

Parenteral Anticoagulants

Indirect

Direct

Differences	HMWH	LMWH eg: Enoxaparin – Dalteparin - Danaproid.	Lepirudin
	↑ activity of a antithrombin III against active factor II, IX, X, XI, and XII.	↑↑ activity of antithrombin III against Xa	-acts via direct binding to active site on activated factor II (thrombin) - is antithrombin III- independent. - Prepared by recombinant DNA technology
Bleeding tendency	High	Low	-----
thrombocytopenia	High	Low	-----
T ½	Short	Long (double)	-----
Bioavailability	Low	High	-----
Control of dose	aPTT, WBC.	Plasma factor Xa	It is monitored by aPTT
Administration	3 - 4 dose / day (I.V. or S.C)	1 - 2 dose / day S.C. only	Has short duration of action (1 hr) Given I.V.
Efficacy	Equal	Equal	-----
MW	5000 - 30.000	2000 - 9000	-----
use	----	----	Used for treatment of thrombosis in HIT patients.

Oral anticoagulants

	MOA	PK	Side effect	Drug interactions	Contraindications
warfarin	<ul style="list-style-type: none"> -are vitamin K antagonists (vitamin K epoxide reductase inhibitors). -reduced vitamin K is required for hepatic synthesis of several clotting factors II, VII, IX, X (gamma carboxyglutamic acid residues). -This results in the production of inactive clotting factors lacking γ-carboxyglutamyl residues 	<ul style="list-style-type: none"> -Taken orally. -Highly bound to plasma protein (low Vd). -Long plasma half life (36 h). -Cross placenta -Metabolized in the liver by cytochrome P450 -Excreted in urine and stool. -Delayed onset of action (12 h). -Acts in vivo only. 	<ol style="list-style-type: none"> 1. Hemorrhage : treated by vitamin K 1 2. Soft tissue necrosis 3. Drug interactions 4. Teratogenicity: <ul style="list-style-type: none"> ■ hemorrhagic disorder ■ abnormal bone formation in the fetus. 5. slow onset of action 	<ol style="list-style-type: none"> 1. Broad spectrum antibiotics sulfonamides increase warfarin action 2. Hepatic P450 Inhibitors increase warfarin action Cimetidine, erythromycin 3. Hepatic P450 Inducers decrease warfarin action rifampicin, phenobarbitone 4. NSAIDs, aspirin 	<ul style="list-style-type: none"> -Pregnancy -Hypoprothrombinemia (Liver disease).