



This document is intended as a guideline only and should not replace sound clinical judgment For questions, please call contact antithrombosis via TigerConnect

- Antithrombotic reversal (of anticoagulants and antiplatelets) should be limited to clinical situations (e.g. life-threatening bleed, need for urgent/emergent surgery) where immediate need of reversal outweighs risk of thrombosis (either from reversal agent itself or normalization of coagulation in a patient with underlying thromboembolic risk) and only once supportive measures have been maximized.
- Whenever possible, antithrombotics should be resumed in a safe, timely manner through shared decision making to avoid thromboembolic complications.

ANTICOAGULANT	REVERSAL AGENT(S)	COMMENTS
DIRECT THROMBIN	Idarucizumab (Praxbind®) – <u>only used for reversal of dabigatran (Pradaxa®)</u>	Use of PCC/idarucizumab:
INHIBITORS (DTIs)	Restrictions: patients confirmed to have recent dabigatran use who:	 REQUIRES ATTENDING
	Require anticoagulant reversal for life-threatening hemorrhage OR	APPROVAL
	Require urgent/emergent invasive procedure within next 8 hours	 Document attending
	Dose: 5 gram	name in the order
	Administration: Infuse two 2.5 gram/50 mL vials undiluted over 5-10 minutes each,	comments
	consecutively	
PO:	– Line should be flushed with NS prior to infusion	Additional options:
 Dabigatran 	Second vial should be infused within 15 minutes of first vial	 If dabigatran ingested
(Pradaxa®)	Onset: Immediate	within 1 hour, consider
		activated charcoal.
Half-life 12-17	Kcentra®- 4 Factor PCC	 Mechanical methods,
hours in normal	May be considered for dabigatran reversal if idarucizumab not available	such as dialysis, may be
renal function	Dose: 1500 units x 1 (optional rescue dose of 1500 units available if hemostasis not	considered as a last
	achieved)	resort
	Administration: Send Kcentra Kit for bedside reconstitution and administer via IV push over	
	5 minutes	<u>Laboratory measurement:</u>
	Use within 4 hours of reconstitution	 A normal thrombin time
	Onset: <30 minutes	(<17 seconds) rules out
	Caution: thrombotic risk	clinically relevant
		dabigatran effect
	Kcentra contains trace amounts of heparin (to mitigate thrombotic potential) and should not be used	· ·
	in bleeding patients with active or recent (last 100 days) heparin-induced thrombocytopenia (HIT). In	- Do not use INR to guide
	this instance, please contact pharmacy to discuss possible use of the alternative procoagulant FEIBA	management
	for reversal.	
IV:	IV DTIs:	
Argatroban	 Short half-life and discontinuation of IV DTIs are primary means of attenuating 	
 Bivalirudin 	bleed.	
(Angiomax®)	 Support with crystalloid and blood products to facilitate rapid renal clearance of 	
	drug.	
Half-life 10-90	 IV DTIs should be discontinued immediately upon bleeding discovery and rarely 	
minutes	require other means of reversal.	
FACTOR XA	Kcentra®-4 Factor PCC	Use of PCC:
INHIBITORS	Recitità 4 lactor l'ec	
	Dose: 1500 units v 1 (ontional rescue dose of 1500 units available if hemostasis not	
	<u>Dose</u> : 1500 units x 1 (optional rescue dose of 1500 units available if hemostasis not	- REQUIRES ATTENDING
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HEPARIN Half-life: 1-2 hours Dose: 1 mg reverses 100 units of IV-administered UFH Time since UFH Dose per 100 units UFH over last 3h Signification: 3:00 min 1 mg 0.5 mg - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTicoagulant effect In clinical practice, give 50 mg IV x1 over 10 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis Laboratory meas Laboratory described in normal renal function For the first of the first o	kely to ant r causes of surement: PTT remains bleeding I, may 60 mg and other t support surement: ains bleeding I may give .5mg r 1 mg
