

OHSU Hospital and Clinics
Department of Pharmacy Services

Pharmacy and Therapeutics Committee
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ANTICOAGULANTS: THE GUIDE TO REVERSAL

Definition of Bleeding:

Minor bleeding – Any clinically overt sign of hemorrhage (including imaging) that is associated with a <5 g/dl decrease in the hemoglobin concentration or $< 15\%$ decrease in the hematocrit felt by the clinician to be related to anticoagulation

Major bleeding – Intracranial hemorrhage or a ≥ 5 g/dl decrease in the hemoglobin concentration or a $\geq 15\%$ absolute decrease in the hematocrit resulting in hemodynamic compromise or compression of a vital structure and felt by the clinician to be related to anticoagulation

ANTIPLATELET AGENTS

Aspirin

Minor – desmopressin 0.3 mcg/kg x 1

Major – platelet transfusion

Clopidogrel (Plavix®)

Minor – desmopressin 0.3 mcg/kg x 1

Major – platelet transfusion – consider two units if life or brain threatening bleeding

Prasugrel (Effient®)

Minor – desmopressin 0.3 mcg/kg x 1

Major – platelet transfusion – consider two units if life or brain threatening bleeding

Ticagrelor (Brilinta®)

Minor – desmopressin 0.3 mcg/kg x 1

Major – platelet transfusion – consider two units if life or brain threatening bleeding

Sustained Release Aspirin/Dipyridamole (Aggrenox®)

Minor – desmopressin 0.3 mcg/kg x 1

Major – platelet transfusion

Abciximab (Reopro®)

Major – platelet transfusion

Eptifibatide (Integrilin®)

Minor – desmopressin 0.3 mcg/kg x 1

Major Bleeding Reversal: platelet transfusions plus infusion of 10 units of cryoprecipitate

Tirofiban (Aggrastat®)

Minor – desmopressin 0.3 mcg/kg x 1

Major bleeding Reversal: platelet transfusions plus infusion of 10 units of cryoprecipitate

HEPARIN AND HEPARIN LIKE AGENTS

Standard Heparin

Time since last heparin dose	Dose of Protamine
< 30 minutes	1 unit/100 units of heparin
30–60 minutes	0.5 – 0.75 units/100 units of heparin
60–120 minutes	0.375 – 0.5 units/100 units of heparin
> 120 minutes	0.25 – 0.375 units/100 units of heparin

Infusion rate should not exceed 5 mg/min. Maximum dose is 50 mg per dose

Low Molecular Weight Heparin

Reversal of Bleeding: Protamine (works just as well with LMWH as heparin) – if with-in 4 hours of dose: 1 mg of protamine for each 1 mg of enoxaparin or 100 units of dalteparin and tinzaparin. Repeat one-half dose of protamine in 4 hours. If 4–8 hours after dose: give 0.5 mg for each 1 mg of enoxaparin or 100 units of dalteparin and tinzaparin.

Fondaparinux (Arixtra®)

Major Bleeding Reversal – Protamine ineffective – rVIIa (90 mcg/kg) may be of use

Dabigatran (Pradaxa®)

Reverse if patient shows signs of bleeding and had an elevated aPTT > 40 seconds

1. Profilnine (Factor IX complex) 4000 units (50 units/kg for patients under 80 kg) plus 1 mg of rfVIIa

Rivaroxaban (Xarelto®)

Reverse if patient shows signs of bleeding and has an INR > 1.5

1. Profilnine (Factor IX complex) 4000 units (50 units/kg for patients under 80 kg) plus 1 mg of rfVIIa

THROMBOLYTIC THERAPY

Reversal: Immediate infusions of equivalent of 6–8 units of platelets (or one platelet pheresis product), 2 units of plasma, and 10 units of cryoprecipitate. No value in infusing anti-fibrinolytic agents

WARFARIN

Not Bleeding: Goal is INR in 2–3 range

INR	Action
3– 4.5	Hold dose until INR decreased
4.5–10	1.25 mg Vitamin K PO
> 10	2.5 – 5 mg Vitamin K PO

Should see INR back in therapeutic range in 24–48 hours

Bleeding: Goal is INR under 2

INR	Action
2–4.5	2.5 mg Vitamin K ± FFP (15 ml/kg)
4.5–10	5 mg Vitamin K ± FFP (15 ml/kg)
>10	5–10 mg Vitamin K ±FFP (15 ml/kg)

FFP: Fresh Frozen Plasma

Life or Brain Threatening: Profilnine 4000 units + 1 mg rVIIa

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