

Heparin (Unfractionated)

Heparin is a fast acting anticoagulant that works by heightening the action of antithrombin. Antithrombin is a protein responsible for inactivating thrombin and factor Xa, which are two major clotting factors within the body. When factor Xa and thrombin are absent, fibrin production is decreased thereby suppressing coagulation.



PLAY PICMONIC

Mechanism of Action

Suppresses Coagulation

Suppressing Clog

Heparin activates antithrombin, which inactivates thrombin and factor Xa to suppress the formation of fibrin. Fibrin is the main component of thrombi found in the veins; therefore, heparin can be very effective in the management and prevention of venous thrombosis.

Indications

Deep Vein Thrombosis (DVT)

Deep V-neck Trombone

Heparin suppresses the production of fibrin, the backbone in thrombi; therefore, suppressing the formation of thrombi. It is often used as a prophylactic agent against thrombosis or clots in cases where patients are immobile, hypercoagulable or susceptible to serious complications of thrombosis. Examples include patients with risk of or previous DVTs, patients undergoing surgery, and immobile patients.

Pulmonary Embolism

Lungs Elmo

Pulmonary embolism is a result of a thrombi traveling to the lungs. Heparin aids in preventing the formation of thrombi, which prevents the formation of a pulmonary emboli.

Side Effects

Hemorrhage

Hemorrhage-hammer

Hemorrhage is the main complication related to heparin therapy because of heparin's anticoagulation properties. By decreasing the normal anticoagulation production, heparin predisposes the patient to hemorrhage.

Heparin-Induced Thrombocytopenia (HIT)

Hippie-heron HITS Trombone-side-toe-peanut

This occurs due to the production of antibodies to the heparin-platelet complexes. The antibodies produced damage the vasculature and activate platelets. This mechanism causes the platelet count to decrease as thrombotic production increases simultaneously.

Considerations

Monitor aPTT

Monitor with Partial PTT-hourglass

Patients taking heparin should have their activated partial thromboplastin time (aPTT) closely monitored to make sure they are on a therapeutic dose. Patients who are given too high a dose of heparin will have a longer aPTT, greater than the normal range of 25-35 seconds.

Preferred (Safe) During Pregnancy

Safe with Pregnant-lady

Pregnant women requiring anticoagulant therapy should be given heparin (unfractionated) over Coumadin. This is because heparin does not cross the placenta or cause harm to the developing fetus. This should be used cautiously, as maternal osteoporosis and thrombocytopenia are possible side effects.

Antidote

Protamine Sulfate

Potato-man with Sulfur-matches

Protamine Sulfate is used as the antidote to heparin, because it combines with the heparin molecule to form a complex that negates the anticoagulant action.