PROTOCOL
Pre-Procedure Anesthesia Protocol

This Protocol is Applicable to the following sites:

Big Rapids (Mecosta County Medical Center), Gerber (Newaygo County General Hospital Association), Ludington (Memorial Medical Center of West Michigan), Outpatient/Physician Practices, Pennock (Pennock Hospital), Reed City (Reed City Hospital Corporation), SH GR Hospitals (Spectrum Health Hospitals), SHMG, United/Kelsey (Spectrum Health United; Spectrum Health Kelsey Hospital), Zeeland (Zeeland Community Hospital)

Applicability Limited to: N/A

Reference #: 9812

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Functional Area: Clinical Operations

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1. **Purpose:** To outline the management of pre-operative testing orders and medical clearance.

2. **Definitions:**

   a. Metabolic equivalent of task (MET): or simply metabolic equivalent, is a physiological concept expressing the energy cost of physical activities (see Appendix E)
   b. Poor functional capacity: a score of less than 4 when using the MET scale
   c. Decrease in functional capacity: A change in metabolic equivalent of task that equals greater than two points decrease on the MET scale. Example: Patient scores a 6 on the MET scale, but reports a previous activity score of 8 or above.

3. **Abbreviations:**
   a. AAA- Abdominal Aortic Aneurysm
   b. ACEI- Angiotensin-Converting Enzyme Inhibitor

c. ARB- Angiotensin-Receptor Blocker
d. BMP- Basic Metabolic Panel
e. BS- Blood sugar
f. CBC- Complete Blood Count
g. CMP- Complete Metabolic Panel
h. DOS- Day of Surgery
i. DOD- Doctor of the day
j. EKG- Electrocardiogram
k. HCG/UCG- Human Chorionic Gonadotropin/Urine Chorionic Gonadotropin
l. H&H- Hemoglobin and hematocrit
m. PCP- Primary Care Provider (PCP)
n. T&S- Type and Screen

4. **Protocol Inclusion Criteria**
   a. All adult and pediatric patients undergoing anesthesia within surgical services at a Spectrum Health facility.
5. **Protocol Exclusion Criteria**
   a. Procedural sedation
   b. Anesthesia outside of Surgical Services
6. **Protocolized Medications**
   a. Protocolized Medications
   b. Protocolized Orders
7. **Responsibility:**
   a. Registered Nurse (RN)
8. **Protocol Information:**
   a. This protocol allows a Registered Nurse to:
      i. order specific tests for patients coming to a Spectrum Health facility for surgery preoperatively
      ii. instruct patients on medication discontinuation for specific medications preoperatively
      iii. gives the RN guidance on when to refer the patient for additional medical evaluation preoperatively.
9. **Protocol Order Type**
   a. "Protocol, NO co-sign required" should be used when ordering based on this protocol
10. **Protocol Interventions**
    a. Preoperative Testing: A preoperative order will be implemented after the patient has been assessed by the RN and the appropriate patient diagnosis and surgical procedure have been correlated with the appropriate diagnostic work as identified on the Preoperative Anesthesia Testing Grid (see Appendix B).
       i. Prior to procedures completed within surgical services that will require anesthesia, the RN will gather assessment data and medication history from the patient.
       ii. The RN, using the assessment data, will compare patient information with the specified criteria defined on the Preoperative Anesthesia Testing Grid.
       iii. Upon correlation of criteria with the Preoperative Anesthesia Testing Grid, any outstanding laboratory work or EKG will be identified and documented on the task list in the electronic health record. Outstanding tests will be ordered on or before the day of service (DOS) using the name of the provider who ordered the "preoperative anesthesia protocol". The communication type is "protocol no co-sign required".

iv. The RN should only exclude tests from the above if a provider has documented a specific exception to the protocol in their note.
v. Deviations will be reviewed by anesthesia prior to case start time.

b. Preoperative Patient Medication Instructions: The RN, using the assessment data and medication history received from the patient/caregiver, will instruct the patient/caregiver on preoperative medication adherence per anesthesia guidelines as outlined in Appendix D.
   i. The RN will document this on the electronic Patient Education Record.
   ii. If the patient reports that conflicting instructions have been given from the surgeon or primary care physician, the RN will notify the Anesthesia Provider for the site; designated as Doctor of the Day (DOD), Anesthesia in Charge (AIC), or First Call Anesthesiologist for direction.
   iii. If patient arrives day of surgery and has not taken the beta blocker, calcium channel blocker, anti-arrhythmic, anti-anginal, and/or anticonvulsant within 24 hours or has not held the Angiotensin-Converting Enzyme Inhibitor (ACEI) or Angiotensin-Receptor Blocker (ARB), the RN will notify the assigned Anesthesia Provider.
      1. This point may be bypassed if there is a documented reason and the Anesthesia Provider approves.

c. Need for Medical Evaluation: The RN will identify functional capacity and clinical risk factors using the Metabolic Equivalent Grid (Appendix E). Poor functional capacity is defined as less than 4 METS. If this is the case, the nurse should request that the surgeon consider medical evaluation prior to day of the procedure, based upon their assessment of the patients function capacity using the Metabolic Equivalent Grid (Appendix E).

