

Economic impact of rivaroxaban versus enoxaparin for prevention of venous thromboembolism after total hip and total knee arthroplasty in the UK

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Introduction: Rivaroxaban is an oral, direct Factor Xa inhibitor for the prevention of venous thromboembolism (VTE) after total hip and total knee arthroplasty (THA, TKA). In RECORD1 and RECORD2 trials 35 days of rivaroxaban, 10 mg once daily, significantly reduced total VTE (composite of any deep vein thrombosis, non-fatal pulmonary embolism and all-cause mortality) after THA versus 35 day (RECORD1) and 14 day (RECORD2) subcutaneous (sc) enoxaparin regimens. After TKA, 14 days' rivaroxaban significantly reduced total VTE versus 14 days' enoxaparin (RECORD3, 4). There were no significant differences in major bleeding between rivaroxaban and enoxaparin. An economic model was developed to assess the cost-effectiveness of rivaroxaban versus enoxaparin in the UK.

Methods: The analyses were conducted from the perspective of the UK National Health Service. The incidence of clinical events, consequences for

resource use, and quality of life (QoL) were modelled over five years. The incidence of VTE during the prophylaxis period was based on the RECORD trials. However, the subsequent incidence of VTE up to 90 days after surgery, and the later incidence of recurrent VTE and post-thrombotic syndrome (PTS), were based on published clinical data. It is assumed that after hospital discharge, 8% of patients receiving sc prophylaxis require daily visits from a nurse for its administration, a cost not incurred with oral rivaroxaban. The costs associated with clinical events (major bleed, VTE and PTS) and nurse visits were derived from published UK sources. Enoxaparin costs and proposed costs for rivaroxaban were also included. The impact of clinical events on QoL was also included, based on published QoL values.

Results: In THA, 35 days' rivaroxaban produced per-patient savings of £77.75 (€98.60) over 5 years versus 35 days' enoxaparin and £34.23 (€43.41) relative to 14 days' enoxaparin, while also producing improvements in quality adjusted life years (QALY) relative to each enoxaparin regimen. In TKA, 14 days' rivaroxaban produced savings over 5 years of £100.39 (€127.31) per patient versus 14 days' enoxaparin, as well as an improvement in QALYs.

Extensive sensitivity analyses, in which cost and clinical parameters were varied, showed that these cost savings in THA and TKA are consistent. These results are driven by the reduced costs of administration with oral rivaroxaban as well as the reduced cost of managing VTE events.

Conclusions: The economic analysis indicated that, by reducing VTE and providing an oral alternative to sc enoxaparin, rivaroxaban results in healthcare cost savings and improved QoL. With cost savings of up to £100 (€127) per patient, potential savings at the national level are significant.

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