**Review: Extended out-of-hospital prophylaxis with heparin prevents deep venous thrombosis in elective hip arthroplasty**


**Question**
In patients who have received total hip replacement, is extended out-of-hospital prophylaxis with low-molecular-weight heparin (LMWH) more effective than placebo for reducing venous thromboembolism (VTE)?

**Data Sources**
Studies were identified by searching MEDLINE (1976 to May 2001) and the Cochrane Library, reviewing lists of conference abstracts and bibliographies of relevant articles, and contacting investigators and pharmaceutical companies for unpublished studies.

**Study Selection**
Studies in any language were selected if they were randomized controlled trials (RCTs) comparing extended out-of-hospital prophylaxis consisting of LMWH with placebo, patients had had elective hip arthroplasty, the presence or absence of all episodes of deep venous thrombosis (DVT) and proximal venous thrombosis were objectively documented by using bilateral ascending contrast venography, and objective methods were used to assess bleeding complications.

**Data Extraction**
Data were extracted on sample size, key components of the intervention, study quality, length of hospital stay, time interval from surgery to venography, and outcomes. Main outcomes included all episodes of DVT, proximal venous thrombosis, symptomatic DVT and pulmonary embolism, and major bleeding complications.

**Main Results**
6 RCTs (1953 patients) met the selection criteria. LMWH preparations assessed were enoxaparin (Aventis Pharmaceuticals, Inc., Bridgewater, NJ, USA) (3 RCTs) and dalteparin (Pharmacia Corp., Peapack, NJ, USA) (3 RCTs). The rates of all episodes of DVT, proximal DVT, and symptomatic VTE were lower in the LMWH group than in the placebo group (all P values < 0.05) (Table). Major bleeding occurred in 1 of 826 patients in the placebo group.

**Conclusion**
In patients who have received total hip replacement, extended out-of-hospital prophylaxis with low-molecular-weight heparin is more effective than placebo for reducing venous thromboembolism.

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**Low-molecular-weight heparin (LMWH) vs placebo for extended out-of-hospital prophylaxis of thromboembolism after total hip replacement**

<table>
<thead>
<tr>
<th>Outcomes at 18 to 29 d</th>
<th>Weighted event rates</th>
<th>RRR (95% CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All deep venous thrombosis</td>
<td>12% 23%</td>
<td>59% (46 to 68)</td>
<td>10 (8 to 14)</td>
</tr>
<tr>
<td>Proximal deep venous thrombosis</td>
<td>6% 11%</td>
<td>69% (53 to 80)</td>
<td>18 (13 to 30)</td>
</tr>
<tr>
<td>Symptomatic venous thromboembolism</td>
<td>2% 4%</td>
<td>64% (33 to 80)</td>
<td>51 (31 to 154)</td>
</tr>
</tbody>
</table>

*Abbreviations defined in Glossary, RRR, NNT, and CI calculated from data in article using fixed-effects models.

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**Commentary**
LMWH is an effective form of thromboprophylaxis after elective hip arthroplasty, but the optimal duration of therapy is controversial. It has been shown that the risk for VTE extends beyond the usual 7- to 10-day period of prophylaxis (1).

The review by Hull and colleagues is the third meta-analysis (2, 3) of LMWH prophylaxis after total hip replacement, but the optimal duration of therapy is controversial. It has been shown that the risk for VTE extends beyond the usual 7- to 10-day period of prophylaxis (1).