11. Documentation:

a. Assessment data gathered to inform protocol use
b. Care provided under the direction of the protocol
c. Patient verbal response to the new orders and medication directions
d. Patient/Caregiver teaching

Revisions

Spectrum Health reserves the right to alter, amend, modify or eliminate this protocol at any time without prior written notice and in compliance with *Administrative Policy: Policy and Procedure Structure, Standards and Management*.

Protocol Superseded and Replaced: This protocol supersedes and replaces the following policies as of the effective date of this protocol: CPOL-IPR-D-385-PERI

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Anesthesia, Pre-procedure assessment, Presurgery, Preop Anesthesia Testing, surgery, surgical, testing, PPP

Appendix A

Surgical Predictors of Increased Risk

Surgical risk is the aggregate factors that the procedure has on the patient unrelated to the patient's medical condition. These factors include, but are not limited to, level of invasiveness, duration, blood loss, anesthesia, fluid requirements, patient positioning (prone procedures are higher risk), and intraoperative and postoperative physiologic distress.

Medium/High Risk

- Emergent major operations, particularly in patients older than 75 years
- Cardiac surgeries
- Major vascular surgery (AAA)
- Prolonged duration (greater than 3 hours) with anticipated large blood loss, fluid shift, or use of cell savers, (radical hysterectomy, radical cystectomy or nephrectomy, major spine, complicated intra-thoracic or abdominal, complicated head & neck).
- Craniotomy
- Revision Hip Replacement
- Carotid endarterectomy
- Open peripheral vascular procedure and aortic stent grafts
- Uncomplicated Head and neck surgery
- Uncomplicated thoracic and abdominal surgery
- Total Joint other than revision hip
- Prostate surgery, including radical
- Uncomplicated spine
- Breast reconstruction

Low Risk

- Percutaneous extremity peripheral vascular
- Endoscopic procedures, peripheral (excludes shoulder/hip)
- Superficial procedures, such as breast, carpal tunnel, cosmetic plastic

No Risk

- Cataract
- Local anesthesia

Testing Based on Risk and Comorbidities

	Healthy (No comorbidities)	**Unhealthy (at least one comorbidity)**
No Risk	None	None
Low Risk	Pregnancy test as indicated in the Pregnancy Testing for Surgical Patients policy.	Glucose and A1C for diabetic patients; pregnancy test as indicated in the Pregnancy Testing for Surgical Patients policy; BMP for renal dialysis patients
Medium/High Risk	Preoperative Anesthesia Testing Grid for Medium/High Risk Procedures	Preoperative Anesthesia Testing Grid for Medium/High Risk Procedures

Appendix B

Preoperative Anesthesia Testing Grid

I. Preoperative Anesthesia Testing Grid-Low Risk Surgeries with at least ONE co-morbidity

a. Low risk surgeries do not require preoperative testing; with the exception of a glucose and A1C for diabetic patients, a pregnancy test as indicated in the Pregnancy Testing for Surgical Patients policy and a BMP for renal dialysis patients if dialysis has been interrupted. Some sites do require a glucose POC test the morning of surgery, please follow standard work for these sites.

b. PT/INR is not required for anesthesia in a low risk procedure but may be ordered by the surgeon for something else (e.g. nerve blocks).

II. Preoperative Anesthesia Testing Grid-Medium and High-Risk Surgeries

	CBC (6 months)	PT/PTT/INR (6 months)	BMP-Lytes Creat/BUN (6 months)	BS DOS	HCG/UCG	T&S (1 week)	HgbA1C (90 days)
Undefined History of Bleeding	X	X					
Anemia	X						
Thrombocytopenia	X						
Cardiovascular Disease/MI/CAD/CHF/ Arrhythmia/Vascular Disease	X		X				
ACE's or ARB's			X				
Diuretics			X				
Malignancies/Rad Tx/Chemo w/in past 6 months	X						
Hepatic Disease	X	X	*CMP	X			
Diabetes			X	X			X
Endocrine Disorder			X				
Renal Failure/Insufficiency within 30 days, (Dialysis H&H and K+ within 24 hours)			X				
Coumadin		*PT/INR					
Premenopausal					X		
Sickle Cell Anemia	X					X	
Non-steroid Immunosuppressant	X						
Hysterectomy (CBC within 30 days)	X						
Surgery > 3 hours	X		X			X	

*Any boxes that have writing rather than an "X" should be followed, rather than the column heading.

