# *Unfractionated heparin (UFH), standard heparin*

Clotting-Guide
vom Labor zur Diagnose

## Description:

Heparins have been used for anticoagulation for decades. Heparin does not act directly on the coagulation system but catalyzes and enhances the binding of antithrombin to thrombin, and factors Xa, IXa, and XIa. Therefore, the heparin effect depends on the antithrombin level.
The effect of heparin can have a great inter- and intraindivitual variation and dosing must be adjusted with appropriate laboratory tests and checked frequently.

Heparin can immediately be antagonized with protamine (1 IU protamine antagonizes 1 IU heparin), but attention is necessary because of the shorter half-life of protamine (heparin rebound).
Heparin-associated thrombocytopenia (HIT-2), a rare complication of heparin therapy, can occur within 2 weeks after start of heparin. In that case, a switch to alternative anticoagulants is necessary.

## Dosing and treatment options:

Today, heparin is only given as a continuous intravenous infusion; the infusion rates individually vary between 250 and 2000 U/h (usually 1000 U/h). Dosing must be monitored regularly with appropriate laboratory tests.

Heparin resistance occurs when an adequate prolongation of the APTT cannot be achieved despite a rate of >2000 U/h. In this case, replacement of antithrombin or a switch to an alternative anticoagulant are possible.

## Surveillance:

APTT, target 1.5-2.5x the baseline value, i.e. 80-100 seconds.
Thrombin clotting time, target 2-3x the baseline value, i.e. 60-80 seconds.
Anti-Xa test with UFH calibration curve, target 0.4-0.6 U/mL.
Repetition of the tests is necessary every 4 hours after each change in infusion rate or twice daily if the setting is stable.
For questions please contact a coagulation specialist.

## References:

Thomas L, Laboratory and Diagnosis, 2023, Release 5: https://www.labor-und-diagnose.de/index.html
Parameter catalog of the Clinical Institute for Laboratory Medicine, Med.Univ.Wien and AKH Vienna: https://www.akhwien.at/default.aspx?pid=3982
List of services for clinical chemistry, Univ.Klinikum Ulm: https://www.uniklinik-ulm.de/zentrale-einrichtung-klinische-chemie/leistungskatalog.html