Rivaroxaban for Prevention of Venous Thromboembolism after Total Knee Replacement: Impact on Healthcare Costs Based on the RECORD4 Study

### Introduction

- Rivaroxaban is an oral, direct Factor Xa inhibitor that has recently been approved in the European Union and Canada for the prevention of venous thromboembolism (VTE) after elective total hip or knee replacement (THR or TKR) surgery. It has been submitted for Food and Drug Administration approval for prophylaxis of deep vein thrombosis (DVT) and pulmonary embolism (PE) in patients undergoing THR or TKR.

- Two large, phase III, randomized controlled trials (RECORD1 and 2) compared oral rivaroxaban with subcutaneous (s.c.) enoxaparin (both administered for 12±2 days) after TKR.

- The RECORD3 trial, rivaroxaban 10 mg once daily (od) showed statistically significant risk reduction (RRR) in the primary outcome compared with an enoxaparin regimen of 40 mg od:
  - Enoxaparin 30 mg twice daily (bid) is the more widely used regimen in North America for VTE prophylaxis after TKR.

- The RECORD4 trial, compared rivaroxaban 10 mg od with enoxaparin 30 mg bid:
  - The primary efficacy endpoint (the composite of DVT, PE, and all-cause mortality) was analyzed in the modified intention-to-treat population, and occurred in 6.9% of rivaroxaban patients and 10.1% of enoxaparin patients (RRR 32%; p<0.012).

### Methods

- The potential economic impact of rivaroxaban was assessed using the efficacy data (the composite of DVT, PE, and all-cause mortality) from RECORD4, and by considering cost reductions associated with an oral route of administration.

- The treatment costs for symptomatic VTE and major bleeding were taken from published data on managed care in the US, with all costs being inflated to 2007 US dollars.

- For costing purposes, the duration of hospitalization for TKR (4 days) was obtained from a published US orthopaedic registry.

- A sensitivity analysis included incremental costs associated with home healthcare nurse visits to administer s.c. injections based on other studies and clinical experience of VTE in the US.

- The duration of prophylaxis was assumed to be 14 days.

- The analysis assumed similar daily drug acquisition costs to enoxaparin 40 mg od, which is less expensive than enoxaparin 30 mg bid.

### Results

- The total cost associated with healthcare resource use in the US for the duration of treatment was US$469 per patient with enoxaparin 30 mg bid injections and monitoring costs (Figure 1).

- The total cost associated with healthcare resource use in the US for the duration of treatment was US$307 with oral rivaroxaban 10 mg bid, and monitoring costs (Figure 1). The analysis assumed similar daily drug acquisition costs to enoxaparin 40 mg od, which is less expensive than enoxaparin 30 mg bid.

### Other Variables Likely to Affect Costs not Covered in the Analysis

- Costs associated with long-term complications (e.g. post-thrombotic syndrome) were excluded from this analysis.

### Conclusion

- Any benefits such as reduced hospital readmission, or reduced costs due to a reduction in recurrent symptomatic VTE during the post-prophylaxis period.

- Asymptomatic events, which may result in a symptomatic VTE within 1 to 3 months, are likely to have an impact on healthcare costs within 1 year of TKR surgery.

- Patients’ treatment satisfaction and adherence to oral medication; these are important after hospital discharge and can influence the effectiveness of VTE prophylaxis.

### References and Disclosures


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