

# ROUTINE PREOPERATIVE LAB TEST GUIDELINES

For adult patients (≥ 16 years) undergoing elective surgery

**TESTS WITHIN 6 MONTHS OF SURGERY** are valid, provided there has been no interim change in the patient's condition.

**CLINICAL JUDGEMENT IS REQUIRED** as additional tests may be appropriate for patients with complex or uncommon surgical or medical conditions.

**EXCLUSIONS** this guideline does not apply to patients undergoing **cardiac surgery** or **cesarean section**.

## MINOR SURGERY

Associated with an expected blood loss of <500mL, minimal fluid shifts and is typically done on an ambulatory basis (day surgery/ same day discharge)\*. It includes cataract surgery; breast surgery without reconstruction; laparoscopic cholecystectomy and tubal ligation; and most cutaneous, superficial, endoscopic and arthroscopic procedures.

### DO NOT ORDER PREOP TESTS

including: chest x-rays,  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$ ,  $\text{TCO}_2$ , serum glucose, CBC, ECG, INR, urinalysis, renal, liver or thyroid function tests in asymptomatic\*\* patients.

\*\* **ASYMPTOMATIC** implies the patient does not have new or worsened symptoms to suggest a new lab test abnormality. (e.g. if the patient does not have new or worsened symptoms of an arrhythmia, congestive heart failure, dyspnea or ischemic heart disease, an ECG would not be recommended).

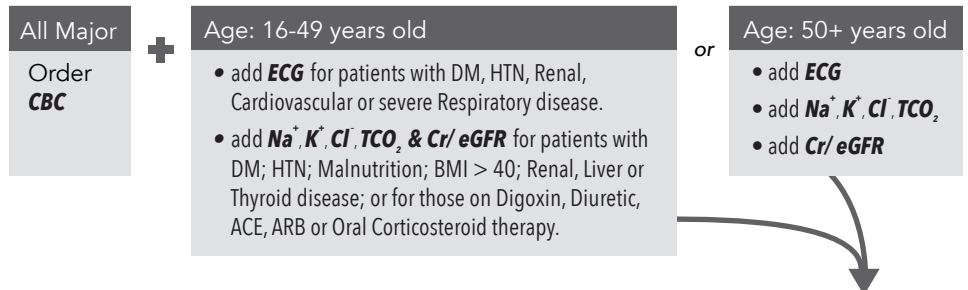


For more information, see [choosingwiselycanada.org/recommendations/anesthesiology](http://choosingwiselycanada.org/recommendations/anesthesiology)

## MAJOR SURGERY

Associated with an expected blood loss of >500mL, significant fluid shifts and typically, at least one night in hospital\*. Includes laparoscopic surgery (except cholecystectomy and tubal ligation); open resection of organs; large joint replacements; mastectomy with reconstruction; and spine, thoracic, vascular, or intracranial surgery.

\* If the surgery is typically ambulatory but the patient has a medical or social reason for overnight admission (i.e. OSA, no support at home), still consider the surgery minor in determining which lab tests to order.



**MAJOR SURGERY, ALL AGES:** Other tests indicated by patient characteristics & medications

- **Oral Corticosteroids, DM or BMI > 40:** add Hemoglobin A1C or fasting plasma glucose.
- **Malnutrition, BMI > 40, or Liver disease:** add liver function tests and INR.
- **At high risk for iron deficiency:** add serum iron, TIBC and Ferritin.
- **Thyroid disease:** add TSH.

**Chest X-rays** - Not recommended for any surgery **except** to facilitate the diagnosis of new/ worsened symptoms, or if ordered by the surgeon prior to thoracic surgery or to work up a malignancy.

