

BETH ISRAEL LAHEY HEALTH

DEPARTMENT OF ANESTHESIA CRITICAL CARE AND PAIN MEDICINE

POLICIES, PROCEDURES, DIRECTIVES AND GUIDELINES

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CLASSIFICATION (CHECK ONE):

POLICY STANDARD OPERATING PROCEDURE (SOP) DIRECTIVE GUIDELINE

TITLE:

GUIDELINE FOR THE PERIOPERATIVE LABORATORY TESTING FOR PATIENTS UNDERGOING ANESTHESIA

RATIONALE:

While testing before surgery and anesthesia should always be based on the planned procedure and the comorbidities of the specific patient, this guideline will help inform the decision about what test(s) should be performed. The goal is to minimize both over testing, which can be costly and cause harm to the patient, and under testing, which can lead to missed diagnoses and the potential for patient harm. The over utilization of these labs in the past creates a potential for excessive healthcare charges to both patients and healthcare organizations.

RESPONSIBLE DIVISION: PERIOPERATIVE SERVICES

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SEARCH TAGS: LABORATORY TESTING PRE ANESTHESIA ASSESSMENT

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NARRATIVE DESCRIPTION OF THE PPDG

GENERAL PRINCIPLES:

1. Pre-op testing should be performed to help identify comorbidities or disease processes (especially those that could be modified), to help inform the surgical or anesthesia decisions that are best for the patient, or to help identify perioperative risk to inform the consent process. Test should generally not be performed only to obtain a “baseline”.
2. Whenever an order for a test is sent to PAT, it will be assumed that the request is to have recent values for that test. Thus, if a recent value for the test can be identified in the BIDMC or its affiliated systems, these results will be documented in the patient record and the test will not be repeated in PAT. The definition of “recent” will be based on the specific test and will be outlined below. Without a change in symptoms no laboratory tests should be repeated if results was normal within 4 months of surgery. If the surgeon wants the test repeated despite the recent results, this must be explicitly communicated to PAT. The Pre-Admission Testing department will carefully evaluate each patient, and in the case of potentially duplicated lab results will communicate with ordering provider.
3. The following recommendations concerning preoperative laboratory tests are based on published guidelines in the medical literature including guidelines from the American Association of Family Practitioners, The American Society of Anesthesiologists, the American Heart Association, the National Institute for Health and Care Excellence (NICE), and Up-to-Date (https://www.uptodate.com/contents/preoperative-medical-evaluation-of-the-adult-healthy-patient?search=pre-op%20lab%20test&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1include references, and other references)

BLOOD TESTS:

1. Blood tests will not be repeated in PAT if results can be found within 1 month of the visit and there has been no change in the clinical status (unless requested by Surgeon).

- a. **CBC:** A CBC may be ordered to assess platelet count or hemoglobin. It should be ordered to determine platelet count only for patients with a known history of thrombocytopenia or as part of a work up of a clinical history of pathologic bleeding. A CBC should be ordered to assess hemoglobin if the patient is undergoing more than a minor procedure and:
 - i. The patient's medical condition indicates a high likelihood of preexisting anemia. This includes: chronic renal failure (Cr Cl < 50), chronic liver disease, ongoing blood loss (e.g. menorrhagia, GI bleeding), known anemia, bleeding disorder, use of anticoagulants.
 - ii. Anemia would be especially risky. Hx CVA, Hx CAD
 - iii. There is likely to be significant blood loss at the time of surgery. If a T+S/T+C is required, the pre-op hematocrit is likely indicated.
 - iv. A platelet count is not needed in an otherwise healthy patient prior to neuraxial or regional anesthesia with no clinical evidence of pathologic bleeding. A platelet count may be ordered prior to neuraxial or regional anesthesia at the discretion of the anesthesiologist in patients with significant liver, cardiac or vascular disease

- b. **Test of Hemostasis (PT/ PTT/INR):** These tests are generally not needed as a baseline before surgery or regional or neuraxial anesthesia. They should be ordered if:
 - i. The patient is taking medications known to alter hemostasis
 - ii. The patient has advanced liver disease
 - iii. There is clinical evidence of pathologic bleeding

- c. **HGB A1C:** This should be tested only in diabetics and if the results would alter the surgical decision making (e.g. postpone surgery to improve glucose control), or alter the risk profile as part of the informed consent process.

