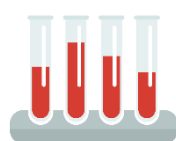




## ER Coagulation Testing QI Project to Improve Test Ordering Practice

\*The following has been adapted from Dr. M. Sholzberg, University Health Network, Toronto

**PT/INR** Prothrombin Time International Normalized Ratio  
**aPTT** Activated Partial Thromboplastin Time  
**TT** Thrombin Time



90% of information available to a physician with regard to risk of bleeding disorder and hemorrhage is from a thorough clinical / family bleeding history.

The [ISTH-SSC Bleeding Assessment Tool](https://bleedingscore.certe.nl) is simple and very useful in this regard  
<https://bleedingscore.certe.nl>



**Coagulation testing should NOT be used as a screening test as results will not, in the absence of a significant personal or family bleeding history, predict bleeding risk. Coagulation testing should be used as diagnostic tests in the context of the clinical bleeding history.**

***Always consider severe thrombocytopenia and acquired (e.g. medication) or congenital platelet dysfunction in patients with suspected bleeding disorder or severe hemorrhage***

### Consider PT/INR if:

- ✓ On Warfarin therapy and level is clinically relevant
- ✓ On Rivaroxaban and anti-Xa assay is not available and is clinically relevant
- ✓ To assess synthetic status in the setting of severe liver dysfunction (Fibrinogen may also be helpful)
- ✓ Patient at risk for vitamin K deficiency (malnutrition, cholestasis, prolonged or new antibiotics)

### Consider aPTT if:

- ✓ Unfractionated Heparin therapy
- ✓ Suspected Anti-phospholipid antibody syndrome (Lupus Inhibitor)

### Consider both PT/INR and aPTT if:

- ✓ Suspected congenital bleeding disorder (von Willerand's Disease, Hemophilia - Factor VIII, IX or XI deficiency)
- ✓ Suspected acquired bleeding disorder (DIC, severe liver failure, acquired hemophilia)
- ✓ Hemorrhaging patient and blood products potentially needed



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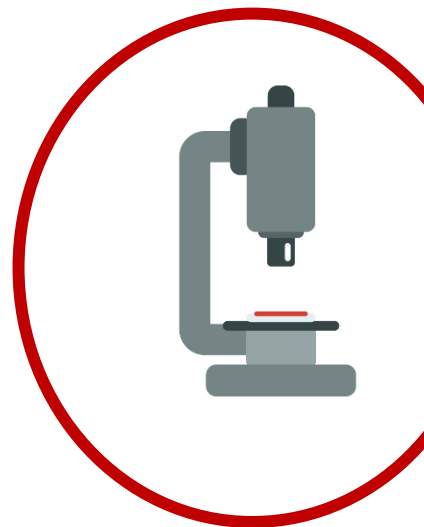
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***Always consider severe thrombocytopenia and acquired (e.g. medication) or congenital platelet dysfunction in patients with suspected bleeding disorder or severe hemorrhage***

### Do not order coagulation testing:

- As routine blood work
- As routine pre-op screening in absence of personal or family bleeding history
- As monitoring of Dabigatran, Rivaroxaban, Apixaban
- As monitoring of Low Molecular Heparin therapy
- As monitoring of thromboprophylaxis (eg. UFH 5000 IU BID)



### Coagulation testing for anticoagulation agents

<b>Warfarin</b>	<b>PT / INR</b>
<b>Unfractionated Heparin</b>	<b>aPTT</b>
<b>Argatroban</b>	<b>aPTT</b>
<b>LMWH</b>	<b>Anti-Xa (drug specific assay)*</b>
<b>Dabigatran</b>	<b>Thrombin Time (TT)</b>
<b>Rivaroxaban</b>	<b>Anti-Xa (drug specific assay)* also an elevated PT/INR may provide a rough indication of the presence of anticoagulation effect</b>
<b>Apixaban</b>	<b>Anti-Xa (drug specific assay)*</b>

\*available at RJH Special Hematology Lab through consultation with hematopathologist on-call



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### Direct Oral Anticoagulant (DOACs) Lab testing

**PT/INR and aPTT are not indicated and are not accurate for routine monitoring**

**DOAC testing options:**

Dabigatran	
Normal Thrombin Time (TT)	Anticoagulant effect is <b>ABSENT</b>
Elevated Thrombin Time (TT)	Anticoagulant effect is <b>PRESENT</b>

**Drug specific anti-Xa assay is most accurate**

*(available through consultation with Hematopathologist on-call)*

Apixaban / Rivaroxaban		
PT / INR	Normal	Rivaroxaban → Anticoagulation effect is unlikely Apixaban → Does not exclude anticoagulation effect
	Abnormal	Suggests anticoagulation effect for both

**Lab testing with DOAC's may be indicated when:**

- Urgent or emergent surgical or invasive interventions required
- Significant bleeding complication
- Suspected overdose
- Extreme body weight
- Potential drug interactions
- Renal (Dabigatran) or liver dysfunction (Apixaban/Rivaroxaban) with potential drug accumulation

