

Table 2. Characteristics of oral anticoagulants registered in Singapore (extracted from local product information leaflets)

Medications	Warfarin [†]	Apixaban [†]	Rivaroxaban [†]	Edoxaban	Dabigatran	
Mechanism of action	Vitamin K antagonist	Direct factor Xa inhibitor	Direct factor Xa inhibitor	Direct factor Xa inhibitor	Direct thrombin inhibitor	
Bioavailability	> 95%	~ 50%	80–100% when administered with food	~ 60%	6.5% Do not chew, break or open capsule	
T (max)	72–96 h	3–4 h	2–4 h	1–2 h	0.5–2 h	
Half-life	40 h	12 h	5–13 h	10–14 h	12–14 h	
Routine coagulation monitoring	Yes	No	No	No	No	
Reversal agent(s)	Vitamin K and/or 4F-PCC	Andexanet alfa [§] or 4F-PCC ^{17,39,40}			Idarucizumab or 4F-PCC ^{17,39,40}	
Elimination	~100% metabolised, negligible in urine	27% renal, 73% faecal	67% renal, 33% faecal	35% renal, 65% faecal	85% renal	
Drug interactions**	++++ Co-trimoxazole, fluconazole, metronidazole, rifampicin, carbamazepine, phenobarbitone, St John's Wort, amiodarone	++ Antifungals (e.g. azoles), macrolides (e.g. erythromycin), antituberculosis medications (e.g. rifampicin), phenytoin, valproate, carbamazepine, phenobarbitone, St John's wort, antiretrovirals		++ Antifungals (e.g. azoles), macrolides (e.g. erythromycin), antituberculosis medications (e.g. rifampicin), phenytoin, valproate, carbamazepine, phenobarbitone, St John's wort, amiodarone, ciclosporin		
Dosing according to renal function, CrCl (mL/min)^{††}						
> 50	INR-adjusted	5 mg BD 2.5 mg BD if patients have ≥ 2 of the following: • age ≥ 80 years • body weight ≤ 60 kg • serum creatinine ≥ 133 micromol/L	20 mg daily	60 mg daily	150 mg BD 110 mg BD if patients are either: • age ≥ 80 years • taking verapamil • have high risk of bleeding	
30 - 50				30mg daily if patients are either: • ≤ 60kg • Taking the following P-gp inhibitors: quinidine, ciclosporin, dronedarone, erythromycin, ketoconazole		
15–29 ^{††}			15 mg daily	30 mg daily		Avoid
< 15			Avoid			
Dosing in liver impairment						
	INR-adjusted	Not recommended in severe liver disease				

4F-PCC, four-factor prothrombin complex concentrate; BD, twice a day; CrCl, creatinine clearance; INR, international normalised ratio; P-gp, P-glycoprotein; T(max), time taken for a drug to reach maximum concentration

[†] Available on government subsidy list.

[§] Andexanet alfa is not registered in Singapore at time of publication.

** List of drug interactions is not exhaustive. Patients taking systemic strong CYP3A4 or P-gp inhibitors may be contraindicated for DOAC use. Please consult a pharmacist or appropriate online resources⁴¹ for information on medications with interacting metabolic pathways, especially when patients are taking new concomitant medications or supplements.

^{††} As estimated by Cockcroft-Gault formula.

^{‡‡} Patients with CrCl < 30mL/min were excluded in pivotal trials for dabigatran, rivaroxaban and edoxaban. Patients with CrCl < 25mL/min were excluded in the pivotal trial for apixaban. However, product information leaflets state that apixaban, rivaroxaban and edoxaban can be used in patients with CrCl 15-29mL/min, based on pharmacokinetic data.