

Subcutaneous Unfractionated Heparin for VTE Treatment In Patients on Dialysis or Who Are Not Candidates for Low Molecular Weight Heparins and Fondaparinux

In addition to continuous IV unfractionated heparin (UFH), subcutaneous use of the following are options for the initial treatment of venous thromboembolism (VTE):

- UFH
- Low molecular weight heparin (LMWH) and
- Fondaparinux

However, because LMWH and fondaparinux are primarily renally eliminated, they can accumulate and increase risk of bleeding in patients with renal failure.

In patients with a CrCl of < 30ml/min, a dose adjustment to the LMWH dose is recommended. In contrast, the use of fondaparinux is contraindicated in these patients with a CrCl < 30ml/min. **Both LMWH and fondaparinux are not FDA approved for use in dialysis patients.**

UFH is considered safe for use in patients with renal insufficiency and on dialysis. It can be used while bridging to warfarin in an outpatient setting. Warfarin bridging consists of overlapping UFH and warfarin for at least 4 to 5 days and until 2 therapeutic INRs are achieved 24 hours apart. The dose of SC UFH administration should be higher than the usual IV dose because of the decreased bioavailability associated with the SC route. Additionally, conversions can be made to switch a patient from IV infusion of UFH to SC UFH.

SC Dosing for Treatment of VTE: (*Doses based on actual body weight, max doses not clearly defined in the literature*)

- **Unmonitored dosing regimen:**
 - Initial: 333 units/kg then 250 units/kg SC every 12 hours
- **Monitored dosing regimen:**
If immediate effect is required:
 - Initial: ~5000 unit IV bolus then 250 units/kg SC every 12 hours
 - Subsequent doses adjusted based on patient heparin assay (anti-Xa assay) response
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Venous Thromboembolism Treatment (Target Heparin Assay 0.3 – 0.7 U/mL)

Monitor: Heparin Assay 6 hrs after injection

Heparin Assay (U/mL)	Action
< 0.15	Increase by 48 units/kg every 12 hours
0.15-0.29	Increase by 24 units/kg every 12 hours
0.3-0.7	No Change
0.71-1	Decrease by 24 units/kg every 12 hours
> 1	Decrease by 36 units/kg every 12 hours

Extrapolated from UHS unfractionated heparin infusion protocol. 2009. (Adjusted for 12 hour dosing)

Converting From IV UFH to SC UFH:

- Calculate total 24 hour IV UFH dose requirement needed to maintain a therapeutic heparin assay
- Increase total 24 hour dose requirement by 10% to 20%
- Divide newly calculated dose by 2 (This determines initial Q12 hour dosing)
- Discontinue IV UFH and administer first SC UFH dose **within** 1 hour
- If the monitored dosing regimen is chosen, check heparin assay at 6 hours after first SC dose and adjust further doses based on heparin assay

Vial Sizes Available:

- 10,000 units/mL
- 20,000 units/mL
- Vials may not be usually stocked in pharmacy. Please contact outpatient pharmacy in advance for availability. Product may need to be ordered.

Outpatient Pharmacies:

- Medical Center Pavilion: 358-4160
- UHS Discharge Pharmacy: 358-2903
- Downtown Brady Green: 358-3473

Appropriate Syringe Selection:

- Patients should be discharged with syringes
- Use a 25—27 gauge needle that is 3/8—5/8 inches in length

Administration Counseling:

- Inject by deep SC injection into the lower abdomen
- Do not aspirate or massage injection site
- Do not administer intramuscularly (IM) due to pain, irritation, and hematoma formation
- Injection sites should be rotated frequently (usually left and right portions of the abdomen, above iliac crest)

Monitoring:

- Heparin assay (**Target 0.3-0.7 U/mL**) (Only if monitored dose regimen is chosen)
- Hemoglobin/hematocrit
- Platelet count (Consider at baseline and every 2-3 days between days 4-14 of treatment)
- Monitor for signs and symptoms of bleeding

References:

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