

dh Deaconess ANTICOAGULANT AND ANTIPLATELET MEDICATION REVERSAL

1: Identify the medication 2: Stop the medication 3: Confirm time of last dose

Emergent—Life-threatening bleeding. Immediate action needed:

Hold anticoagulants and consider giving a specific antidote and/or a pro-coagulant agent (see table below) Consider laboratory analysis for baseline values and if necessary to modify the therapy. Therapy may be initiated prior to lab results being posted

Urgent—Non-life-threatening bleeding. Potential intervention within 6-12 hours:

hold anticoagulants and consider giving a specific antidote and/or a pro-coagulant agent (see table below) Consider laboratory analysis for baseline values and if necessary to modify the therapy.

Non-Urgent—Non-bleeding patient. 12-24 hours or greater:

Hold the anticoagulant. Consider additional laboratory analysis and reassess bleeding risks.

Drug: Agent Type	Monitor	Half-life (t1/2)	Reversal Recommendation	Administration/Miscellaneous
Vitamin K antagonist: Coagulation factors II, VII, IX, X; anticoagulant proteins C, S	Monitor PT/INR	20-60 hrs	Determine risk (emergent, urgent, non-urgent for appropriate intervention) <ul style="list-style-type: none"> • Non-Urgent: Hold the anticoagulant. Consider additional laboratory analysis and reassess bleeding risks. Consider vitamin K 10 mg PO x 1 based on INR. • Urgent: Phytonadione (vitamin K) 10 mg IV over 30 minutes <ul style="list-style-type: none"> - <i>Vitamin K ALONE can significantly reverse the INR within change to 6-8 hours, so should be considered as sole agent if no intervention is needed until that time.</i> • Emergent: PCC 4 factor (Kcentra) 1500 units IV PLUS vitamin K 10 mg IV over 30 minutes <ul style="list-style-type: none"> - Dose may be repeated (max 5000 units) 	<ul style="list-style-type: none"> • FFP: plasma can be used if 4FPCC is unavailable. <ul style="list-style-type: none"> - FFP may require 2 or more adult doses for total reversal and may exceed 6 hours <ul style="list-style-type: none"> o single adult plasma dose = 10-15ml/kg • If INR remains elevated post single dose and/or the patient is still experiencing uncontrolled bleeding, redosing of PCC can be considered. Max dose is 5000 units. Redosing of vitamin K is rarely indicated, but may be given after 12 hours of original dose.
Anticoagulant: Heparin (UFH); binds to antithrombin; inactivates Xa; inactivates IIa; indirect thrombin inhibitor	aPTT; Monitor platelet count	90 minutes	<ul style="list-style-type: none"> • 1mg protamine/100 units of IV heparin infused over 10 mins; max dose = 50mg protamine repeating to calculated amount 	<ul style="list-style-type: none"> • IV slowly -over 10 mins • Beware anaphylactoid reaction; >50mg/dose
Anticoagulant: enoxaparin (Lovenox; LMWH); binds to antithrombin; inactivates Xa	aPTT; Monitor platelet count	7-12 hrs ~ upon renal function	<ul style="list-style-type: none"> • Activity 60% neutralized by protamine; < 8hrs; give 1mg protamine/mg enoxaparin. Last dose > 8hrs - give 0.5mg protamine/1mg enoxaparin • Second dose needed: 0.5mg protamine/1mg of enoxaparin 2-4 hrs after the first. 	<ul style="list-style-type: none"> • See UFH
Anticoagulant: fondaparinux (Arixtra); binds to antithrombin; inactivates Xa; a heparinoid.	Monitor platelet count; thrombocytopenia is rare.	17-21 hours	<ul style="list-style-type: none"> • None • <i>(None of the following products has been shown to reduce bleeding in these pts; however, there is no direct antidote for fondaparinux)</i> 	<ul style="list-style-type: none"> • Supportive care; blood components • PCC 4 factor (Kcentra contains heparin) 50units/kg (max 5000 units); no repeat dose recommended (<i>off-label</i>)
Thrombolytic: recombinant tissue plasminogen activator	Monitor neurologic exam; PT and aPTT, fibrinogen, platelet count.	~5min	<ul style="list-style-type: none"> • TXA 1gm IV bolus over 10 mins followed by 1gm gtt over 8 hours • 1 Cryoprecipitate dose (<i>1 adult dose = 5 pooled units</i>) • Platelets (<i>single adult dose= 1 unit</i>) 	<ul style="list-style-type: none"> • If TXA contraindicated: use Amicar (contact pharmacy for dosing) • Keep fibrinogen > 150 mg/dl
Factor Xa inhibitor: oral 1) Rivaroxaban (Xarelto) 2) Apixaban (Eliquis) 3) Edoxaban (Savaysa) 4) Betrixaban (Bevyxxa)	PT/INR (if normal, less likely that drug is contributing to ongoing bleeding)	1) 15-9 hrs and elderly 11-13 hrs 2) 8-15 hrs 3) 9-11 hrs 4) 19-25 hrs	<ul style="list-style-type: none"> • Vitamin K is NOT effective • Supportive care • PCC 4 factor (Kcentra contains heparin) 50 units/kg (<i>max 5000 units; off-label- but is an option in life-threatening situation.</i>) 	<ul style="list-style-type: none"> • If initial interventions do not control bleeding: <ul style="list-style-type: none"> - Consider plasma (adult dose =15ml/kg)
Oral platelet inhibitors: 1) Clopidogrel (Plavix-P2Y12) 2) Prasugrel (Effient-P2Y12) 3) Ticagrelor (Brilinta-P2Y12) 4) Vorapaxar (Zontivity-Par1)	Monitor bleeding, Hct, Monitor platelet function (VerifyNow: plt function test avail approx. July 2018)	1) ~ 6 hrs 2) ~ 7 hrs 3) ~ 7 hrs 4) ~ 8 days	<ul style="list-style-type: none"> • Platelets • <i>Start with single unit (single unit= 1 adult dose)</i> • <i>Utility of platelet transfusion in critical bleeding patients remains under investigation.</i> • DDAVP (caution: fluid overload) 0.4mcg/kg IV x 1 	<ul style="list-style-type: none"> • Platelet count > 50 for major surgery/100k for neurosurgical/ophthalmic. • DDAVP 0.4mcg/kg in 50ml NS over 15-30 mins. • Platelet transfusions have not been shown to improve clinical outcomes; however, the recommendations provided are based on the most recent neuro/critical care guidelines.
Direct thrombin inhibitor: (oral) dabigatran (Pradaxa)	APTT: (if normal, less likely that drug is contributing to ongoing bleeding)	(t1/2=12-17 hours but much longer with renal impairment)	<ul style="list-style-type: none"> • Idarucizumab 5g, provided as two separate vials each containing 2.5g/50ml; give one after the other. Limited data supports administration of an additional 5g of idarucizumab (Praxbind) 	

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