PROTOCOL
Pre-Admission Anesthesia Protocol

This Protocol is Applicable to the following sites:

Big Rapids (Mecosta County Medical Center), Gerber Memorial (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

Version #: 8

Effective Date: 05/17/2022

Functional Area: Clinical Operations, Nursing

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

2. **Definitions:**
   a. Poor functional capacity: a score of less than 4 when using the M-DASI or MET Scale
   b. 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.
   c. Healthy patient: Patient has no comorbidities
   d. Unhealthy patient: Patient has at least ONE comorbidity
   e. Comorbidity: Simultaneous presence of a systemic disease in addition to the medical condition bringing the patient to the system currently (example: finger fracture AND diabetes type 2)

f. Unstable Comorbidity: Comorbidity that have new or worsening symptoms related to the systemic problem. (example: coronary heart disease with new or worsening angina or shortness of breath)
g. Surgical Optimization: Optimization of chronic health issues prior to surgery, to minimize the risk of postoperative complication, decrease length of stay in the hospital, reduce unplanned readmissions, and enhance the patient's overall health prior to surgery.

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. M-DASI - Modified Duke Activity Status Index
n. MET-Metabolic Equivalents of Task
o. MST-Malnutrition Screening Tool
p. PAT-Pre-Admission Testing
q. PCP- Primary Care Provider
r. SOC-Surgical Optimization Center
s. T&S- Type and Screen

4. Protocol Inclusion Criteria

a. All adult patients (patients 18 years of age and older) undergoing anesthesia within surgical services at a Spectrum Health facility.

5. Protocol Exclusion Criteria

a. Procedural sedation
b. Anesthesia outside of Surgical Services
c. Pediatric patients (patients less than 18 years of age)

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 and select procedures, 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. Orders resulting from this protocol should be placed using the "Nursing Pre-Procedure Anesthesia Protocol" orderset as "Per Protocol: NO Cosign Required."

10. Protocol Interventions

a. Preoperative Testing: A preoperative order will be implemented after the patient has been assessed 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 team 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, based on the Surgical Predictors of Increased Risk.
   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. These instructions will be used for all patients who will receive anesthesia, regardless of risk status.
   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 M-DASI Scale. Poor functional capacity is defined as less than 4 METS. If this is the case, the nurse should request that the surgeon order medical evaluation prior to day of the procedure.

d. For criteria related to Automatic Referral for Surgical Optimization at the Surgical Optimization Center (SOC), please see 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

12. 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

13. References

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Keywords

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

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 surgeries (AAA, carotid endarterectomy, aortic stent grafts)
- Prolonged duration (greater than 3 hours) with anticipated large blood loss, fluid shift, or use of cell savers (examples: radical hysterectomy, radical cystectomy or nephrectomy, major spine, cardiovascular procedures).
- Craniotomy
- Total Joint Procedures
- Head and neck surgery
- Thoracic and abdominal surgery
- Prostate surgery, including radical
- Spine procedures
- Breast reconstruction
- Interventional endoscopy procedures completed under General Anesthesia
- **NOTE:** All patients having a procedure at Gerber Memorial Hospital, aside from cataracts, must be treated at Medium/High Risk. This is per NorthStar Anesthesiology's contract.
- **NOTE:** Procedures that are considered low risk, but also require general anesthesia should be treated as medium

Low Risk

- Percutaneous extremity peripheral vascular
- Endoscopic procedures, peripheral (excludes shoulder/hip)
- Superficial procedures, such as breast, carpal tunnel, cosmetic plastic
- Interventional endoscopy procedure with MAC Anesthesia
- Procedures that are completed under MAC Anesthesia and do not have a skin incision (i.e. cystoscopy, colonoscopy with biopsy etc)

No Risk

- Cataract
- Local anesthesia

Testing Based on Risk and Comorbidities

- All procedures will require a pregnancy test as indicated in Pregnancy Testing for Surgical Patients policy.
- All procedures will be required to follow the COVID-19 Testing Protocol for preoperative testing.
- PT/INR required within 48 hours for all procedures where patient is unable to hold coumadin.

	Healthy (No comorbidities)	**Unhealthy (one or more comorbidities)**
No Risk	No additional testing required.	No additional testing required.
Low Risk	No additional testing required.	Refer to Preoperative Anesthesia Testing Grid **ONLY** if any **unstable** (new or worsening) comorbidities exist. **Exception:** HgbA1C is not required for patients undergoing a procedure that does not have a skin incision (example: endoscopy with biopsy).
Medium/High Risk	Refer to Preoperative Anesthesia Testing Grid.	Refer to Preoperative Anesthesia Testing Grid.

Appendix B

Preoperative Anesthesia Testing Grid

	CBC (6 months)	PT/PTT/INR (6 months)	BMP-Lytes Creat/BUN (6 months)	BS DOS	HCG/UCG	T&S (72 hours**)	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 BMP within 24 hours, after last run and prior to procedure)			X				
Coumadin		*PT/INR					
Premenopausal					X		
Sickle Cell Anemia Disease	X					X	
Non-steroid Immunosuppressant	X						
C-Section	X					X	
Surgery > 3 hours	X		X			X	

*****Any boxes that have writing rather than an "X" should be followed, rather than the column heading.
**Refer to the Type and Screen Policy for variations in this timeframe.