### SPECIFIC DIRECTIONS FOR OTHER TESTS & CONDITIONS

- **Urinalysis:** Not recommended except for specific surgeries, at the surgeon's discretion.
- **Pulmonary function tests, spirometry, or arterial blood gases:** No routine indications except prior to thoracic surgery, as ordered by the surgeon.
- **Pregnancy testing:** Will be carried out by preoperative staff as required.
- **Perioperative type and screen:** Will be ordered by surgeon, anesthesiologist or pre-anesthesia clinic when indicated, or by pre-anesthesia clinic where maximum allowable blood loss or type and screen criteria have been instituted.
- **Warfarin therapy:** It is unnecessary to test the INR remote from the surgery date solely for the purpose of the preoperative work up.
- **Antiepileptic drug (AED) levels:** Should be obtained only for patients on Carbamazepine, Phenobarbital, Phenytoin, or Valproic acid who meet at least one of the following criteria: a history of unstable AED levels, a seizure within the last 6 months, or undergoing major gastrointestinal surgery.



For more examples of minor & major surgery, please see the reverse side.

To access the electronic version of this document, please visit: [wrha.mb.ca/extranet/eipt/EIPT-003.php](http://wrha.mb.ca/extranet/eipt/EIPT-003.php)

For an interactive preop test decision aid, visit: [logixmd.com/preop](http://logixmd.com/preop) or use the QR code above

### LEGEND: TESTS

- **CBC:** Complete Blood Count.
- **Cr/ eGFR:** Creatinine and if available, estimated Glomerular Filtration Rate.
- **ECG:** Electrocardiogram.
- **Liver function tests:** AST, ALT, Alk Phos, GGT, albumin, total and direct bilirubin.
- **Na<sup>+</sup>, K<sup>+</sup>, Cl<sup>-</sup>, TCO<sub>2</sub>:** Serum sodium, potassium, chloride and total carbon dioxide.

### LEGEND: PATIENT CHARACTERISTICS

- **ACE:** Angiotensin Converting Enzyme inhibitor medication.
- **ARB:** Angiotensin Receptor Blocker medication.
- **DM:** Diabetes Mellitus.
- **HTN:** Hypertension.
- **Cardiovascular disease:** Previous or current myocardial infarction, angina, congestive heart failure, valvular heart disease, atrial fibrillation or other arrhythmia, stroke, TIA or peripheral vascular disease.
- **Severe respiratory disease:** Dyspnea or other physical limitation prevents the patient from climbing a flight of stairs or running a short distance.
- **Renal disease:** History of proteinuria or elevated creatinine / reduced GFR.
- **Liver disease:** Includes jaundice, hepatitis, cirrhosis, hepatic metastases and ethanol abuse (defined as average intake > 2 standard drinks per day).
- **Malnutrition:** Includes patients with BMI < 19; unintentional ≥ 10% body weight loss over previous 6 months; inflammatory bowel disease; oral, esophageal, gastric or pancreatic malignancy.
- **High risk of iron deficiency:** Anemic patients with low MCV or high RDW on CBC.

## MAJOR & MINOR SURGERY: COMMON EXAMPLES

The common minor and major surgeries listed in this table generally adhere to the definitions given. However, clinical judgment should be applied. If higher than expected blood loss, fluid shifts and invasiveness are likely due to exceptional surgical pathology, then it would be appropriate to consider a minor surgery as a major surgery and order preoperative tests accordingly (i.e. very large basal cell carcinoma, extensive lysis of adhesions for endometriosis).

