

Guideline for the Management of Preoperative Patients with Isolated ↑ PTT

Measurement of INR/PTT recommended preoperatively in the following patients:

- High risk of intraoperative bleeding¹
- Cardiac surgery²
- Positive bleeding history³

All other patients: routine preop INR/PTT **NOT** required

if INR/PTT incidentally available

Isolated ↑ PTT unlikely to be clinically relevant.
Based on clinical judgement, can **proceed to OR**.

Isolated ↑ PTT (>38s)
(normal INR)

Isolated elevated PTT of **38 – 48 sec** with a truly negative bleeding history is considered clinically insignificant (why it does not trigger automatic testing). Consider risk/benefit/necessity of proceeding down algorithm.

Consider repeating PTT to rule out venipuncture artifact (14% in one study)³

Step 1: Rule out Heparin/LMWH/Dabigatran:

- **Thrombin time (TT)*** will be elevated if above anticoagulants present
- If Thrombin Time not complete, **order**.

These tests performed automatically at VGH lab when isolated elevated PTT (> 48 sec) is present. (Within 4 hours, test is easily added on.) Call 62982

Step 2: Rule out Lupus Anticoagulant (LA):⁴

- **Lupus Anticoagulant-Insensitive PTT (LAI-PTT*)**: PTT will normalize when repeated with LAI-PTT
- If LAI-PTT not complete, **order**.

LAI-PTT normal (≤ 31 sec)
• LA present

- Proceed to OR. No increased risk of bleeding⁵
- In the context of patient history of recurrent thrombosis or pregnancy loss⁶ OR spontaneous bruising/bleeding⁷ consider hematology consult.

LAI-PTT is long (>31 sec):
• A different cause for PTT prolongation may exist. Proceed to **Step 3**

Step 3: Rule out common Factor deficiency/Inhibitor (involving Factor VIII)

- Add on **"Factor VIII level*"** (call lab ext 62982)

Notes:

- Factor abnormalities associated with isolated elevated PTT are uncommon and often clinically significant, however, it may be helpful to exclude low Factor VIII.
- If LAI-PTT within 5 sec of normal range → elevated PTT is likely still due to LA. Additional testing for factor VIII abnormalities = clinical discretion.
- If LAI-PTT > 5 sec of normal range → recommend **stat Factor VIII level** (can likely "add on" test).

Factor VIII low:

- **Delay OR** and consult Hematology for further w/u (factor VIII level < 30% → ↑ PTT)

Factor VIII normal/elevated:

- Safe to proceed to OR
- Clinically significant bleeding disorder not present

¹ See addendum for list of procedures with various bleeding risks

² Cardiac surgery patients require baseline coagulation testing because of the requirement for effective perioperative anticoagulation and testing. (Additionally, knowledge of certain bleeding disorders will affect interpretation of PTT and ACT (i.e: Lupus Anticoagulant may differentially increase both PTT and ACT).

³ Elbaz C, Sholzberg M. An illustrated review of bleeding assessment tools and common coagulation tests. *Res Pract Thromb Haemost*. 2020;4(5) 761-773.

⁴ Detailed information on APL syndrome and Lupus Anticoagulant: Garcia D, Erkan D. Diagnosis and Management of the Antiphospholipid Syndrome. *NEJM* 2018; 378:2010-21.

⁵ Patients with an isolated incidental finding of lupus anticoagulant (LA) have no increased risk of bleeding (may have increased risk of thrombosis).

⁶ Normal LAI-PTT + history of recurrent thrombosis or pregnancy losses may be indicative of Antiphospholipid Syndrome. Patient may benefit from more aggressive postoperative thromboprophylaxis.

⁷ It is possible (but exceedingly rare), that patients could have a LA and a co-existing factor VIII deficiency. If a patient has a significant bleeding history in the context of a detected LA, consider hematology consult.

* Turn around time (TAT) for TT and LAI-PTT ~ 30 min; TAT for STAT factor VIII level ~ 30-60 min (call the lab).

Addendum

Table 1. Bleeding Risk for Various Invasive/Surgical Procedures

LOW/VERY LOW RISK	MODERATE RISK	HIGH RISK
- Cataract surgery - Dermatologic procedures (e.g. biopsy) - Gastroscopy or colonoscopy <u>without</u> biopsies - Coronary angiography (using radial arterial approach) - Permanent pacemaker insertion or internal defibrillator placement (if bridging anticoagulation is not used) - Selected procedures with small-bore needles (e.g. thoracentesis, paracentesis, arthrocentesis) - Dental extractions (1 or 2 teeth) - Endodontic (root canal) procedure - Subgingival scaling or other cleaning	- Abdominal surgery (e.g. cholecystectomy, hernia repair, colon resection) - Other general surgery (e.g. breast) - Other intrathoracic surgery - Other orthopedic surgery - Other vascular surgery - Non-cataract ophthalmologic surgery - Coronary angiography (using femoral artery approach) - Gastroscopy or colonoscopy <u>with</u> biopsies - Selected procedures with large-bore needles (e.g. bone marrow biopsy, lymph node biopsy) - Complex dental procedure (e.g. multiple tooth extractions)	- Any surgery or procedure with neuraxial (spinal or epidural) anesthesia - Neurosurgery (intracranial or spinal) - Cardiac surgery (e.g. CABG, heart valve replacement) - Major vascular surgery (e.g. aortic aneurysm repair, aortofemoral bypass) - Major orthopedic surgery (e.g. hip/knee joint replacement surgery) - Lung resection surgery - Urological surgery (e.g. prostatectomy, bladder tumour resection) - Extensive cancer surgery (e.g. pancreas, liver) - Intestinal anastomosis surgery - Reconstructive plastic surgery - Selected procedures involving vascular organs (e.g. kidney biopsy, prostate biopsy) or high bleed risk intervention (e.g. pericardiocentesis, spinal injection, polypectomy)

- From: Thrombosis Canada, **DOACs: Perioperative Management**, version Aug 7, 2021, https://thrombosiscanada.ca/wp-uploads/uploads/2021/11/22.-DOACs-Perioperative-Management_07August2021.pdf