Savaysa), betrixaban (Bevyxxa)	72 hours	CONTRAINDICATED while catheter in place		6 hours
Dabigatran (Pradaxa)	5 days			
Enoxaparin (Lovenox) 40mg subcutaneous q12hr/q24hr or 30mg subcutaneous q12hr/q24hr (prophylaxis)	12 hours*			4 hours
Enoxaparin (Lovenox) 1 mg/kg q12hr or 1.5 mg/kg q24hr (treatment)	24 hours*			
*For patients receiving **heparin** or **enoxaparin** for more than 4 days, a platelet count should be assessed to evalute for potential heparin-induced thrombocytopenia*				
Warfarin	When INR <1.5	CONTRAINDICATED while catheter in place		4 hours
Fondaparinux (Arixtra) 2.5 mg subcutaneous q24hr (prophylaxis)	96 hours*			
Fondaparinux (Arixtra) 5-10mg subcutaneous q24hr (treatment)				
Argatroban	When PTT<38 (check PTT at approximately: 2 hours after stopping bivalirudin*, 4 hours after stopping argatroban)			
Bivalirudin (Angiomax)				
Abciximab (ReoPro)	48 hours			
Eptifibatide (Integrilin), Tirofiban (Aggrastat)	8 hours*			
Alteplase (TPA) – full dose for stroke, MI, PE, etc	10 days			10 days
Alteplase (TPA) – 2 mg dose for catheter clearance	May be given with no time restrictions			
Oral Antiplatelet Agents – contact cardiologist prior to stopping Plavix, Effient, Brilinta, Ticlid or Persantine in patients with cardiac stents				
Aspirin/NSAIDs	May be given with no time restrictions IF not being used concurrently with other anticoagulants or antiplatet agents			
Clopidogrel (Plavix), ticagrelor (Brilinta), dipyridamole (Persantine), dipyridamole + ASA (Aggrenox)	7 days	CONTRAINDICATED while catheter in place		6 hours
Ticlopidine (Ticlid), prasugrel (Effient)	10 days			
Cilostazol (Pletal)	2 days			

References:

Horlocker TT, et al. Regional Anesthesia in the Patient Receiving Antithrombotic or Thrombolytic Therapy. Regional Anesthesia and Pain Medicine 2018:43:263-309.
Gogarten W, et al. Regional Anaesthesia and Antithrombotic Agents: Recommendations of the European Society of Anaesthesiology. E J Anaesthesiol 2010:27:999-1015.

***Renal impairment recommendations:**

Enoxaparin: consider waiting at least 24 hours after a prophylaxis dose and 48 hours after a treatment dose for patients with crcl <5Oml/min; consider checking LMWH Xa level
Fondaparinux: consider waiting 6 days for crcl 30-60ml/min; medication is contraindicated in pts with crcl <30ml/min
Bivalirudin: consider waiting at least 4 hours in pts with crcl <30ml/min
Eptifibatide/Tirofiban: consider waiting at least 16 hours in pts with crcl <50ml/min

DIABETIC PROTOCOL/MANAGEMENT

4 Days prior to Procedure

- Patients should NOT take SGLT2 inhibitors for 4 days prior to their procedure. This includes: Canagliflozin, Dapagliflozin, Empagliflozin, Ertugliflozin

Day prior to Procedure

- Patient should follow anesthesia guidelines regarding NPO/clear liquids prior to procedure
- Patient should NOT take Sulfonylureas or Chlorpropamide
- Patient may take usual mealtime insulin doses with evening meal
- Patient should NOT take bedtime doses of Novolog, Humalog, Apidra, or regular insulin
- Patient should administer 70% of routine dose of long acting insulin, Lantus, Levimir, or NPH
- If patient takes an insulin mix at bedtime, consult physician for dosing
- Patient should monitor glucose as usual and treat low blood glucose per current regimen; if NPO treat low blood sugar with a clear liquid that contains sugar (e.g. 7 UP), oral glucose tab, etc.

Morning/Day of Procedure

- Patient should NOT take any oral hypoglycemic
- Patient should NOT take any non-insulin injectable anti-diabetic agents
- Patient should NOT take morning insulin doses (will be administered at the hospital)
- If patient receives routine morning dosing of Lantus or Levimir, administer 50% of routine dose (if surgery is scheduled after 12pm)

FREQUEST CONTACT NUMBERS AND REFERENCES

Surgery Scheduling Office

- Surgery Scheduling Office (402) 354-6223
  - Surgery Scheduling Manager: Ronda Gammel (402) 354-4772

Pre-Surgery RN

For questions related to patient preparation, education, or pre-testing needs:

- Pre-Surgery Screening Nurse Call Center (402) 354-5100
  - Pre-Surgery Screening FAX (402) 354-4010
  - Pre-Surgery RN Manager: Julia Luceri-Barry (402) 354-5116

Methodist HealthWest
16120 W Dodge Rd.

- OR Desk: (402) 354-0780
- Pre-Op: (402) 354-0783
- PACU: (402) 354-0788
  - HealthWest Surgical Services Manager: Emily McGuire (402) 815-1641

Methodist Hospital (Main) Operating Room
8303 Dodge Street

- OR Front Desk: (402) 354-4744
  - OR Nurse Manager: Jenny Miller (402) 354-3019
- Pre-Op Front Desk: (402) 354-4054
  - Pre-Op Nurse Manager: Ashley Sullivan (402) 354-6782
- PACU Front Desk: (402) 354-4197
  - PACU Nurse Manager: Ashley Sullivan (402) 354-6782

Methodist Outpatient Surgery
8303 Dodge Street

- OR Front Desk: (402) 354-4207
  - OR Nurse Manager: Jenny Miller (402) 354-3019
- Pre-Op Front Desk: (402) 354-4206
  - Pre-Op Nurse Manager: Ashley Sullivan (402) 354-6782
- PACU Front Desk: (402) 354-4205
  - PACU Nurse Manager: Ashley Sullivan (402) 354-6782

Methodist Women's Hospital
707 N 190th Plaza

- OR Front Desk: (402) 815-1666
- Pre-Op & PACU: (402) 815-1292
  - Women's Hospital Surgical Services Manager: Emily McGuire (402) 815-1641

References*

Practice Advisory for Pre-anesthesia Evaluation: An Updated Report by the American Society of Anesthesiologists Task Force on Pre-anesthesia Evaluation 2011.

UpToDate: Estimation of cardiac risk prior to non-cardiac surgery

Cochrane Review: Routine Preoperative Medical Testing for Cataract Surgery

Feely MA, Collins CS, Daniels PR, Kebede EB, JROI, MUXK KD, *Preoperative Testing Before NonCardiac Surgery: Guidelines and Recommendations.* Am Fam Physician. 2013:87(6):414-418Preoperative

**List is not all inclusive*

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