Introduction

- Venous thromboembolism (VTE): the composite of deep vein thrombosis (DVT) and pulmonary embolism (PE) is the outcome of a clot, which forms within a vein and then travels through the blood vessels to a different site
- Total hip replacement (THR) surgery is an important risk factor for VTE1
- With more than 28,000 THRs being performed in Canada annually, the potential public health risk is considerable
- Rivaroxaban is a novel, once-daily, direct inhibitor of Factor Xa that received marketing approval in the EU and Canada for the prevention of VTE in adult patients undergoing THR and total knee replacement surgery. Unlike existing low molecular weight heparins such as enoxaparin, rivaroxaban is administered orally
- A total of randomized controlled trials in patients undergoing THR, rivaroxaban reduced total VTE (composite of any DVT, non-fatal PE and all-cause mortality) by 79% versus placebo.4 There was a similar level of major bleeding in both arms

Objective

- This study assesses the cost-effectiveness of rivaroxaban versus enoxaparin for the prevention of VTE after THR in Canada

Methods

- An economic model assessed the cost-effectiveness of rivaroxaban versus enoxaparin from the Canadian Ministry of Health perspective. The analysis initially models the period from surgery to up to 90 days after surgery (Figure 1), followed by long-term complications such as recurrent VTE and post-thrombotic syndrome (PTS) from 90 days to 5 years after surgery (Figure 2)

Results

- When comparing 35 days’ rivaroxaban with 35 days’ enoxaparin, based on RECORD1, rivaroxaban was associated with an incremental gain of 0.0069 quality-adjusted life years (QALY) and a saving of C$364.93 per patient
- Savings were driven by improved efficacy, reduced long-term complication costs and reduced outpatient administration costs (Table 2)
  - Probabilistic sensitivity analyses showed dominance in 98% of cases versus 35 days’ enoxaparin (Figure 3)
  - When compared with 14 days’ enoxaparin followed by placebo, based on RECORD2, 35 days’ rivaroxaban reduced total VTE by 79% and symptomatic VTE by 80% versus 14 days’ enoxaparin followed by placebo. There was a similar level of major bleeding in both arms

Table 1. Resource use and cost inputs for the economic model

<table>
<thead>
<tr>
<th>Resource use</th>
<th>Cost (C)$</th>
<th>Source</th>
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<tbody>
<tr>
<td>Rivaroxaban</td>
<td>35/14 days</td>
<td>OACCAC</td>
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<tr>
<td>Enoxaparin</td>
<td>35/14 days</td>
<td>OACCAC</td>
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<td>OACCAC, Ontario Association of Community Care Access Centres; OCCI, Ontario Case Costing Initiative; ODB, Ontario Drug Benefit; OBCMSCPS, British Columbia Medical Services Commission Payment Schedule; DVT, deep vein thrombosis; INR, international normalized ratio; LMWH, low molecular weight heparin; OACCAC, Ontario Association of Community Care Access Centres; OCCI, Ontario Case Costing Initiative; ODB, Ontario Drug Benefit; OBCMSCPS, British Columbia Medical Services Commission Payment Schedule; DVT, deep vein thrombosis; INR, international normalized ratio; LMWH, low molecular weight heparin; CUA, cost-utility analysis; QALY, quality-adjusted life year.</td>
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Table 2. Cost-effectiveness of rivaroxaban versus enoxaparin after total hip replacement in Canada

| Cost-effectiveness scatter plot: 35 days’ rivaroxaban versus 14 days’ enoxaparin (RECORD2). COA, cost-utility analysis; QALY, quality-adjusted life year. |

Conclusions

- Rivaroxaban improves QALYs against both enoxaparin regimens
- Rivaroxaban is dominant against the 35-day regimen of enoxaparin and has a small incremental cost against the 14-day regimen of enoxaparin after THR
- Disaggregated results show that savings from administration and long-term complications would be key drivers of costs in Canada
- Probabilistic sensitivity analyses show that these results are robust

References

1. OCCI Acute Inpatient Databases for 2005/06 and 2006/07.
6. OCCI Acute Inpatient Databases for 2005/06 and 2006/07.
9. OCCI Acute Inpatient Databases for 2005/06 and 2006/07.
23. OCCI Acute Inpatient Databases for 2005/06 and 2006/07.