The cost-effectiveness of rosuvastatin versus simvastatin for the prevention of cardiovascular morbidity and mortality in patients with higher baseline risk – A Swedish economic evaluation based upon the JUPITER trial

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Background
• Cardiovascular disease is the largest cause of morbidity and a major cause of death in Europe and the United States. 
• In European countries, cardiovascular diseases rank first in burden of disease and is dominated by the years lost due to premature death. 
• Current European treatment guidelines recommend LDL-C lowering therapy to reduce the risk of cardiovascular events, non-CVD death, venous thromboembolism (VTE) death, non-fatal VTE, coronary artery bypass graft, percutaneous transluminal coronary angioplasty, CVD death, and MI death. 

Objective
• Estimate the long-term health outcomes (CVD events avoided and quality-adjusted life-years gained) and costs of rosuvastatin versus simvastatin for the treatment of individuals with cardiovascular disease risk factors who have had a recent cardiovascular event. 
• Simulate CVD events and costs as a result of treatment with rosvastatin and simvastatin for the prevention of CVD. 
• Assess the long-term health outcomes and costs associated with rosuvastatin versus simvastatin treatment in Swedish patients with a 10-year Framingham risk greater than 20%. 

Method
• A probabilistic Monte Carlo micro-simulation model was constructed to estimate the long-term cost-effectiveness of treatment with rosuvastatin versus simvastatin. 
• The model assessed cost-effectiveness in the Swedish setting from a healthcare payer perspective. 
• CVD event rates were combined with epidemiological and unit cost data specific for the Swedish setting. 

Model Population
• Patients with a 10-year Framingham CVD risk >20% were simulated in the model using the characteristic of the JUPITER clinic trial patients – patients with no evidence of cardiovascular event during the 6-month study period unless a non-cardiac reason for discontinuation. 
• The following total CVD events were estimated to be avoided over the lifetime (per 100,000 patients): MI death 7,485 (R 20 mg vs. S 40 mg), Stroke death 7,485 (R 20 mg vs. S 40 mg), Other CVD death 7,485 (R 20 mg vs. S 40 mg). 

Results
• The following total CVD events were estimated to be avoided over the lifetime (per 100,000 patients):
  - R 20 vs. S 20: 2,642 CVD events avoided
  - R 20 vs. S 10: 1,516 events avoided
  - R 10 vs. S 10: 1,298 events avoided
  - The 20-year time horizon had estimated between 1,646 (R 10 mg vs. S 40 mg) and 3,465 (R 20 mg vs. S 40 mg) events avoided

Conclusions
• The probabilistic sensitivity analysis (Figure 6) indicated that at a willingness-to-pay (WTP) threshold value of SEK 500,000 (EUR 51,850) per QALY gained, rosuvastatin 20 mg would be cost-effective in 80% of the model replications.

References

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Figure 3. Incremental cost-effectiveness ratios (ICERs) of rosuvastatin vs. simvastatin over the lifetime in Swedish patients with Framingham CVD risk >20%.