Title : COST-EFFECTIVENESS ANALYSIS OF THIAZOLIDINEDIONES IN UNCONTROLLED TYPE 2 DIABETIC PATIENTS RECEIVING SULFONYLUREAS AND METFORMIN IN THAILAND

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Abstract

The purposes of this study are to determine cost-effectiveness of thiazolidinediones and to apply diabetes modeling for Thai healthcare system. Thiazolidinedione is a group of anti-oral diabetes drugs that have different mechanism of action from other antidiabetes drug. Pioglitazone and rosiglitazone are two drugs in thiazolidinedione class. To determine cost-effectiveness of both drugs, we need to know their long-term clinical and economic outcomes. However, most of clinical studies have only short-term data. Diabetes modeling is an instrument that can project the long-term costs and outcomes based on available data.

The CORE diabetes model was used in this study. We adjusted the model with Thai data. Baseline characteristics and management of Thai diabetes patients were retrieved from the diabetes registry project and other published literatures. Costs of diabetes complications were calculated from Buddhachinaraj hospital database, published literatures, expert opinions, and government reports. Non-specific mortality rate and transition probabilities of death from renal replacement therapy were obtained from the government report and Thailand registry of renal replacement therapy, respectively. Other transition probabilities and progression rate of diabetes complications were based on defaults setting in the model. The defaults setting data in the model were based on long-term epidemiological studies. Clinical effectiveness of

thiazolidinediones were retrieved from a thiazolidinediones meta-analysis and other published literatures. Time horizon that we set to run the model was 40 years.

Results of the study showed that the pioglitazone group had a better clinical outcomes and highter lifetime costs. The incremental cost per life year gained and incremental quality adjusted life years gained were 148,649 Bath per life year gain and 206,125 Bath per quality adjusted life year gained, respectively. The acceptability curves results showed that probability that pioglitazone was cost-effective was 29% at the willingness to pay of the 1 time of the Gross domestic product per capita (GDP-per capita) and 64% at the willingness to pay of the 3 times of the GDP-per capita. Sensitivity analysis demonstrated that effect of pioglitazone on %HbA1c decrease was the most sensitive to the final outcomes.

In conclusion, the base-case analysis found that the use of pioglitazone fell in the cost-effective range recommended by WHO cost-effective as threshold criteria (1 to 3 times of GDP-per capita). In additon, the sensitivity analysis acceptability curves demonstrated probabilities that the use of pioglitazone was cost-effective was between 29% and 64% at the 1 time and 3 times of GDP-per capita, respectively. Hospital policy makers have to weigh these cost-effective probabilities against other choices. However, if we considered using pioglitazone in diabetic patients with higher risk of cardiovascular diseases, the incremental cost-effectiveness ratio comparing pioglitazone and rosiglitazone may be lowered.