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- Do not exceed 50mg in a single dose; high doses can have an undesirable ANTIcoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes Administration: Slow IV push not to exceed 5mg/minute Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis Protamine (Does not reverse LMWH as effectively as it does UFH) Dose: 1 mg for each 1 mg of enoxaparin in last 8 hours - If >12 hrs have elapsed since LMWH administration, protamine may not be needed - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTicoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute WARFARIN Half-life 36 hours WARFARIN Half-life 36 hours MAJOR OR LIFE THREATENING BLEED: - Hold warfarin & give Vit K 5-10mg IV (may repeat q12h based on repeat INR) - Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) - PLUS either Kcentra (preferred) or FFP - FP Laboratory meas: - If anti-Xa or a levated or if not controlled redoes UFH) - Consider FFP (aboves an have an undesirable ANTicoagulant elevated or if not controlled redoes of 0 protamine pe LMWH - Consider FFP (aboves an have an undesirable ANTicoagulant elevated or if not controlled product or if not controlled redoes of 0 protamine pe LMWH - Consider FFP (aboves an have an undesirable ANTicoagulant elevated or if not controlled product or if not controlled	PTT remains bleeding I, may 50 mg and other t support surement: ains bleeding I may give .5mg r 1 mg
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- In clinical practice, give 50 mg IV x1 over 10 minutes Administration: Slow IV push not to exceed 5mg/minute Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis - Consider FFP, blood product LMWHs (enoxaparin) Half-life: 2-8 hours in normal renal function - If >12 hrs have elapsed since LMWH administration, protamine may not be needed - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTIcoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute - Caution: Rapid administration can cause severe hypotension and anaphylaxis - If >12 hrs have elapsed since LMWH administration, protamine may not be needed - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTIcoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute - LMWH - Onset: 5-15 minutes - Caution: Rapid administration can cause severe hypotension and anaphylaxis - Consider FFP blood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose with 5 to plood product - If anti-Xa or a elevated or if not controllec redose set anaphylaxis - If >12 hr anti-Xa or a elevated or if not controllec redose set anaphylaxis - If >12 hr anti-Xa or a elevated or if not controllec redose set anaphylaxis - If >12 hr	PTT remains bleeding I, may 50 mg and other t support surement: ains bleeding I may give .5mg r 1 mg
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LMWHs (enoxaparin) Half-life: 2-8 hours in normal renal function WARFARIN Half-life 36 hours WARFARIN Half-life 36 hours MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) Pose: 1 mg for each 1 mg of enoxaparin in last 8 hours - If >12 boratory meas - If >15 12 hrs have elapsed since LMWH administration, protamine may not be needed - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTIcoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute Dose: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis Phytonadione (Vitamin K) Dose: See box on left Administration: IV- dilute in 50 ml NS and give over 30 minutes Onset: PO=24 hours; IV=12 hours Caution: IV - may be associated with very (may repeat q12h based on repeat INR) PLUS either Kcentra (preferred) or FFP Dose: See box on laft Administration: IV - may be associated with very small risk of anaphylaxis FFP	t support surement: ains bleeding I may give .5mg r 1 mg
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Cenoxaparin Dose: 1 mg for each 1 mg of enoxaparin in last 8 hours If >12 hrs have elapsed since LMWH administration, protamine may not be needed elevated or if	ains bleeding I may give .5mg r 1 mg
Half-life: 2-8 hours in normal renal function - If >12 hrs have elapsed since LMWH administration, protamine may not be needed - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTIcoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis WARFARIN Half-life 36 hours ACTIVE BLEEDING AT ANY INR: Hold warfarin & give Vit K 5-10mg IV (may repeat q12h based on repeat INR) MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) PLUS either Kcentra (preferred) or FFP FFP elevated or if not controlled 2nd dose of 0 protamine pe LMWH Dose: See box on left Administration: IV- dilute in 50 ml NS and give over 30 minutes Onset: PO=24 hours; IV=12 hours Caution: IV - may be associated with very small risk of anaphylaxis PLUS either Kcentra (preferred) or FFP FFP	bleeding I may give .5mg r 1 mg
