Economic and Health Consequences of the Use of a DPP4 Plus Metformin Scheme in the Treatment of Patients with Type 2 Diabetes in Mexico from the Private Perspective

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OBJECTIVES: To estimate the economic and health consequences of the use of DPP4 plus metformin in the treatment of patients with type 2 diabetes in Mexico. METHODS: A cost-effectiveness analysis was done using a discrete event model to simulate the behavior of a hypothetical population with 40 years follow-up, to evaluate the number of interventions (ischemic heart disease, myocardial infarction, congestive heart failure, stroke, amputation, retinopathy and ESRD), their costs and quality-adjusted life years (QALY’s); and the expected cost with the use of metformin+DPP4 (MDPP4), metformin+Insulin (MSU), metformin+Thiazolidinediones (MTZ) and metformin (MF). The demographic and clinical background of the patients used in the model was obtained based on expert panel opinions (11 physicians). A systematic literature review was performed to get information on effectiveness (reduction in HbA1c, level and related complications as reported in the UKPDS) and quality of life. Utilization of health care resources from clinical files of patients included in the General Zona n° 8 of the Mexican Social Security Institute. Private costs of complications treatments were obtained from institutional sources applying a conversion ratio of 2.46 as referred in the literature. Drug prices as based on private reference (the HCP). All costs are expressed in 2008 MXS. Probabilistic sensitivity analysis was performed (1000 Monte Carlo iterations) and acceptability curves were constructed. Both cost and QALY’s were discounted at 5%. RESULTS: The expected treatment cost and QALY’s for MF is 250,213.26 and 12.97 respectively; MSU 255,910.09 and 13.26; MTZ 257,177.26 and 13.77; MDPP4 245,055.52 and 13.41. The probability of being cost-effective at a threshold of 50,621.30 (equivalent to 3 times the Mexican GDP per-capita) with MSU is 0.54 (CI95%:0.512-0.574); MTZ 0.593 (CI95%:0.563-0.623) and MDPP4 0.586 (CI95%:0.584-0.588). CONCLUSIONS: The scheme based on metformin+DPP4 presents the best cost effectiveness ratio against metformin+Insulin or metformin+Thiazolidinediones.

ECONOMIC EVALUATION OF THREE FIRST-LINE MEDICATIONS IN DIABETIC PERIPHERAL NEUROPATHY IN MEXICO

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OBJECTIVES: Diabetic Peripheral Neuropathic Pain (DPNP) is a chronic neuropathic condition that significantly affects both health-related quality of life and functional status, causing depression and disabilities, increased health care utilization and high costs. We aimed to perform an economic evaluation of three recommended first-line medications for DPNP. METHODS: The analysis was conducted using a three-month decision model, which compares duloxetine 60mg once daily (DUL), gabapentin 600mg twice daily (GAB) and pregabalin 150mg twice daily (PRE) for patients with DPNP and moderate to severe pain, under the perspective of public health care system in Mexico. Efficacy rates were gathered from published literature. Adherence (based in number of daily doses needed) and adverse effects (AE) rates were incorporated into the model. Direct medical costs included drug acquisition and additional medical consultation due to lack of efficacy (poor pain relief) or intolerable AE. Unit costs were taken from local public tariffs. All costs were calculated in 2009 Mexican Pesos (MXP) and then expressed in USD. Proportion of patients with Good Pain Relief (GPR) and expected quality-adjusted life years (QALY) by patient was assessed. RESULTS: Branded GAB and PRE were both dominated by generic GAB and DUL. Compared to branded GAB and PRE, DUL leads to savings of 98 and 129 USD per patient, respectively. The incremental cost per QALY gained with DUL used instead of generic GAB is 8821 USD. This amount is similar to the estimated gross domestic product per capita in Mexico during 2008 year. DUL was cost-effective compared to generic GAB in about 83% of the samples during a second-order Monte Carlo simulation. CONCLUSIONS: DUL had lower costs and better health outcomes when compared to both branded GAB and PRE. According to the recommendations stated by the regulatory authorities, DUL can be seen as a cost-effective intervention compared to generic GAB.