OBJECTIVES: We conducted a cost-effectiveness analysis of two dipeptidyl-peptidase-4 inhibitors, metformin and linagliptin, in combination with sitagliptin for the treatment of Type 2 diabetes. METHODS: A decision tree model was developed using cost and effectiveness data for saxagliptin + metformin and linagliptin + metformin using published literature. Costs were evaluated using third party payer costs, including costs of drug, provider visits, lab tests, and health care associated with adverse events. All costs were adjusted to 2013 dollars using consumer price index and were calculated for a period of one year. A comprehensive literature review and a PubMed, Cochrane library and Google Scholar was conducted to obtain data for clinical efficacy and costs. Clinical efficacy values were obtained from randomized clinical trials. The primary efficacy measure was the proportion of participants achieving HbA1c ≤ 7.0%. Base case analysis was analyzed as incremental cost per effective treatment. One way sensitivity analysis was performed by varying costs by 10% associated with drug treatment to evaluate the robustness of the model. RESULTS: In the base-case analysis, saxagliptin + metformin combination for shorter duration of treatment than linagliptin + metformin as a combination therapy with metformin with an incremental cost effectiveness ratio of 30.51. Considering only direct costs for the treatment, expected cost per effective treatment for a year was found to be $179.25 for saxagliptin while that for linagliptin was found to have better clinical outcomes and lower costs than linagliptin but for the dominant treatment option. CONCLUSIONS: Saxagliptin in our study was found to be favored over linagliptin in combination with metformin for the treatment of Type II Diabetes. These results may help decision makers develop appropriate treatment options. Type II diabetes being a lifestyle disorder, further research by inclusion of indirect costs associated with the treatment options may help strengthening the results.

PD76
WEIGHT GAIN, HYPOGLYCEMIA AND COST-EFFECTIVENESS: WHAT DRIVES VALUE AMONG TREATMENT OPTIONS FOR DIABETES TREATMENTS IN THE SHORT TERM
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OBJECTIVES: Current treatment options for managing type 2 diabetes (T2D) have significant and varied effects upon patient weight and the incidence of hypoglycaemia. In the short term, and from the patient’s perspective, the absolute clinical effects of therapies are usually observed in the year succeeding therapy initiation. Consequently, there has been a growing interest to evaluate the ability of the model to understand the influence of weight and hypoglycaemia on the cost-effectiveness of T2D treatments. METHODS: With this in mind we developed an economic model that stratified the quality of life and cost consequences associated with different oral treatment strategies over a 1-year time horizon, focusing on the effect of weight change and incidence of hypoglycaemia. We illustrate these issues in patients adding dapagliflozin (DAPA) or DPP-4 inhibitors (DPP-4i) to metformin mono-therapy (MET). Net health benefits were sourced from the published literature. The model adopts a US societal perspective by including direct and indirect costs and benefits and US specific data where possible. RESULTS: The mean (95% CI) quality adjusted life year (QALY) difference in the DAPA vs. DPP-4i comparison (0.02: 0.75 vs. 0.73) was driven by the weight advantage of DAPA with no appreciable difference in expected costs ($34: $8,426 vs. $8,392). DAPA was cost-effective with a cost per QALY gained estimate of $2,090. CONCLUSIONS: In the context of this analysis, the driver of economic value over the 1-year period following DAPA was weight advantage of DAPA with no appreciable difference in costs. Further research by including indirect costs associated with the treatment options may help strengthening the results.

