

## Therapeutic LMWH dosing conversion to prefilled syringes

The CIUSSS is switching to **commercially available pre-filled syringes** for all Low Molecular Weight Heparins (LMWH). These syringes will be used for both therapeutic and prophylactic doses of Dalteparin (Fragmin®) and Enoxaparin (Redesca®, the newly available biosimilar replacing Lovenox®).

**Therapeutic LMWHs on PANDAWebRx will be prescribed as commercially available pre-filled syringes, based on corresponding pre-set weight ranges, as described below in Table 1.**

For Enoxaparin, for weights corresponding to a > 11% dose variance, Pharmacy will prepare specific doses rounded to the nearest 10mg for those specific weights.

For Dalteparin, the corresponding syringe strengths are based on the product monograph, with modifications to include both the 7,500 unit and 16,500 unit syringes (which were not originally part of the company's initial offerings), while minimizing the % error as much as possible.

The objectives of rounding therapeutic doses of LMWH to a commercially available prefilled syringe are:

- To simplify prescribing of LMWH
- To facilitate administration and increase security of LMWH
- To facilitate patient teaching and safer transition from inpatient to outpatient, for patients who may require continuing LMWH after discharge
- To prevent drug waste due to longer stability/better expiration dates and unused syringes returned to Pharmacy
- To provide a significant cost saving as well as time saving (preparation time by both Pharmacy and Nursing staff)
- To standardize available formats/doses between CCOMTL-affiliated institutions

**Table 1: Rounding protocol for therapeutic dosing of LMWH**

DALTEPARIN (FRAGMIN®)		ENOXAPARIN (REDESCA®)			
200 units/kg SC per day		1mg/kg SC BID		1.5mg/kg SC DIE	
Weight (kg)	Pre-filled syringe	Weight (kg)	Pre-filled syringe	Weight (kg)	Pre-filled syringe
35-43	7,500 units DIE	37-44	40mg BID	37-44	60mg DIE
44-56	10,000 units DIE	45-54	50mg BID (prepared by Pharmacy)	45-48	70mg DIE (prepared by Pharmacy)
57-68	12,500 units DIE	55-66	60mg BID	49-59	80mg DIE
69-78	15,000 units DIE	67-72	70mg BID (prepared by Pharmacy)	60-74	100mg DIE
79-86	16,500 units DIE	73-89	80mg BID	75-89	120mg DIE
87-95	18,000 units DIE	90-111	100mg BID	90-110	150mg DIE
96-112	10,000 units BID	112-134	120mg BID		
113-130	12,500 units BID	135-155	150mg BID		

Populations **included** in this conversion protocol:

- Patients requiring therapeutic anticoagulation for acute coronary syndrome (ACS) (Enoxaparin is the LMWH of choice as it's the only LMWH officially indicated for ACS by Health Canada)
- Patients requiring therapeutic anticoagulation for mechanical valves
- Patients requiring therapeutic anticoagulation for both arterial thromboembolism (i.e. left ventricle thrombus, limb ischemia, etc.) and venous thromboembolism (i.e. deep vein thrombosis, pulmonary embolism, etc.)
- Patients requiring bridging therapy for warfarin

- Patients requiring temporary interruption of oral anticoagulation for atrial fibrillation stroke prevention with high thrombotic risk, as well as for patients with other conditions with high risk thrombosis (e.g. antiphospholipid syndrome)

Populations **excluded from the conversion protocol** for therapeutic dosing of LMWH are:

- Patients with severe renal dysfunction (CrCL < 30ml/min)
- Pregnant women
- Extreme weights, not included in the above table
- Patients on chronic LMWH therapy pre-admission
- Patients with known therapeutic failure to usual therapeutic doses of LMWH, i.e. in some patients with cancer associated thrombosis

**These excluded patients should receive specific, weight-based dosing using multidose vials already available in our institutions.**

In the event that the specific weight-based dosage is very close to a commercial, pre-filled syringe, Pharmacy will round to the nearest available syringe, as follows:

- For Enoxaparin: if the specific weight-based dosing is with 2.5mg on either side of the syringe
- For Dalteparin: if the specific weight-based dosing is with 500 units on either side of the syringe

Distribution of doses by Pharmacy – JGH

- Prophylactic doses: Enoxaparin 30mg, 40mg & Dalteparin 5000 unit syringes will continue to be stocked on units that already have them.
- Therapeutic doses:
  - Enoxaparin multidose vials will continue to be stocked in ED, K2 and night cabinet.
  - Dalteparin multidose vials will continue to be stocked in ED and night cabinet
  - During Pharmacy opening hours, first doses of therapeutic LMWH will be supplied by Pharmacy as commercial pre-filled syringes (or compounded syringes of 50mg or 70mg when required), with the exception of the critical care areas (ED, K2) which can continue to use multidose vials for their 1<sup>st</sup> doses.

Distribution of doses by Pharmacy – JEC, DBM, CAV, MSH

- Same as above.
- Pharmacy to prepare 1<sup>st</sup> dose of therapeutic syringes, then order from compounding team (JGH)
- Always prefilled syringes are dispensed to unit, never vials.

**Table 2: LMWH formats carried on formulary**

<b>DALTEPARIN (FRAGMIN®)</b>	<b>ENOXAPARIN (REDESCA®)</b>
<ul style="list-style-type: none"> <li>• 2500 IU/0.2mL prefilled syringe</li> <li>• 5000 IU/0.2mL pre-filled syringe</li> <li>• 7500 IU/0.3mL pre-filled syringe</li> <li>• 10000 IU/0.4mL pre-filled syringe</li> <li>• 12500 IU/0.5mL pre-filled syringe</li> <li>• 15000 IU/0.6mL pre-filled syringe</li> <li>• 16500 IU/0.66mL pre-filled syringe</li> <li>• 18000 IU/0.72mL pre-filled syringe</li> <li>• 25000 IU/1mL multidose vial</li> </ul>	<ul style="list-style-type: none"> <li>• 30mg/0.3mL pre-filled syringe</li> <li>• 40mg/0.4mL pre-filled syringe</li> <li>• 50mg/0.5mL compounded pre-filled syringe</li> <li>• 60mg/0.6mL pre-filled syringe</li> <li>• 70mg/0.7mL compounded pre-filled syringe</li> <li>• 80mg/0.8mL pre-filled syringe</li> <li>• 100mg/1mL pre-filled syringe</li> <li>• 120 mg/0.8mL pre-filled syringe</li> <li>• 150 mg/1 mL pre-filled syringe</li> <li>• 300 mg/3 mL multidose vial</li> </ul>