- d. **Electrolytes, including creatinine:** The American Geriatrics Society recommends that all elderly patients have a creatinine test before surgery. It is also reasonable to consider this in patients who have underlying kidney disease, are taking medications that alter electrolytes, have exposure to nephrotoxic agents, or require cardiac risk stratification as the Revised Cardiac Risk Index and Gupta myocardial infarction or cardiac arrest calculator use creatinine as one of the risk factors. Otherwise these labs should be ordered if:

- i. The patient has comorbidities likely to alter electrolyte (CAD, CRF with Cr CL < 50, Chronic liver disease, HTN, Complicated DM, CHF, PVD)
 - ii. The patient is taking medications likely to change renal function or serum electrolytes (ACEI, ARBs, Diuretics, chronic NSAIDS, digoxin)
 - iii. The surgery might impact renal function (kidney surgery, aortic surgery, cardiac surgery)
 - iv. It is appropriate to obtain a serum creatinine concentration in patients over the age of 50 undergoing intermediate- or high-risk surgery. It should also be ordered when hypotension is likely, or when nephrotoxic medications will be used.
 - v. Routinely obtaining albumin, pre-albumin, and transferrin levels is not recommended for asymptomatic patients, with the possible exception of geriatric patients. These are reasonable tests if there is concern for nutritional status based on history, physical exam finding, or underlying medical conditions.
2. **Urinalysis:** Urinalysis should be performed for surgery on the GU tract, if there are symptoms consistent with GU infections, or if the planned surgery will include an implanted device.
3. **ECG:** Routine electrocardiograms (ECGs) are not indicated for asymptomatic individuals who are undergoing low-risk surgeries. ECG is recommended for patients undergoing an elevated-risk surgical procedure or patients with known cardiovascular disease not undergoing a low-risk procedure. No EKG should be repeated if one has been done within the past 3 months. If the surgeon orders an ECG, he/she must provide an indication. The code for the surgery is not an indication for an ECG. An ECG should be performed for:
 - i. Symptoms of cardiac disease: Angina, shortness of breath/DOE, Orthopnea, palpitations
 - ii. Medical history: CAD, HTN, CVA, PVD, long standing IDDM, ESRD, extremes of heart rate in PAT (< 45, > 120).
 - iii. Surgery with high risk for cardiac complications. Cardiac, major vascular, thoracic
4. **Stress testing** can be considered in specific situations, such as elevated risk patients with a poor functional capacity (< 4 METs.) Routine echocardiography is not recommended in asymptomatic individuals; it is reasonable in patients with known valvular disease or decreased left ventricular function.

- 5. Chest X-Rays (CXR):** Routine chest x-rays are not needed for asymptomatic patients, but the American College of Physicians recommends one “for patients with known cardiopulmonary disease and those older than 50 years of age who are undergoing upper abdominal, thoracic, or abdominal aortic aneurysm surgery”. The ACC/AHA recommends a chest x-ray for patients with severe obesity (BMI >40 kg/m²) to assess for potentially “undiagnosed heart failure, cardiac chamber enlargement, or abnormal pulmonary vascularity suggestive of pulmonary hypertension”. If the surgeon orders a CXR, he/she must provide an indication. The code for the surgery is not an indication for a CXR, except for procedure actually performed in the chest. A CXR should be performed for those undergoing non-minor surgery and:
- i. Signs/symptoms of an acute respiratory process: SOB, hypoxemia, wheezing, rales, rhonchi
 - ii. History of: CHF, severe COPD, significant cardiopulmonary disease, recent pneumonia.
 - iii. Aortic, cardiac or thoracic surgery
 - iv. It may be considered for those with severe obesity (BMI >40)
- 6. Pregnancy tests** should only be ordered and performed on the day of surgery.
- 7.** The table enclosed below represents the standard lab tests that are expected to be ordered prior to surgery.

TABLES, FLOWCHARTS, VISUAL AIDS

Table 1: Suggested Laboratory Orders in PAT

Preoperative Condition	CBC	PT/PTT	HCG	CHEM 7	K	Na	Cr	HCG	HgA1C	Other testing	Chest X-Ray	EKG	UA/C&S	T+S
Procedure w/ expected blood loss (EBL > 500ml)	X			X										X
Procedure w/o blood loss														
Active Cardiovascular Disease				X						Mg		X		
Active Pulmonary Disease										PFTs	X	X		
Active Malignancy/Chemo	X			X										
Hepatic, Biliary, Pancreatic Disease	X	X		X						LFT				
Thyroid Disease										TSH				
Renal Disease	X			X								X		
Bleeding Disorder	X	X												X
ETOH > 28 LIP or Provider discretion				X						GGT	X			
Symptoms, ± or Hx of +PPD and/or TB									X					
Diabetes				X							X	X		
Active Smoking = 20 pack/years w/ symptoms											X	X		
Use of Diuretics				X	X							±		
Use of Digoxin										Dig Level		X		
Chronic use of Steroids				X										
Use of Anticoagulants (drug-spec test)	X	X (drug-spec)												
Active CNS Disease	X			X		X						X		
Women of Child Bearing Age								X						
Recovering COVID Patients										PFTs	X			
Urologic Patients													X	

Notes:

No Lab Tests must be repeated if result was normal within 4 mos of surgery (without change in symptoms)

No EKG should be repeated if one has been done within past 3 mos. (without change in symptoms)

Abnormal GGT should trigger Liver Function Tests (LFTs) and Magnesium (Mg) - to be added by lab?

Pregnancy Tests should be ordered on appropriate patients on the day of surgery as per ASA guidelines

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