Table 1. Characteristics of anticoagulants registered in Singapore (adapted from local product information leaflets)

	Mechanism of action	Pharmacokinetics	Reversal agent(s)	Routine coagulation monitoring	Dosing		Dosing according to renal function, CrCl (mL/min)			
					Active treatment phase (3 months)	Extended treatment phase (>3 months)	>50	30–50	15–29	<15
Apixaban‡‡	Direct factor Xa inhibitor	Bioavailability: ~50% Tmax: 3–4 hours Half-life: 12 hours Elimination: 27% renal	Andexanet alfa*** or 4F-PCC	Not required	**Day 1–7:** PO 10 mg BD††† **Day 8 onwards:** PO 5 mg BD	**Month 3–6:** PO 5 mg BD **Month 7 onwards:** PO 2.5 mg BD	Dose adjustment is not necessary		Use with caution.	Not recommended
Dabigatran	Direct thrombin inhibitor	Bioavailability: 6.5% Tmax: 0.5–2 hours Half-life: 12–14 hours Elimination: 85% renal	Idarucizumab or 4F-PCC	Not required	**Day 1–5:** *Use LMWH, no dabigatran* **Day 6 onwards:** PO 150 mg BD‡‡‡	Use maintenance dose.	Dose adjustment is not necessary.	**Day 6 onwards:** Consider dose reduction to PO 110 mg BD for patients with high bleeding risks	Not recommended	
Edoxaban§§	Direct factor Xa inhibitor	Bioavailability: ~60% Tmax: 1–2 hours Half-life: 10–14 hours Elimination: 35% renal	Andexanet alfa*** or 4F-PCC	Not required	**Day 1–5:** *Use LMWH, no edoxaban* **Day 6 onwards:** PO 60 mg OD§§§	Use maintenance dose.	Dose adjustment is not necessary.	**Day 6 onwards:** PO 30 mg OD****		Not recommended
Rivaroxaban‡‡	Direct factor Xa inhibitor	Bioavailability: 80–100% Tmax: 2–4 hours Half-life: 5–13 hours Elimination: 67% renal (36% as active compound)	Andexanet alfa*** or 4F-PCC	Not required	**Day 1–21:** PO 15 mg BD††† **Day 22 onwards:** PO 20 mg OD	**Month 3–6:** Use maintenance dose. **Month 7 onwards:** PO 10 mg OD. Consider continuing with the maintenance dose of 20 mg OD in patients with high risk of recurrent VTE.	Dose adjustment is not necessary.	**Day 22 onwards:** Consider dose reduction to PO 15 mg OD**** for patients whose bleeding risks outweigh the risks of VTE recurrence. Use with caution in patients with CrCl 15–29 mL/min. If the recommended dose is PO 10 mg OD, dose adjustment is not necessary.		Not recommended
Warfarin‡‡	Vitamin K antagonist	Bioavailability: >95% Tmax: 72–96 hours Half-life: 40 hours Elimination: ~100% metabolised, negligible in urine	Vitamin K, fresh frozen plasma and prothrombin complex concentrates	Required	**Day 1–2:** PO 5 mg OD. *Give with LMWH for five days, or until INR ≥2 —whichever takes longer* **Day 3 onwards:** Titrate according to INR	Use maintenance dose.	INR-adjusted			
Dalteparin	Accelerates antithrombin action	Bioavailability: 87% Tmax: 3–4 hours Half-life: 3–5 hours Elimination: Primarily renal (<5% as active compound)	Protamine	Not required	SC 200 IU/kg OD, up to a maximum of 18,000 IU, OR SC 100 IU/kg BD	Can be used as monotherapy in patients with cancer or in pregnant patients.	Dose adjustment is not necessary.		Not recommended	
Enoxaparin‡‡	Accelerates antithrombin action	Bioavailability: ~100% Tmax: 3–5 hours Half-life: 4–7 hours Elimination: 40% renal (10% as active compound)	Protamine	Not required	SC 1 mg/kg BD. Can be used as monotherapy in patients with cancer.	Can be used as monotherapy in patients with cancer or in pregnant patients.	Dose adjustment is not necessary.		SC 1 mg/kg OD. Consider monitoring of anti-factor Xa activity.	

4F-PCC, four-factor prothrombin complex concentrate; BD, twice a day; CrCl, creatinine clearance; INR, international normalised ratio; IU, international units; OD, once daily; PO, oral; SC, subcutaneous; Tmax, time taken for a drug to reach the maximum concentration

Initial parenteral anticoagulation

‡‡ Available on government subsidy list.

§§ Edoxaban is registered in Singapore for the treatment of VTE but is not commonly used at the time of ACG publication.

*** Andexanet alfa is not registered in Singapore at time of ACG publication.

††† Apixaban and rivaroxaban have different doses and durations for the acute treatment phase.

‡‡‡ For patients of age ≥80, use the reduced dose of 110 mg BD.

§§§ For patients who weigh ≤60 kg, use the reduced dose of 30 mg OD.

**** The recommended dosing for patients with CrCl 15–29 mL/min is based on pharmacokinetic data and has not been studied in this clinical setting. Apixaban is the most suitable DOAC for patients with CrCl 15–29 mL/min, as it is least affected by renal elimination compared to other DOACs.