**Prevention of Venous Thromboembolism (VTE) in Hospitalized Patients**

**Summary of Good Practice**

**Clinical Order Sets**

Prophylaxis of VTE works best when there is a system-wide approach within a hospital. The best way to accomplish this is to embed orders for prophylaxis in clinical order sets, such that prophylaxis is routine and inclusive.

**Opt In vs. Opt Out**

Some institutions have elected to use an “opt out” approach for DVT prophylaxis on their clinical order sets. In an “opt out” order set, all patients using that order set have an automatic order for DVT prophylaxis. A physician must inactivate the order for prophylaxis (“opt out”) if they feel that thromboprophylaxis is not indicated or is contraindicated. Physicians should state the reason why no prophylaxis is ordered when “opt out” is chosen. An “opt out” style order ensures that DVT prophylaxis is actually considered, which ultimately results in a larger portion of patients receiving prophylaxis.

**Simplicity**

Try to limit choices for DVT prophylaxis to keep it simple. Only one or two choices are sufficient in most situations.

**Low-Dose Unfractionated Heparin (LDUH) vs. Low Molecular Weight Heparin (LMWH)**

There has been a movement in recent years towards the use of LMWH over LDUH. LMWH have advantages over LDUH including: once a day administration, lower rates of heparin induced thrombocytopenia, and availability in prefilled syringes. The cost difference, if any, is small between LMWH and LDUH, thereby reducing any resistance to eliminating LDUH altogether.

**Weight Based vs. Fixed Dosing**

There is evidence that obese patients (>100 kg, BMI>35 kg/m2)require higher doses of LMWH than non-obese patients. However, fixed doses of LMWH in a prefilled syringe (i.e. tinzaparin 4500 U subcutaneously once daily) is the simplest regimen for most patients.

One way to solve this issue on the clinical order set is to have a fixed dose for the most common weight ranges, with adjusted dosing for those at the weight extremes (<50 or >100 kg).

**Dosing Considerations**

* 50-100 kg Tinzaparin 4500 units subcutaneously once a day
* >100 kg Tinzaparin subcutaneously

\_\_\_\_\_\_\_ 75 IU/kg daily or 10 000 units daily or 4 500 units BID

* <50 kg Tinzaparin 2500 units subcutaneously once a day

*Clinical order sets for a predominately obese population (such as bariatric surgery) may warrant two or three weight ranges using prefilled syringe sizes.*

* 100 – 150 Kg tinzaparin 10,000 U subcutaneously once a day
* 151 – 200 Kg tinzaparin 14,000 U subcutaneously once a day
* 201 – 250 Kg tinzaparin 18,000 U subcutaneously once a day

**Renal Dysfunction**

With tinzaparin, there is no need to adjust/reduce the prophylactic dose in patients with renal dysfunction.1 No dose adjustment of tinzaparin is needed for patients with renal failure or patients receiving intermittent hemodialysis2,3, it is suggested that the prophylactic dose of tinzaparin be given after the dialysis (for example, qhs).

1..Mahé O, *et al. Thromb Haemost* 2007;97:581-6; 2. PROTECT Investigators. *N Engl J Med*. 2011;364:1305-14; 3. Nutescu EA, *et al. Ann Pharmacother* . 2009;43:1064-83.