HEALTH ECONOMIC EVALUATION OF BIVALIRUDIN IN THE MANAGEMENT OF PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION IN BELGIUM

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OBJECTIVE: To determine the cost-effectiveness (CE) from the Belgian societal perspective of anticoagulation with bivalirudin vs. heparin + glycoprotein inhibitors (GPIIb/IIIa) in patients undergoing percutaneous coronary intervention (PCI).

METHODS: Efficacy data were taken from REPLACE-2, EPIS-TENT and ESPRIT trials which documented probabilities of PCI outcomes: death, myocardial infarction, urgent revascularization, and major/minor bleedings according to TIMI definition. Costs data were drawn from Belgian literature except for drug costs which were valued using REPLACE-2 actual dosages and official Belgian tariffs. We considered unfractionated (UFH) and low-molecular weight (LMWH) heparins. Abciximab was the only GPIIb/IIIa considered as it is the only one indicated for PCI in Belgium. A 30-day time frame analytical model was developed from an original model by The Swedish Institute for Health Economics (IHE), to estimate the incremental costs per life year gained (LYG). Costs and LYG were discounted at 3.0% per annum. In the base case analysis, GPIIb/IIIa was given in 27.5% of the patients receiving heparin (consensus estimate between the Belgian Working Group in Interventional Cardiology and expert opinions).

RESULTS: Giving bivalirudin to the average patient undergoing PCI in Belgium resulted in extra €0.0794LYG and €90.1 vs. UFH (incremental cost-effectiveness ratio (iCER) = €1134.8/LYG). LMWH was dominated. A threshold analysis, varying from 0% to 100% the percentage of patients in the heparin branches who receive additional GPIIb/IIIa, revealed that when this percentage is above 34%, bivalirudin dominates both heparin strategies. When no patient at all was given additional GPIIb/IIIa, the iCER vs. UFH was €3933.3/LYG. Other variables were much less sensitive. CONCLUSION: Our analysis suggests that the use of bivalirudin during PCI is a cost-effective alternative to the current approach of heparin + GP IIIb/IIIa in the Belgian health care setting. The percentage of patients given GPIIb/IIIa with heparin is the key factor driving the iCER of bivalirudin.

ECONOMIC ANALYSIS OF THE STRATEGY STUDY: TIROFIBAN AND DRUG ELUTING STENTS VS BARE METAL STENTS

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OBJECTIVES: Primary bare metal stenting and abciximab infusion are currently considered the best available reperfusion strategy for acute ST-segment elevation myocardial infarction (STEMI). Sirolimus eluting stents (SES), compared to bare metal stent (BMS), greatly reduce the incidence of binary restenosis and target vessel revascualrization (TVR), but their use on a routine basis results in a significant increase in medical costs. With current European list prices, the use of tirofiban (TIRO) instead of abciximab (AB) would save enough money to absorb the difference in cost between SES and BMS. The STRATEGY study examined the safety and efficacy of tirofiban and SES vs. AB and BMS in STEMI patients. To evaluate the short- and medium-term economic impact of the STRATEGY combination, namely TIRO + SES versus current golden standard of treatment, AB + BMS.

METHODS: A medium-term (one year or 8 months) decision analytic model was developed to conduct a cost-effectiveness analysis using a cost per survival. The perspective of the model was that of Italy. Clinical outcomes (mortality, myocardial infarction (MI), revascularization (Revasc) and major cardiac events (MACE) were based on the final results of the STRATEGY study. Costs were obtained from Italian sources for device and hospitalization data (€2004). Total expected costs and outcomes for TIRO + SES versus AB + BMS were compared. The robustness of the results was tested in a sensitivity analysis.

RESULTS: Clinical outcomes were lower for TIRO than for BMS when compared to AB + BMS for mortality (0.079 vs. 0.089), MI (0.068 vs. 0.089), Revasc (0.067 vs. 0.197) and MACE (0.214 vs. 0.377). The average overall cost of TIRO + DES (€23,674) was less expensive than that of AB + BMS (€24,274) with an incremental difference of €600. One-way sensitivity analysis indicated the model was sensitive to the unit cost of AB with a threshold value of €338. CONCLUSIONS: TIRO + SES resulted to be the dominant strategy.