

## Why did we do this review?

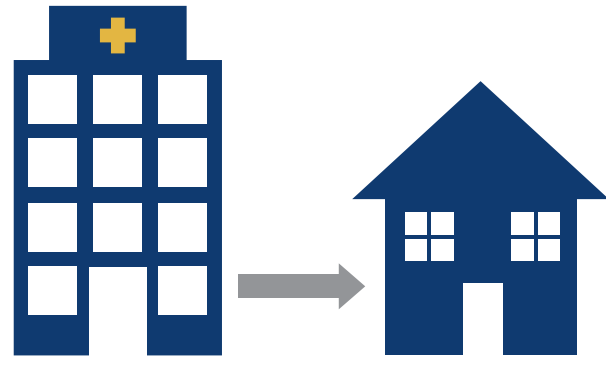
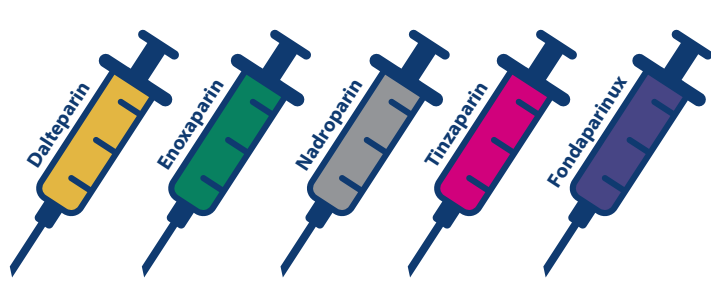
The Ontario Drug Policy Research Network (ODPRN) conducted multiple studies on the recommended use and accessibility of low-molecular-weight heparins (LMWHs) using various research methods as part of an initiative to modernize the public drug formulary in Ontario.

## What are low-molecular-weight heparins (LMWHs)?

They are blood thinners, also known as anticoagulants, used for the prevention and treatment of blood clots which can be life-threatening.

In our review of 28 guidelines, we found that LMWHs are recommended for the use in a broad range of patients, from those undergoing surgery, to cancer patients, to pregnant women; in general, all LMWHs have very similar efficacy.

## Availability



In Canada, there are four LMWHs commercially available: **dalteparin**, **enoxaparin**, **nadroparin**, and **tinzaparin**. **Fondaparinux**, a synthetic heparin-like compound, is also available.

Many patients begin treatment in the hospital and then need to continue the treatment at home.

## Current listing

- LMWHs are covered under a series of different codes and criteria for various indications; they are listed under Limited Use and available through the Exceptional Access Program telephone request service.
- Interviews with prescribers found that the presence of both multiple Limited Use Codes and separate EAP criteria is confusing and not inclusive.

- Dalteparin
- Enoxaparin
- Nadroparin
- Tinzaparin
- Fondaparinux

### Limited Use\*

<p>Treatment of deep vein thrombosis (DVT) in non-cancer patients</p> <p>Most frequently used code - 186 (48.9%)</p>	<p>Post-operative prophylaxis of venous thromboembolism (VTE) for lower limb surgery</p>	<p>Treatment of pulmonary embolism</p>
<p>DVT in patients in whom treatment with warfarin is not tolerated or is contraindicated</p> <p>Second most used code - 188 (29.2%)</p>	<p>Treatment of DVT in patients who failed on warfarin</p>	<p>Treatment of DVT in pregnant/lactating females</p>

\*LU codes used are used inappropriately to gain access for different indications

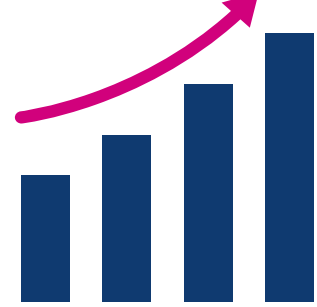
### Exceptional Access Program

<p>Treatment (extended) of VTE in patients with cancer</p>	<p>Prophylaxis for peri-operative bridging in patients who require long-term warfarin and must temporarily discontinue it before and after surgery</p>	<p>Prophylaxis for DVT for patients who had hip or knee surgery, and cannot use warfarin</p>
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### Not listed

<p>Prevention of VTE in non-orthopedic surgical patients</p>	<p>Prevention of VTE in cancer patients with additional risk factors for VTE</p>
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## Utilization & Cost

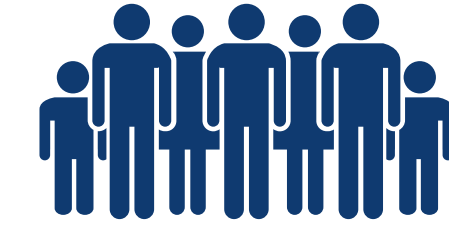


Ontario has seen a 143% increase in the number of publicly-funded users over 10 years.

from



10,121 users in 2004



to 24,584 users in 2014



Dalteparin has the most users but has seen a decrease in its market share from 62% (6,300 users) in 2004 to 44% (10,791 users) in 2014.



Enoxaparin is the second most commonly used (41%, 10,140 users).

# \$33,660,440



The overall cost for LMWHs obtained through the OPDP program in 2014

## Recommendation

Based on clinical guidelines for the use of LMWHs and increased accessibility for indications currently not funded (e.g., post-operative prophylaxis in non-orthopaedic surgery) or currently funded through EAP (e.g., extended treatment of VTE in cancer patients), the following reimbursement option is recommended. It should be noted that a slight increase in utilization and cost is anticipated with this recommendation.

### Limited Use for LMWHs and fondaparinux (streamlined codes)

This option combines the current Limited Use codes and EAP criteria into six streamlined codes based on patient population.

- 1** Acute treatment of VTE in non-cancer patients
- 2** Acute treatment and secondary prophylaxis for VTE in patients with cancer
- 3** Treatment and prophylaxis in pregnant or lactating females
- 4** Post-operative prophylaxis of VTE for patients undergoing surgery of lower limbs
- 5** Post-operative prophylaxis of VTE for patients undergoing non-orthopaedic surgery and who are at high risk of thromboembolic complications
- 6** Peri-operative bridging for patients who require long-term warfarin therapy

## Other considerations



LMWH use in pediatrics:

The pediatric population is unique, and an additional review of LMWHs in pediatrics is warranted.



Price negotiations:

LMWHs were not shown to be cost-effective at currently listed prices for extended treatment of VTE in patients with cancer.

**91%**



**EAP**

EAP for fondaparinux for patients with cancer-associated thrombosis and heparin-induced thrombocytopenia (HIT) or in pregnant females with history of HIT:

Although fondaparinux has not been studied in patients with cancer-associated thrombosis, guidelines suggest that fondaparinux is an option for patients with a history of HIT in this population. Additionally, fondaparinux has been used during pregnancy in patients with history of HIT.