

Bridging anticoagulation

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Indications for bridging

Thromboembolic risk	Mechanical valve	Atrial fibrillation	VTE	Bridging recommended?
High	<p>>10% annual thrombosis risk</p> <ul style="list-style-type: none"> Mitral (any type) Aortic (caged ball or tilting disc) CVA ≤ 6 months prior 	<ul style="list-style-type: none"> CHA₂DS₂VAsc ≥7 CVA <3 months prior 	<ul style="list-style-type: none"> < 3 months prior One or more severe thrombophilias <ul style="list-style-type: none"> Protein C, S, AT deficiencies, APS 	Yes¹
Moderate	<p>5-10% annual thrombosis risk</p> <ul style="list-style-type: none"> Bi-leaflet aortic valve with: <ul style="list-style-type: none"> Atrial fibrillation OR <ul style="list-style-type: none"> Any CHA₂DS₂VAsc risk factor 	<ul style="list-style-type: none"> CHA₂DS₂VAsc 5-6 	<ul style="list-style-type: none"> 3 < VTE <12 months prior Recurrent VTE Active cancer (treated <6 months prior) Non-severe thrombophilia 	<p>Case by case basis</p> <ul style="list-style-type: none"> Avoid if high bleeding risk, certain surgeries (major cardiac, CEA, neurosurgery)
Low	<p><5% annual thrombosis risk</p> <ul style="list-style-type: none"> Bi-leaflet aortic valve with no other risk factors 	CHA ₂ DS ₂ VAsc ≤4 ²	<ul style="list-style-type: none"> >12 months prior No other risk factors 	No¹

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Bleeding risk calculators

Important notes:

- No bleeding risk tools have been validated for VTE treatment, only for prophylaxis and atrial fibrillation
- Observational studies suggest net clinical benefit of anticoagulation even with very high bleeding risk
- No RCTs exist demonstrating benefit of *withholding* anticoagulation based on high bleeding risk

HAS-BLED (atrial fibrillation) 1 point each	IMPROVE (VTE prophylaxis for inpatients)
HTN (SBP >165 mmHg)	Active gastroduodenal ulcer (4.5)
Renal disease (ESRD, Cr >2.26, or transplant)	Bleeding within past 3 months (4)
Liver disease (cirrhosis, AST/ALT >3x upper limit, Tbili >2x upper limit)	Admission platelets < 50 x10 ⁹ cells/L (4)
History of stroke	Hepatic failure (INR >1.5) (2.5)
History of bleeding or predisposition to bleeding	ICU/CCU stay (2.5)
Labile INR	Central venous catheter (2)
Alcohol or illicit drug use	Rheumatic disease (2)
Taking antiplatelet or NSAID	Active malignancy (2)
Age > 65	Age: 40-84 (1.5), ≥ 85 (3.5)
	Renal disease: GFR 30-59 mL/min (1), <30 mL/min (2.5)
High risk	High risk
≥ 3	≥ 7

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References

1. [Douketis JD, Spyropoulos AC, Spencer FA, et al. Perioperative management of antithrombotic therapy: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest. 2012;141\(2 Suppl\):e326S-50S.](#)
2. [Douketis JD, Spyropoulos AC, Kaatz S, et al. Perioperative Bridging Anticoagulation in Patients with Atrial Fibrillation. N Engl J Med. 2015;373\(9\):823-33.](#)
3. [Doherty JU, Gluckman TJ, Hucker WJ, et al. 2017 ACC Expert Consensus Decision Pathway for Periprocedural Management of Anticoagulation in Patients With Nonvalvular Atrial Fibrillation: A Report of the American College of Cardiology Clinical Expert Consensus Document Task Force. J Am Coll Cardiol. 2017. pii: S0735-1097\(16\)37085-1](#)

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