in normal renal function - Do not exceed 50mg in a single dose; high doses can have an undesirable ANTIcoagulant effect - In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis - Consider FFP blood product caution: Rapid administration can cause severe hypotension and anaphylaxis - Consider FFP blood product blood product blood product blood product blood product caution: IV- dilute in 50 ml NS and give over 30 minutes - Document att name in the or comments - Document att name in the or comments - Document att name in the or comments - FFP	I may give .5mg r 1 mg
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- In clinical practice, give 50 mg IV x1 over 10 minutes. Administration: Slow IV push not to exceed 5mg/minute Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis MARFARIN Half-life 36 hours ACTIVE BLEEDING AT ANY INR: Hold warfarin & give Vit K 5-10mg IV (may repeat q12h based on repeat INR) MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) PLUS either Kcentra (preferred) or FFP Protamine per LMWH Consider FFP and the subject of the protation and anaphylaxis Phytonadione (Vitamin K) Dose: See box on left Administration: IV- dilute in 50 ml NS and give over 30 minutes Onset: PO=24 hours; IV=12 hours Caution: IV - may be associated with very small risk of anaphylaxis FFP	r 1 mg
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Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis WARFARIN Half-life 36 hours Hold warfarin & give Vit K 5-10mg IV (may repeat q12h based on repeat INR) MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) PLUS either Kcentra (preferred) or FFP Hyponadione (Vitamin K) Dose: See box on left Administration: IV- dilute in 50 ml NS and give over 30 minutes Onset: PO=24 hours; IV=12 hours Caution: IV - may be associated with very small risk of anaphylaxis FFP Consider FFP blood product Use of Kcentra: - REQUIRES AT APPROVAL FFP Caution: IV - may be associated with very small risk of anaphylaxis FFP	and other
Onset: 5-15 minutes Caution: Rapid administration can cause severe hypotension and anaphylaxis WARFARIN Half-life 36 hours Hold warfarin & give Vit K 5-10mg IV (may repeat q12h based on repeat INR) MAJOR OR LIFE THREATENING BLEED: Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) Hold warfarin & give Vit K 10mg IV (may repeat q12h based on repeat INR) PLUS either Kcentra (preferred) or FFP Hyponadione (Vitamin K) Dose: See box on left Administration: IV- dilute in 50 ml NS and give over 30 minutes Onset: PO=24 hours; IV=12 hours Caution: IV - may be associated with very small risk of anaphylaxis FFP comments	and other
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PLUS either Kcentra (preferred) or FFP FFP	
DOSC, SEC DOX OFFICE	urement:
■ Kcentra 1500 units x 1 OR Administration: At least 10 ml/min - Repeat INR 30	
■ FFP 10-30 mL/kg Onset: 2-6 hours after Kcentra	
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Caution: Carries risk of infection, must be ASYMPTOMATIC SUPRATHERAPEUTIC INR Leading: Caution: Carries risk of infection, must be thawed and a large volume is required — If INR remain:	s alouated
(i.e., no active bleeding) (often > 1 liter) may give add	tionai
■ INR 5-9: Omit 1-2 warfarin doses Kcentra 1500 units x1	
± 1-2.5mg PO Vit K Dose: 1500 units x 1 (optional rescue	
■ INR > 9 (NO BLEED): Omit 1-2 warfarin dose of 1500 units available if	
doses & give 2.5-5mg PO Vit K hemostasis or desired target INR not	
achieved)	
SURGERY REVERSAL Administration: Send Kcentra Kit for	
■ INR > 1.5-2.5 bedside reconstitution and administer	
Surgery < 24 hours: 0.5-1mg IV Vit K x1 via IV push over 5 minutes	
+/- 5-8mL/kg FFP — Use within 4 hours of reconstitution	
Surgery 24-96 hours: 0.5-1mg PO Vit K x1 Onset: <30 minutes	
monitor INR q12-24h <u>Caution</u> : thrombotic risk	
■ INR >2.5-5	
Surgery <24 hours: 1-2.5mg IV Vit K x1 Kcentra contains trace amounts of heparin	
+/- 5-8mL/kg FFP (to mitigate thrombotic potential) and	
Surgery 24-96 hours: 1-2.5mg PO Vit K x1 should not be used in bleeding patients	
monitor INR q12-24h with active or recent (last 100 days)	
heparin-induced thrombocytopenia (HIT).	
In this instance, please contact pharmacy	
to discuss possible use of the alternative	
procoagulant FEIBA for reversal.	