III. Preoperative EKGs

A. All Surgeries (low, medium and high risk)

Required within 30 days only for anyone with recent changes in functional status, new or unstable angina, or progressive dyspnea. Please request the most recent evaluation by the provider and the most recent EKG to place in the patient's file.

B. Additional Requirements for Medium & High-Risk Surgery

Required within 6 months for anyone with:

- Poor functional capacity with METs < 4
- All Major Vascular Surgery
- Any surgery with anticipated postoperative ICU admission
- CAD
- CHF (systolic or diastolic)
- Uncontrolled HTN
- Cardiac arrhythmias
- Pacemakers or ICDs
- Structural heart disease such as valvular disorders
- CAD "equivalents" including:
    - Insulin dependent DM
    - CVA/TIA
    - CKD with Creatinine > 2 or ESRD
    - Peripheral arterial or cerebrovascular disease
- History of moderate to severe pulmonary disease
- HIV

***Please note that patient age is not a criterion for obtaining a preoperative EKG.**

Appendix C
Explanation of Pre-operative Anesthesia Testing Grid

Undefined History of Bleeding: Any patient with a known coagulopathy (does not form clots normally) or bleeding tendency; including, but not limited to hemophiliacs, patients with factor deficiencies, or low platelet count.

Anemia: Any patient with a current anemia (treated or untreated) including, but not limited to low hemoglobin, low iron, or B12 deficiency.

Thrombocytopenia: Any patient with a known diagnosis of thrombocytopenia.

CV disease/MI/CAD/CHF/Arrythmia/Vascular disease: Any patient with cardiovascular disease including, but not limited to, previous cardiac surgery, angioplasty, coronary stent or intervention, or myocardial infarction (MI), congestive heart failure (CHF), abdominal aortic aneurysm (AAA), coronary artery disease (CAD), arteriosclerotic heart disease (ASHD), peripheral vascular disease (PVD), or valve disease. Exception: Mitral valve prolapses

ACE/ARBS: Any patient currently on an ACE or ARB antihypertensive medication.

Diuretics: Any patient currently on any diuretic medications. *If K+ level is abnormal repeat DOS.

Malignancies/Radiation treatment/Chemotherapy w/in past 6 mo: Any patient with a history of malignancy, radiation treatment or chemotherapy within the past 6 months. Exception: minor skin lesions.

Hepatic disease: Any patient with active or chronic liver disease including, but not limited to liver failure, cirrhosis, or hepatitis C. Exception: Hepatitis A or B that is resolved.

Diabetes: Any patient with diabetes (diet controlled, oral or insulin controlled). These patients also require the Diabetes Management - PreProcedure Form (X17340) completed by a Primary Care Provider (PCP) or Endocrinologist.

Endocrine Disorder: Any patient with an endocrine disorder including, but not limited to Graves' disease, hypothyroid, adrenal, or pituitary disorders.

Renal failure/Insufficiency/Dialysis: Any patient with current renal failure/insufficiency including, but not limited to glomerulonephritis or polycystic kidney disease. A medical evaluation within 6 months may be required.

Coumadin: Any patient taking warfarin should receive a PT/INR 3 days after stopping the medication, but at least 12-24 hours prior to surgery. *If abnormal, repeat prior to surgery.

Premenopausal: All menstruating premenopausal persons require a urine pregnancy test. A serum test may be ordered within 48-72 hours of procedure if patient is auric. **Exception**: please refer to the Pregnancy Testing for Surgical Patients policy.

Sickle Cell Anemia: Any patient with sickle cell anemia or hemoglobinopathy including, but not limited to, thalassemia minor.

Non-steroid Immunosuppressant: Any patient taking non-steroidal immunosuppressant or disease modifying anti-rheumatic drugs such as Enbrel or Humira.

Hysterectomy: If patient is undergoing a hysterectomy.

Surgery Greater than 3 hours: Any patient undergoing a prolonged procedure greater than 3 hours anticipated to be associated with large fluid shifts and/or blood loss.

