

Assessment of the risk of bleeding during anticoagulation therapy

Introduction:

Bleeding complications are a common concern with the use of anticoagulant agents. In selected situations, reversing or neutralizing the effects of an anticoagulant may be desired.

Table 1: Risk factors for increased major anticoagulant bleeding

Category	Characteristics
Anticoagulation	<ul style="list-style-type: none"> • Quality (out of range versus in goal) • Presence of multiple anticoagulants or antiplatelet agents • Organ dysfunction (eg. hepatic failure, renal failure, etc) creating reduced capacity for hemostasis to occur
Patient	<ul style="list-style-type: none"> • Anemia • Coagulopathy disorders • Prior bleeding history • Chronic renal insufficiency • Uncontrolled hypertension • Malignancy • Alcohol abuse • Previous stroke • Age greater than 70 years old • Organ failure reducing anticoagulant clearance • Reduced platelet count or function (eg: less than 50,000) • In setting where risk of a traumatic events is increased
Procedures	<ul style="list-style-type: none"> • Impaired vascular integrity • Recent procedure (bleeding risk is higher closer to surgery) • Drains at site • Procedural related use of anticoagulation (e.g. bypass, vascular catheterization) • Vascular irregularities (eg. aneurysm)

Considerations for decision to reverse anticoagulation

Reversal of anticoagulation effects may depend on the urgency of the situation. The approach may include full or partial reversal of anticoagulation, and have an immediate or long term effects.

Table 2: Urgent and Semi-Urgent bleeding assessment

	Syndrome or Indication	Timeline	Hemostatic Goal
Urgent	<p>Life threatening or bleeding that may affect a vital organ.</p> <p>Active or presumed bleeding with hypotension, tachycardia, hematoma, swollen joints, other signs or symptoms that suggest immediate consequences.</p> <p>Any include selected invasive procedures where emergent reversal of effects is necessary.</p>	Minutes to Hours	Rapidly achieve and maintain lower or normal anticoagulation indices for 24-72 hours.
Semi-Urgent	Plan for emergent invasive procedure that could result in bleeding complications	Hours to Days	Therapeutic or lower intensity of anticoagulation within 24 - 72 hours. Consider for patients with high bleeding risk factors including procedures.

Appendix:

Risk assessment scores: Several risk assessment tools have been explored, and may be used in various settings such as acute coronary syndromes. For assessing the risk of bleeding with long term anticoagulation, the HAS-BLED score has been proposed as simple bleeding risk assessment tool to guide management decisions.

HAS-BLED scoring system: [For atrial fibrillation patients]

Hypertension: 1 point for uncontrolled high blood pressure
- systolic (greater or equal to 160mmHg)

Abnormal kidney and/or liver function:

- 1 point for impaired kidney or liver function
- 2 points for both

Stroke: 1 point for previous history of stroke, especially deep brain (lacunar) stroke

Bleeding: 1 point for previous history of bleeding, anemia or having predisposition to bleeding

Labile INR: 1 point for unstable or high INRs, or poor time (less than 60%) in the therapeutic time range.

- Not necessarily easy to validate in acutely ill inpatients

Elderly: 1 point for age greater than or equal to 65 years

Drugs and/or alcohol:

- 1 point for taking antiplatelet drugs (e.g. aspirin, clopidogrel, prasugrel, ticagrelor, etc...)
- 1 point for consuming 8 or more alcoholic drinks per week
- 2 points for both

HAS-BLED Score	Major Bleeding Risk* per 100 patient years
0	0.9%
1	3.4%
2	4.1%
3	5.8%
4	8.9%
5	9.1%
6	Number of subjects too small to estimate

*Overall percent of Major Bleeds during oral vitamin K antagonist therapy to prevent stroke in patients with AF observed in two trials (mean duration of therapy 17 and 24 months/trial).

Ref: Lip GH et al. JACC 2011;57:173-80

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