<b>MINOR</b>	<b>MAJOR</b>	<b>MINOR</b>	<b>MAJOR</b>
<b>ENT and Oral Surgery</b>		<b>Orthopedic Surgery</b>	
<ul style="list-style-type: none"> <li>• Tooth extraction</li> <li>• Tonsillectomy and/or adenoidectomy</li> <li>• Septoplasty, turbinectomy and rhinoplasty</li> <li>• Pharyngeal or laryngeal biopsy or minor excision by laser or other means</li> <li>• Middle ear surgery, mastoidectomy, cochlear implantation</li> <li>• Endoscopic sinus surgery</li> <li>• Small resections of benign and malignant masses, done on an ambulatory basis (i.e. mandibular tori, brachial cleft cyst, small tongue cancer)</li> <li>• Thyroidectomy</li> </ul>	<ul style="list-style-type: none"> <li>• Maxillary or mandibular osteotomy</li> <li>• Laryngectomy</li> <li>• Resection of large benign or malignant mass and/or lymph node dissection requiring overnight stay in hospital, with or without reconstructive surgery.</li> </ul>	<ul style="list-style-type: none"> <li>• Arthroscopic surgery including ACL repair</li> <li>• Routine hardware removal, not for infection</li> <li>• Tendon surgery</li> <li>• Bunionectomy</li> <li>• Discectomy</li> </ul>	<ul style="list-style-type: none"> <li>• Knee, hip, shoulder or elbow joint replacement</li> <li>• Hardware removal or revision for infection or failure</li> <li>• Amputation</li> <li>• Spinal laminectomy and/or fusion</li> </ul>
<b>General Surgery</b>		<b>Plastic Surgery</b>	
<ul style="list-style-type: none"> <li>• Breast lumpectomy or mastectomy with or without lymph node biopsy or axillary dissection</li> <li>• Inguinal or umbilical hernia repair by laparoscopic or open approach</li> <li>• Laparoscopic cholecystectomy</li> <li>• Hemorrhoidectomy</li> </ul>	<ul style="list-style-type: none"> <li>• Mastectomy with immediate tissue reconstruction, with or without lymph node biopsy or axillary dissection</li> <li>• Laparoscopic or open repair or resection of stomach, small bowel, colon, liver, pancreas, spleen, adrenals or liver</li> <li>• Open cholecystectomy</li> <li>• Large incisional, epigastric or ventral hernia repairs</li> </ul>	<ul style="list-style-type: none"> <li>• Carpal tunnel release</li> <li>• Dupuytren's contracture release</li> <li>• Major and minor tendon surgery</li> <li>• Small rotational flaps and skin grafts</li> <li>• Basal cell carcinoma resection</li> <li>• Lipoma excision</li> <li>• Reduction mammoplasty and other surgery for benign breast disease</li> <li>• Cosmetic breast surgery</li> </ul>	<ul style="list-style-type: none"> <li>• Free flap reconstruction</li> <li>• Panniculectomy</li> </ul>
<b>Gynaecology</b>		<b>Thoracic Surgery</b>	
<ul style="list-style-type: none"> <li>• Uterine dilation and curettage</li> <li>• Laparoscopic hysteroscopy</li> <li>• Laparoscopic tubal ligation</li> <li>• Laparoscopy for endometriosis, infertility or simple ovarian cyst</li> <li>• Transvaginal tape obturator insertion (TVTO)</li> </ul>	<ul style="list-style-type: none"> <li>• Hysterectomy (abdominal or vaginal)</li> <li>• Salpingo-oophorectomy for other than simple cyst</li> <li>• Pelvic floor repair for prolapse other than TVTO</li> </ul>	<ul style="list-style-type: none"> <li>• Bronchoscopy</li> </ul>	<ul style="list-style-type: none"> <li>• Mediastinoscopy</li> <li>• Resection of lung, esophagus or mediastinal mass (Thoracoscopic or open)</li> <li>• Hiatal hernia repair (Thoracoscopic or open)</li> </ul>
<b>Neurosurgery and Spine Surgery</b>		<b>Urology</b>	
<ul style="list-style-type: none"> <li>• Discectomy</li> </ul>	<ul style="list-style-type: none"> <li>• Intracranial surgery</li> <li>• Spinal laminectomy and/or fusion</li> </ul>	<ul style="list-style-type: none"> <li>• Cystoscopy, Ureteroscopy, Renoscopy for stone, stricture or biopsy</li> <li>• Hydrocele and varicocele excision</li> <li>• Vasectomy</li> <li>• Circumcision</li> </ul>	<ul style="list-style-type: none"> <li>• Resection of bladder or prostate tumor (transurethral or open)</li> <li>• Resection of kidney or ureter (laparoscopic or open)</li> <li>• Resection of testis (transscrotal or abdominal)</li> </ul>
<b>Ophthalmology</b>		<b>Vascular Surgery</b>	
<ul style="list-style-type: none"> <li>• Cataract extraction and most other ophthalmological procedures</li> </ul>		<ul style="list-style-type: none"> <li>• Varicose vein excision</li> </ul>	<ul style="list-style-type: none"> <li>• Amputation</li> <li>• Peripheral arterial bypass surgery</li> <li>• Aortic aneurysm repair (endovascular or open)</li> <li>• Carotid endarterectomy</li> </ul>