Heparin Assay Monitoring For Heparin Continuous IV Therapy

Lupus anticoagulants, Anticardiolipin antibodies, pregnancy, liver disease and deficiencies of certain factors (eg, factor XII) may prolong the baseline aPTT and/or accentuate the prolongation of the aPTT when heparin is added. Despite the aPTT prolongation, lupus anticoagulants are associated with thrombosis rather than bleeding. Therefore, in these situations, an alternative assay, such as the heparin anti-factor Xa assay, should be used rather than the aPTT to monitor heparin. If the heparin anti-Xa assay demonstrates that the heparinized aPTT is not affected by the lupus anticoagulant, cautious use of the aPTT may be considered in that patient.

LAB:

a) Obtain baseline APTT, PT, CBC prior to administering heparin.

b) Order Heparin Assay (Anti-Factor Xa level) 6 hours after start of heparin infusion and 6 hours after each dosage change. Include which type of heparin patient is taking.

c) When 2 consecutive anti-Xa results are within therapeutic range, order Heparin assay daily until heparin discontinued (schedule at least 6 hours after any earlier level.)

d) Check CBC every 2 days.

e) Check for signs and symptoms of bleeding daily (stool, urine, and gums).

DOSAGE:

• Heparin IV continuous infusion (25,000 units/500 mL D5W).

• Give 80 units/kg bolus (based upon patient's actual body weight) and begin the infusion at 18 units/kg/hr.

• For patients >60 years old, decrease the initial bolus by 1/2 to 1/3.

• If using heparin with a fibrinolytic (eg. tPA, Reteplase, etc.) give bolus of 60 units/kg (maximum 4000 units). Infusion of 12 units/kg (maximum 1000 units/hr for patients >70 kg).

ALL DOSES SHOULD BE ROUNDED TO THE NEAREST 100 UNITS
BOLUS DOSES SHOULD BE ROUNDED TO THE NEAREST 500 UNITS

DOSAGE ADJUSTMENT:

• Following each anti Xa result, adjust heparin dose and reorder Heparin assay based upon dosing table below.

• Write changes on Physician order form (ie. antiXa = XX, decrease heparin to XXX units/hr, next Heparin assay in 6 hours at XXXX, per dosing protocol).

Anti Factor Xa	ACTION	RATE CHANGE	REPEAT LAB
<0.2	Bolus of 30 units/kg	↑ by 3 units/kg/hr	6 hours after rate change
0.2 – 0.29	Bolus of 30 units/kg	↑ by 2 units/kg/hr	6 hours after rate change
0.3 – 0.7	Therapeutic Range	No Change	Next AM labs
0.71 – 0.8	-----	↓ by 1 units/kg/hr	6 hours after rate change
0.81 – 0.99	-----	↓ by 2 units/kg/hr	6 hours after rate change
≥1	Hold infusion for 1 hour	↓ by 2 units/kg/hr	6 hours after rate change

When using heparin with **fibrinolytics**, the therapeutic range for the first 48 hours should be 0.1 to 0.3 (or 1.2 to 2 times control.) After 48 hours, the original protocol above should be used to adjust doses.

Anti Factor Xa	ACTION	RATE CHANGE	REPEAT LAB
<0.1	Bolus of 30 units/kg	↑ by 3 units/kg/hr	6 hours after rate change
0.1 – 0.3	Therapeutic Range for 1st 48 hrs for patients receiving thrombolytics	No Change	Next AM labs
0.31 – 0.49	-----	↓ by 1 units/kg/hr	6 hours after rate change
0.5 – 0.69	-----	↓ by 2 units/kg/hr	6 hours after rate change
≥0.7	Hold infusion for 1 hour	↓ by 2 units/kg/hr	6 hours after rate change