DRUG-ELUTING STENTS VERSUS BARE-METAL STENTS FOR ACUTE MYOCARDIAL INFARCTION: AN ECONOMIC ANALYSIS APPROACH

Ofstead R., Gandhi SK, Jansen MM, Brodsky L, Fox KM, Gold A, Hsu J
Texas A&M Health Science Center College Station, TX, USA, 2AstraZeneca US

OBJECTIVES: To evaluate the economic impact of using drug-eluting stents (DES) versus bare-metal stents (BMS) in patients with ST-elevation acute myocardial infarction (STEMI) in Korea from a societal perspective. METHODS: A cost-minimization analysis using a decision analysis model comparing DES and BMS was performed since the mortality was comparable between two stents in a random-effects meta-analysis of 14 randomized controlled trials (RCTs) with a minimum follow-up of one year. The one-way time period was varied and since most of STEMI patients require an emergency procedure and revascularization occurs within one year. The probabilities of revascularization for each stent were derived from the meta-analysis and the probabilities of costs and utilities were obtained from the national reimbursement database of the National Health Insurance Review and Assessment (HIRA) between 2006–2009. To identify stent-naive STEMI patients defined as having no stenting during one-year of washout period, we used two-years of intake period with diagnosis code I21 and ER visit. We also used a micro-costing method based on six experts’ opinion. Uncertainty was assessed using tornado diagrams and probabilistic sensitivity analyses. RESULTS: Incidence of revascularization after initial stenting was 5.42% and 11.79% for DES and BMS, respectively. The transition probabilities of DES-to-BMS, DES-to-BMS, DES-to-CABG, DES-to-balloon were 62.8%, 1.5%, 4.1% and 31.7%. The transition probabilities of BMS-to-DES, BMS-to-BMS, BMS-to-CABG, BMS-to-balloon were 52.8%, 7.6%, 0.0%, and 39.5%. The average costs of DES and BMS from HIRA data in 2009 were US$11,007/person-year and US$9,771/person-year, respectively. Those from a micro-costing method were US$4246/person-year for DES and US$4470/person-year for BMS. DES versus BMS resulted in higher costs for US$1237/person-year using HIRA data and US$236/person-year using micro-costing model. The model was highly sensitive to the probability of having no revascularization. CONCLUSIONS: The use of BMS versus DES in STEMI patients may be a cost-saving procedure. Local large RCTs are needed to minimize the uncertainty of results.