Guidelines For Intravenous Unfractionated Heparin Administration

INDICATIONS:

- Massive pulmonary embolism.
- Myocardial infarction, unstable angina, acute arterial occlusion, non-massive PE, venous thrombosis - when Low Molecular Weight Heparin (LMWH) or Fondaparinux inappropriate or unsuitable for use.

PRIOR TO ADMINISTRATION: Perform baseline clotting screen and platelet count.

PRESCRIBING:

Prescriptions for intravenous heparin should be on the pre-printed infusion chart which includes space to record details of administration and dose adjustments.

Loading dose: Give 5000 units IV bolus over 3-5 minutes or give 10,000 units if massive PE and thrombolysis is inappropriate.
Initial infusion rate: Calculated using patient's body weight - 15 units/kg/hour
Maintenance dose: Usually 1000 - 2000 units/hour (18 units/kg/hour) – rate adjusted to maintain APTT ratio (APTTR) of 1.5 – 2.5

ADMINISTRATION AND RATE ADJUSTMENT:

Heparin IV infusion should be administered using an infusion pump. A PVC-free line should be used to avoid adsorption of heparin to the line.
An ampoule containing 20,000 units in 20ml should be drawn into a 50ml syringe and used undiluted (1000 unit/ml solution). A fresh infusion should be drawn up every 24 hours.

- Start infusion at calculated infusion rate of 15 units/kg/hour (0.015 ml/kg/hour)
- Check APTTR after 4 - 6 hours
- Adjust dose according to APTT Ratio as below – aim APTTR 1.5 – 2.5
- Re-check APTTR 4 - 6 hours after every dose adjustment and then at least once daily

APTT Ratio	Change in infusion rate
>5	Stop for 30 minutes then reduce rate by 500 units/hour (0.5ml/hr)
4.1 - 5.0	Stop for 30 minutes then reduce rate by 300 units/hour (0.3ml/hr)
2.6 - 4.0	Stop for 30 minutes then reduce rate by 100 units/hour (0.1ml/hr)
1.5 - 2.5	No Change
1.2 - 1.4	Increase by 200 units/hour (0.2ml/hr)
<1.2	Administer slow IV bolus of 5000 units and increase by 400 units/hour (0.4ml/hr)

IMPORTANT NOTES:

- The nurse administering the infusion should contact doctor immediately if the patient experiences any bleeding and should inform doctor if APTTR above therapeutic range.
- For patients with severe renal impairment (GFR < 30 ml/min), bolus doses should be halved. If APTT >2.5 stop infusion for 1 hour then reduce infusion rate by 50% (e.g. in rate was 1ml/hr reduce to 0.5ml/hr)
- Monitor platelet count every 2-3 days from day 4 to day 14 of heparin treatment (see HIT guideline)
- Reversal of heparin effect (e.g. in severe bleeding) may be achieved with protamine sulphate given by slow iv bolus over 10 minutes. 1 mg Protamine neutralises 100 units heparin – reduce dose if more than 15 minutes have elapsed since heparin dose - max single dose protamine 50mg. The dose may need repeating as protamine is cleared more rapidly than heparin.

BCSH Guidelines 2005 (www.bschguidelines.com/pdf/Heparin_070705.pdf)

Trust Guidelines

NHS
University Hospitals Plymouth
NHS Trust

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Accountabilities	
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Links to other documents

Version History		
V1	July 2011	Guideline created
V1.1	Nov 2019	Guideline reviewed - unchanged

Last Approval	Due for Review
Nov 2019	Nov 2022