I. 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:
    - Previous MI -regardless of time of MI
    - Insulin dependent DM*
    - CVA/TIA -regardless of time of CVA/TIA
    - CKD with Creatinine > 2 or ESRD
    - Peripheral arterial or cerebrovascular disease
- History of moderate to severe pulmonary disease
- HIV

NOTE: Patient age is not a criterion for obtaining a preoperative EKG.

*EKG is not needed for patients who are low risk and would only be bumped up for general anesthesia and Insulin Dependent Diabetes.

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 that has been treated and 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. **Exception:** HgbA1C is not required for patients undergoing a procedure that does not have a skin incision (example: endoscopy with biopsy).

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. Dialysis patients should have labs completed after last run of dialysis but prior to surgery.

Coumadin: Any patient taking warfarin should receive a PT/INR 3 days after stopping the medication, and prior to surgery. *****If abnormal, repeat prior to surgery. Patients not stopping coumadin prior to their procedure will also require a PT/INR within 48 hours for low risk and above.

Premenopausal: All menstruating premenopausal persons require a urine pregnancy test. A serum test may be ordered within 24-72 hours of procedure if patient is auric. **Exception**: please refer to the Pregnancy Testing for Surgical Patients policy.

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

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

C-Section: If a patient is undergoing a C-section.
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:** *This list is not all encompassing. Refer to organizational drug information resource or provider for questions.*	**Additional information:**
Continue taking/take DOS	Beta Blockers	atenolol (Tenormin), metoprolol (Lopressor, Toprol XL), carvedilol (Coreg), propranolol (Inderal LA)	
	Hypertensive Medications such as: • Calcium Channel blockers -Dihydropyridines -Nondihydropyridines • Antianginal • Alpha-adrenergics • Central alpha-2 agonists	amlodipine (Norvasc), diltiazem (Cardizem), propranolol (Inderal LA, Inderal XL, InnoPran XL), isosorbide mononitrate (Imdur), doxazosin (Cardura), clonidine (Catapres), hydralazine (Apresoline), verapamil (Calan)	
	Antiarrhythmics	procainamide (Procan SR), flecainide (Tambocor)	
	Cholesterol medications	atorvastatin (Lipitor)	
	Alpha-Adrenergics / Medications for Prostate	tamsulosin (Flomax), finasteride (Proscar)	
	Anticonvulsant medications	Carbamazepine (Carbatrol, Epitol, Tegretol), levetiracetam (Keppra, Spritam, Elepsia XR)	
	Reflux (tablet or capsule form only)	lansoprazole (Prevacid), omeprazole (Prilosec), pantoprazole (Protonix), famotidine (Pepcid)	No antacids / Tums, no liquids except sodium citrate
	Psychoactive medications such as: • Antidepressants • Antianxiety agents • Antipsychotic agents	Amitriptyline (Elavil), citalopram (Celexa), escitalopram (Lexapro), buproprion (Wellbutrin), duloxetine (Cymbalta), mirtazapine (Remeron)	MAO Inhibitors: Notify the Medical Director of Anesthesia
	MAO inhibitors	isocarboxazid (Marplan), phenelzine (Nardil), tranylcypromine (Parnate), selegiline (Emsam, Zelapar)	May continue taking – Notify the Medical Director of Anesthesia
	Pain medication (except NSAIDS) such as: • Opioid • Opioid agonist • Opioid antagonist	oxycodone (Oxycontin, Roxicodone) , morphine, hydrocodone (Norco), buprenorphine/naloxone (Suboxone)	Take narcotics / opioids on normal schedule.

Instructions:	Medication category:	Common examples: *This list is not all encompassing. Refer to organizational drug information resource or provider for questions.*	Additional information:
	Inhaler medications	Albuterol, mometasone/formoterol (Dulera), budesonide/formoterol (Symbicort), fluticasone/vilanterol (Breo)	
	HIV medications	Raltegravir (Isentress), dolutegravir (Tivicay), abacavir (Ziagen), lamivudine (Epivir)	
	Anti-neoplastic medications	tamoxifen (Soltamox)	
	Thyroid replacement	levothyroxine (Synthroid), methimazole (Tapazole), propylthiouracil (Thioamide)	
	Corticosteroids	Cortisone, hydrocortisone, prednisone, prednisolone, betamethasone	
	Hormone therapies; birth Control	estrogens (Menest, Premarin), estradiol (Climara, Estrogel), ethinyl estradiol	Risk for blood clots vs risk for unplanned symptoms/pregnancy.
Do Not Take DOS	Angiotensin-converting Enzyme inhibitors (ACEIs) *****Hold any combination meds that include an ACEI*****	lisinopril (Zestril) , benazepril (Lotensin), enalapril (Vasotec), ramipril (Altace)	Potential for intraoperative hypotension.
	Angiotensin receptor II blockers (ARBs) ***hold any combination meds that include an ARB*****	candesartan (Atacand), losartan (Cozaar), sacubitril/valsartan (Entresto), valsartan (Diovan)	Potential for intraoperative hypotension.
	Diuretics	furosemide (Lasix), bumetanide (Bumex), torsemide (Demadex), metolazone (Zaroxolyn), hydrochlorothiazide (Microzide)	
	Tums/Calcium/Sucralfate		
	Oral diabetic meds (see below for SGLT-2 inhibitors)	metformin (Fortamet, Glucophage), glipizide, pioglitazone (Actos), alogliptin (Nesina), linagliptin (Trajenta), saxagliptin (Onglyza), sitagliptin (Januvia)	
	Triptans	Almotriptan (Axert), sumatriptan (Imitrex)	

