

# TRADITIONAL ANTICOAGULANT DRUGS

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- **Unfractionated heparin (UH)**
- **Warfarin and other vitamin-K antagonists**
- **Low molecular weight heparins (LMWH)**
- **Fondaparinux**
- **(Bivalirudin)**
- **(Lepirudin)**

# TRADITIONAL ANTIPLATELET DRUGS

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- **Aspirin**
- **Dipyridamole**
- **Clopidogrel and ticlopidine**
- **Glycoprotein IIb/IIIa inhibitors**

# ACHIEVEMENTS WITH TRADITIONAL ANTITHROMBOTIC AGENTS

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- Heparin and LMWH reduce by about 60% the incidence of venous thromboembolism (VTE) after high risk surgery
- Vitamin K antagonists reduce by more than 90% VTE recurrence
- Vitamin K antagonists reduce by about 60% the rate of stroke in patients with atrial fibrillation (AF) or artificial valves
- Aspirin and clopidogrel reduce by about 50% the rate of re-occlusion after coronary stenting

# LIMITS OF TRADITIONAL ANTICOAGULANTS

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- **Need for laboratory monitoring (warfarin, unfractionated heparin)**
- **Need for parenteral administration (heparin, LMWH)**
- **Non-hemorrhagic adverse effects (heparin induced thrombocytopenia, osteoporosis)**
- **Interactions with other drugs (warfarin)**

# LIMITS OF TRADITIONAL ANTIPLATELET DRUGS

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- **Biological response variability**
- **Slow reversibility**
- **Pharmacodynamic interactions with drugs and genetic polymorphisms**

# ANTITHROMBOTIC TREATMENTS: UNMET CLINICAL NEEDS

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- More effective and safer agents for VTE prophylaxis in high risk surgery (orthopedic /cancer surgery)
- Anticoagulants for the acute and long-term treatment of VTE not requiring lab monitoring
- Anticoagulants for the prevention of stroke in patients with AF and artificial valves not requiring lab monitoring
- Anticoagulants for improved acute treatment of ACS, as well as for prevention of re-infarction