ANTIPLATELET	HALF-LIFE	REVERSAL AGENT	COMMENTS
ASPIRIN	15-30 minutes	DDAVP	Short half-life and discontinuation of
	5-10 days for platelet	<u>Dose</u> : 0.3 mcg/kg IV x 1	gpllb-llla are primary means of
	recovery	Administration: over 15 minutes	attenuating bleed
CLOPIDOGREL	8 hours	Onset: Immediate	
(Plavix®)	~ 5 days for platelet	<u>Caution</u> : Serial doses associated	 Transfusion of functioning platelets in
	recovery	with tachyphylaxis, hyponatremia,	spontaneous intracranial hemorrhage
PRASUGREL	7 hours	and seizures	has been associated with harm and
(Effient®)	<7 days for platelet recovery		should be generally be avoided
TICAGRELOR	~ 9 hours		
(Brilinta®)	3 days for platelet recovery		 Mechanical methods, such as dialysis,
Gp IIb-IIIa	30-120 minutes		may be considered as a last resort
Eptifibatide (Integrilin®)			
Abciximab (Reopro®)			
Tirofiban (Aggrastat®)			

Consider use of antifibrinolytics for refractory bleeding

Aminocaproic acid:

Mechanism: antifibrinolytic

Dose: 4-5 gm loading dose in 250 ml NS over 15 minutes followed by infusion of 1gm/hr infusion until bleeding subsides (max 30 gm/day)

Caution: May require renal adjustment

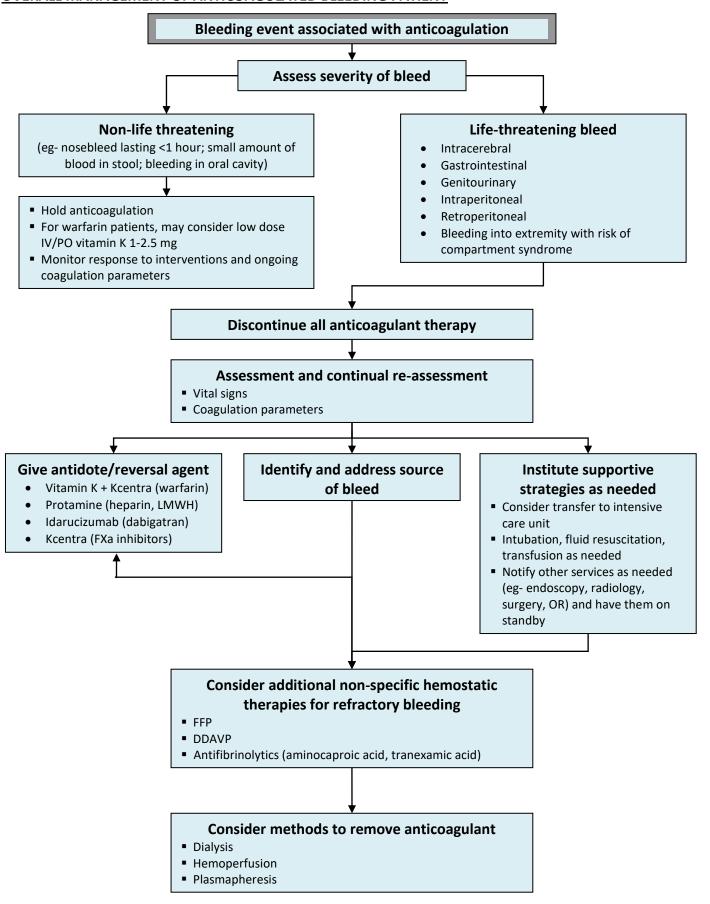
Tranexamic acid:

Mechanism: antifibrinolytic

Dose: 1 gm loading dose in 50 ml NS IV over 10 minutes followed by 1 gm in 250 ml NS infused over the next 8 hours

Caution: May require renal adjustment

OVERALL MANAGEMENT OF ANTICOAGULATED BLEEDING PATIENT



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