Instructions:	Medication category:	Common examples: *This list is not all encompassing. Refer to organizational drug information resource or provider for questions.*	Additional information:
	Medications for 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. *****Ertugliflozin (Steglatro) should be held 96 hours.**
	Phosphodiesterase Inhibitors (PDE-5)	Avanafil (Stendra), sildenafil (Revatio, Viagra), Tadalafil (Adcirca, Cialis), vardenafil (Levitra)	**If patient is taking for pulmonary HTN, these should be continued perioperatively.**
Do Not Take for 48 Hours Before Surgery	Phosphodiesterase-4 Enzyme Inhibitor	apremilast (Otezla)	
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. Add to note if patient will not stop this for any reason. Please refer to site specific STW on non-smoking routes.
	Anorectics	phentermine (Adipex-P; Lomaira)	
	Anticonvulsant Miscellaneous	fenfluramine (Fintepla)	
	NSAIDS	ketorolac (Toradol), ibuprofen (Motrin), naproxen (Naprosyn), nabumetone (Relafen)	Cox II Inhibitors can be continued in Total Joint patients.
Refer to Policy	Insulin Insulin Pumps	Reference #7227 **Insulin Pump: Continuous Subcutaneous Insulin Infusion** Reference #14660 **Diabetes Management in the Adult Surgical/Procedural Patient**	

Appendix E
Referrals to Surgical Optimization Center – Medical Clearance Criteria

I. The RN will review a risk report in the EHR for patient specific risk level (no risk, low risk, intermediate risk, and high risk).
   a. If the patient risk score is "intermediate risk" or "high risk" and:
      i. The patient has a SHMG PCP or does not have an identified PCP the PAT RN will place a referral to the Surgical Optimization Center (SOC) for optimization
      ii. The patient has a PCP outside of SHMG, the PAT RN will contact the surgeon to place a referral to the PCP or SOC for optimization.
   b. If the patient risk score is "no risk" or "low risk" AND has one of the criteria outlined below which is considered unstable, the PAT RN will reach out to the surgeon's office to recommend medical clearance.

Criteria for Automatic Referrals (with NO or LOW Risk)

Cardiac or Vascular Risk Factors
- Coronary artery disease – history of MI, heart bypass surgery, cardiac stents, PTCA or angina
- Cardiac pacemaker or implantable cardiac device (ICD)
- Atrial fibrillation and/or other cardiac arrhythmias
- Cardiac valve replacement/disease, rheumatic fever, or heart murmur
- Congestive heart failure – current history or symptoms, or cardiomyopathy
- Peripheral vascular disease and/or stents

Endocrine
- Diabetes, HgbA1c of ≥ 7.5
- Obesity with BMI ≥ 40
- Malnutrition, albumin ≤3.5

Pulmonary, Hepatic, or Renal
- Lung problems – pulmonary hypertension, COPD, severe/uncontrolled asthma, recent pneumonia, chronic dyspnea, or hypoxemia
- Obstructive sleep apnea - OSA not regularly using CPAP or not well controlled on CPAP, or no dx of OSA but a STOP-BANG of 4 or higher.
- Kidney disease or kidney failure – eGFR ≤45
- Liver disease – chronic hepatitis, cirrhosis, fatty liver. MELD score 10 or above and/or Child-Pugh Class B or C.

Vascular or Neurologic
- Stroke or TIA within the last 9 months
- Blood clots in the legs or lungs (DVT, PE), or other blood clotting disorders
- Neurological diseases – Parkinson's disease, epilepsy, stroke, multiple sclerosis, Alzheimer's, myasthenia gravis

Medication Use
- Blood thinning medications such as heparin, low molecular weight heparins (ie. enoxaparin, fondaparinux), direct oral anticoagulants (ie. rivaroxaban, edoxaban, apixaban, dabigatran), warfarin, antiplatelet agents (ie. aspirin, ticagrelor, clopidogrel, prasugrel)
- Chronic immunosuppression due to medications
- Chronic steroid use – any patient on prednisone of greater than or equal to 5mg daily or equivalent
- Chronic narcotic use – greater than or equal to 60 MME

Other
- Chronic or debilitating disease requiring recent hospitalization
- Anemia – iron deficiency anemia, sickle cell anemia, pernicious anemia, Hgb less than or equal to 13
- Personal or family problems with anesthesia – malignant hyperthermia or severe nausea/vomiting
- History of difficult intubation or other known anesthesia complications