

**Anticoagulant & Antiplatelet reversal and Surgical Management Recommendations**



Drug Class	Non-urgent surgery/ procedure	Urgent-bleeding or immediate surgery	Comment	TEG
<b>Vitamin K Antagonist</b>				
Warfarin	<ul style="list-style-type: none"> <li>Stop 5 days prior to procedure</li> <li>Check INR 1-2 days prior                             <ul style="list-style-type: none"> <li>If INR &gt;1.5, give Vitamin K 1.25 - 2.5 mg PO</li> </ul> </li> <li>Consider bridging w/ LMWH in high risk patients</li> </ul>	<ul style="list-style-type: none"> <li>If procedure can be delayed 6-24 hrs, Vitamin K 5-10 mg PO/IV*</li> <li>If procedure cannot be delayed or for life-threatening bleeding:                             <ul style="list-style-type: none"> <li>FFP</li> <li>Kcentra® + Vitamin K 5-10 mg IV*</li> </ul> </li> </ul> <p>*Subcutaneous Vitamin K is NOT recommended</p>	<ul style="list-style-type: none"> <li>Kcentra® dosing (Order Set 10236)                             <ul style="list-style-type: none"> <li>INR 2-3.9 →25 units/ kg (max 2500)</li> <li>INR 4-5.9 →35 units/kg (max 3500)</li> <li>INR ≥ 6 →45 units/kg (max 4500)</li> </ul> </li> <li>CAUTION Kcentra® contains heparin (CI in pts w/ HIT); risk of thrombosis</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged R &amp; K time</li> </ul>
<b>Factor Xa Inhibitors</b>				
Xarelto® (Rivaroxaban)	<ul style="list-style-type: none"> <li>CrCl &gt;90 mL/min: Hold for at least 24 hrs prior to procedure</li> <li>CrCl 30-90 mL/min: Hold for 2-3 days prior to procedure</li> </ul>	<ul style="list-style-type: none"> <li>No specific antidote / not dialyzable</li> <li>Vitamin K not effective</li> <li>Kcentra® - 25 units/kg and assess response Consider 50 units/kg if life-threatening bleed (limited clinical data) - max dose: 5000 units</li> </ul>	<ul style="list-style-type: none"> <li>PT can be used to rule out substantial residual effect. Normal value may rule out clinically relevant residual anticoagulant effect. PT not intended to be used for dosage adjustment.</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged R &amp; K time.</li> </ul>
Eliquis® (Apixaban)	<ul style="list-style-type: none"> <li>Procedure w/ high bleed risk: Hold 48 hrs</li> <li>Procedure w/ low bleed risk: Hold 24 hrs</li> <li>CrCl &gt;50 mL/min hold 2-3 days</li> <li>CrCl ≤50 mL/min hold 3 or more days</li> </ul>			
Savaysa® (Edoxaban)	<ul style="list-style-type: none"> <li>Procedure w/ high bleed risk: Hold 48 hrs</li> <li>Procedure w/ low bleed risk: Hold 24 hrs</li> <li>CrCl &gt;50 mL/min: Hold 1-2 days</li> <li>CrCl ≤50 mL/min: Hold ≥ 3 days</li> </ul>			
<b>Thrombin Inhibitor</b>				
Pradaxa® (Dabigatran)	<ul style="list-style-type: none"> <li>CrCl &gt;50 mL/min: Hold for 1-2 days</li> <li>CrCl ≤50 mL/min: Hold for 3-5 days</li> </ul>	<ul style="list-style-type: none"> <li>Praxbind® (Idarucizumab) 2.5 gm IV x 2 doses admin no more than 15 min apart</li> <li>Hemodialysis</li> </ul>	<ul style="list-style-type: none"> <li>Thrombin time (preferred) or aPTT can be used to rule out substantial residual effect</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged R &amp; K time</li> <li>Decreased angle &amp; MA</li> </ul>

Anti-platelet Agents				
Plavix® (clopidogrel)	<ul style="list-style-type: none"> <li>Hold 5 days prior to procedure</li> </ul>	<ul style="list-style-type: none"> <li>Consider platelet transfusion</li> </ul>	<ul style="list-style-type: none"> <li>Caution advised in patients with cardiac stents</li> <li>Abrupt discontinuation can increase risk of acute stent thrombosis</li> </ul>	<ul style="list-style-type: none"> <li>Platelet mapping MA-ADP &lt;50 give platelets</li> </ul>
Brilinta® (ticagrelor)				
Effient® (prasugrel)	<ul style="list-style-type: none"> <li>Hold 7 days prior to procedure</li> </ul>			
Aggrenox® (ASA/dipyrida mole)				
Heparins				
Unfractionated Heparin	<ul style="list-style-type: none"> <li>Infusion: Stop infusion 2-6 hrs prior</li> <li>SQ: Hold evening dose prior</li> </ul>	<ul style="list-style-type: none"> <li>Protamine 1 mg for every 100 units of heparin given in previous 3 hrs (max dose: 50 mg single dose or 100 mg in 2 hrs)</li> </ul>	<ul style="list-style-type: none"> <li>aPTT can be used to determine degree of anticoagulation</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged R time</li> <li>TEG w/ heparinase negates effect of heparin to evaluate anticoagulant effects from other agents</li> </ul>
Low Molecular Weight Heparins (enoxaparin, dalteparin, tinzaparin)	<ul style="list-style-type: none"> <li>Last dose should be given 24 hrs before procedure</li> </ul>	<ul style="list-style-type: none"> <li>Wait 24 hrs if possible</li> <li>Consider protamine for high bleeding risk (only partially reverses LMWH) <ul style="list-style-type: none"> <li>LMWH administered ≤ 8 hrs: 1 mg protamine per 1 mg LMWH</li> <li>LMWH administered &gt;8 hrs: 0.5 mg protamine per 1 mg LMWH</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Elimination can be further delayed in patients with renal failure</li> <li>Anti-Xa assay can be used to assess degree of anticoagulation</li> </ul>	
Coagulopathies Not Associated with Anticoagulants				
Uremic bleeding	<ul style="list-style-type: none"> <li>Dialysis</li> <li>Desmopressin 0.3 mcg/kg over 30 min</li> </ul>	<ul style="list-style-type: none"> <li>Desmopressin 0.4 mcg/kg over 10 min</li> </ul>	<ul style="list-style-type: none"> <li>For persistent bleeding unresponsive to other therapies: Conjugated estrogen 0.6 mg/kg IV daily x 5 days</li> </ul>	
Acute Fibrinolysis		<ul style="list-style-type: none"> <li>Post-traumatic hemorrhage within 3 hrs of injury + lysis &gt;3% on TEG <ul style="list-style-type: none"> <li>Tranexamic acid 1 gm IV over 10 minutes followed by 1 gm infusion over 8 hrs</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Tranexamic acid should NOT be given in DIC</li> </ul>	<ul style="list-style-type: none"> <li>If lysis &gt;3% treat with tranexamic acid</li> </ul>
*This is intended to provide the clinician with possible strategies for patient management & should not replace physician judgment. Consider risk of thrombosis when using reversal agents.				
Reviewed by Pharmacy Anticoagulation Service and Surgical Critical Care				Last updated 1/2022