Appendix D

Medication Grid

Instructions:	Medication category:	Common examples:	Additional information:
Continue taking/take DOS	Beta Blockers	atenolol (Tenormin), metoprolol (Lopressor, Toprol XL)	
	Calcium Channel blockers Antiarrhythmics Antianginal Statins Alpha-adrenergics	Amlodipine (Norvasc), diltiazem (Cardizem), Propranolol (Inderal LA, Inderal XL, InnoPran XL), procainamide (Procan SR), isosorbide mononitrate (Imdur), atorvastatin (Lipitor), doxazosin (Cardura), clonidine (Catapres), tamsulosin (Flomax), finasteride (Proscar)	
	Neuro/Seizure medications Anticonvulsants	Carbamazepine (Carbatrol, Epitol, Tegretol), levetiracetam (Keppra, Spritam, Elepsia XR)	
	Antireflux (tablet or capsule form only)	lansoprazole (Prevacid), omeprazole (Prilosec), pantoprazole (Protonix), H2 blocker	No antacids / tums, no liquids except sodium citrate
	Psych/antidepressants/antianxiety		MAO Inhibitors require anesthesia notification
	Pain medication (except NSAIDS)	oxycodone (Oxycontin, Roxicodone)	Take narcotics / opioids on normal schedule.
	Inhalers		
	HIV medications		
	Anti-neoplastic medications	tamoxifen (Soltamox)	
	Thyroid replacement / Corticosteroids		
	Diuretics	Furosemide (Lasix)	
	MAO inhibitors	isocarboxazid (Marplan), phenelzine (Nardil)	May continue taking – **Please notify the Medical Director of Anesthesia for appropriate**

Instructions:	Medication category:	Common examples:	Additional information:
			anesthesia assignment.
	Hormone therapy/Birth Control	estrogens (Menest)	Risk for blood clots vs risk for unplanned symptoms/pregnancy.
	Opioid Opioid agonist Opioid antagonist		
Do Not Take DOS	Angiotensin-converting Enzyme inhibitors (ACEIs)	lisinopril (Zestril)	Potential for intraoperative hypotension.
	Angiotensin receptor II blockers (ARBs) ***Clarification: Also hold any combination meds that include an ACE/ARB**	candesartan (Atacand), losartan (Cozaar)	Potential for intraoperative hypotension.
	Oral diabetic meds (see below for SGLT-2 inhibitors)	metformin (Fortamet, Glucophage)	
	Osteoporosis	raloxifene (Evista), alendronate (Fosamax)	
Do Not Take for 72 Hours Before Surgery	SGLT-2 Inhibitors (an oral diabetes medication)	canagliflozin (Invokana), dapagliflozin (Farxiga), empagliflozin (Jardiance), ertugliflozin (Steglatro)	Potential for postoperative normoglycemic DKA
Do Not Take for 7 days prior to surgery	Vitamins and herbals	All types	*May defer to cancellation on case by case basis but recommendations are to hold 1 week prior.
	Cannabinoids	Marijuana	*Should advise to stop smoking for as long before and after surgery as possible *Other routes, such as orally, have limited anesthetic consequences and are okay to continue.
	Anorectics	fenfluramine/phentermine (Fen-phen)	
	NSAIDS -Except Cox II Inhibitors		

Instructions:	Medication category:	Common examples:	Additional information:
Refer to Policy	Insulin Pumps		Reference #7227 **Insulin Pump: Continuous Subcutaneous Insulin Infusion** Reference #14660 **Diabetes Management in the Adult Surgical/Procedural Patient**

Appendix E
Metabolic Equivalent Scale

A medical evaluation within 6 months may be required for any patient whose functional status is less than 4 METS

Physical Activity	**MET**
Sleeping	0.9
Watching Television	1.0
Walk indoors such as around your house	1.75
Writing, desk work, typing	1.8
Walking, 1.7 mph (2.7 km/h), level ground, strolling, very slow	2.3
Light work around the house like dusting or washing dishes	2.70
Walk a block or two on level ground	2.75
Can you take care of yourself (eating, dressing, bathing, or using the toilet)?	2.75
Walking 2.5 mph	2.9
Bicycling, stationary, 50 watts, very light effort	3.0
Walking 3.0 mph	3.3
Calisthenics, home exercise, light, or moderate effort, general	3.5
Moderate work around the house like vacuuming, sweeping floors or carrying in groceries	3.5
Walking 3.4 mph	3.6
Bicycling, less than10 mph, (16 km/h), leisure, to work or for pleasure	4.0
Yard work like raking leaves weeding or pushing a power mower	4.5
Engage in sexual relations	5.25
Bicycling, stationary, 100 watts, light effort	5.5
Climb two flights of stairs or walk up a hill	5.5
Participate in moderate recreational activates like golf, (no cart), dancing, or doubles tennis	6.0
Participate in strenuous sports like swimming, singles tennis, football, basketball, or skiing	7.5
Calisthenics (e.g. pushups, sit-ups, pull-ups, jumping jacks), heavy, vigorous effort	8.0
Running, jogging in place	8.0
Heavy work around the house like scrubbing floors or lifting and moving heavy furniture	8.0
Run a short distance	8.0
Rope Jumping	10.0