PD77
SHORT-TERM ECONOMIC AND CLINICAL OUTCOMES OF CANALGIFLOZIN COMPARED TO SITAGLITIN IN THE MANAGEMENT OF TYPE 2 DIABETES MELLITUS (T2DM)
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OBJECTIVES: Short-term cost per outcome analyses focusing on efficient attainments of desired health care outcomes, including quality measures can be useful decision-making tools for managed-care payers. Therefore, a simple cost-efficiency model was developed to compare the short-term (i.e., 1-year) clinical and economic outcomes of treating hyperglycaemia with canagliflozin versus sitagliptin in patients with T2DM. METHODS: Data on clinical efficacy and key adverse events (AEs) were obtained from a pooled analysis of 2 comparative trials of canagliflozin 300 mg day versus sitagliptin100 mg/day Wholesale drug acquisition costs were used. The total and diabetes-related cost savings associated with achieving (vs. not achieving) A1C<7% was specified as $3,553/year and $1,651/year, respectively, based on previously reported claims database analysis. Savings of $286/year associated with 1% decrease in weight, sourced from the literature was applied. AE-related costs (i.e. $105-154/genital mycotic infections and $352/hypoglycemia requiring third-party assistance) were used in the treatment arm, net health benefit analysis. Total costs, average and incremental costs/key outcomes were calculated. RESULTS: In the simplest analysis evaluating drug cost/outcome only, whereas annual cost savings were similar and compared to sitagliptin100mg ($3,594), the average cost/patient achieving A1C<7% were lower for canagliflozin 300 mg compared to sitagliptin ($7,162 vs $8,398/patient per year, respectively). Likewise, the average cost per 1% reduction in A1C were lower for canagliflozin 300 mg versus sitagliptin. In a comprehensive analysis, drug and adverse event costs, canagliflozin 300 mg dominates sitagliptin in incremental cost efficiency in A1C goals. Canagliflozin 300 mg resulted in net savings of $639 per patient/year compared to sitagliptin. CONCLUSIONS: Based on inputs and assumptions used in this model, this 52-week economic analysis suggests that canagliflozin 300mg is likely to be a cost-saving treatment option compared with sitagliptin 100 mg when used in combination with other antihyperglycemic agents to treat T2DM.

PD78
THE COST-EFFECTIVENESS OF LIRAGLUTIDE VS EXENATIDE FOR THE TREATMENT OF TYPE 2 DIABETES IN THE UNITED STATES
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INTRODUCTION: The global clinical and economic burden of type 2 diabetes is substantial. New GLP-1 receptor agonists have shown a multifactorial clinical profile with the potential to address many of clinical needs. OBJECTIVES: The objective of this study is to evaluate the cost-effectiveness of once-daily liraglutide vs. once- weekly exenatide in patients who had failed in metformin plus sulfonylurea treatments. METHODS: A Markov model is made to predict life expectation and QALYs of liraglutide and exenatide. Baseline characteristics are consistent with OUB. Scenario analyses were run over 35 years (one year as a cycle) from a third-party payer perspective. Future costs and benefits are discounted at 3%. 5 health states were included in the model: “No complications”, “Microvascular complications”, “Macrovascular complications”, “both complications” and “Death”. Results: Data was extracted from previous studies, head-to-head clinical trial, U.S. consumer Price Index, U.K. Perspective Diabetes Survey, Action in Diabetes and Vascular Disease Trials, Action to Control Cardiovascular Risk in Diabetes trials and National Health Interview Survey data. The transition probabilities in the model vary by the age and gender of the patients to simulate the natural progression of type 2 diabetes. RESULTS: Liraglutide is associated with improvement of 0.15 QALY. Even though it costs more than exenatide, it is still more cost-effective than exenatide. The increment of cost-effectiveness ratios per QALY gained with liraglutide is $18,282 (2013 US$), which is less than 3 times GDP per capita in 2013. Sensitivity analysis was done. Figures in the model were adjusted reasonably, and the results remain robust. In other word, liraglutide is more cost-effective than exenatide. CONCLUSIONS: Long-term projections indicated that liraglutide (injected daily) is more cost-effectiveness than exenatide (administered weekly).

PD79
CONTRASTING COST-EFFECTIVENESS RESULTS DERIVED FROM THE UKDFS 68 AND 82 RISK EQUATIONS IN TYPE 2 DIABETES
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OBJECTIVES: The IMS CORE Diabetes Model (CDM) is a widely published and previ- ously validated model supporting cost-effectiveness. The model uses the UKDFS 68 risk equations (IEs) to predict events and has been updated to include the UKDFS 82 IEs. The objective of this study was to compare cost-effectiveness (CE) results obtained via the UKDFS 82 and 68 IEs. METHODS: Lifetime analyses were conducted using the CDM, which utilizes the UKPDS82 equations to estimate the risk of complications, “Macrovascular complications”, “Microvascular complications”, “both complications” and “Death”.RESULTS: Quality adjusted life expectancy was 8.157 and 8.038 in patients treated with M+D and M+S using UKDFS 68 IEs and 7.851 and 7.733 using UKDFS 82 IEs. Total direct costs and costs associated with non-severe hypoglycaemia episodes were similar. Conclusions: Incremental differences between IEs were not pronounced, incre- mentally higher per quality adjusted life years were observed using the UKDFS 82 IEs compared to the UKDFS 82 IEs. CONCLUSIONS: The UKDFS risk equations are widely used in type 2 diabetes cost-effectiveness models. While the new equations predict appreciable differences in absolute costs and quality adjusted life years, the incremental differences were marginal. Conclusions: Economic evaluations using the new UKDFS82 equations appear unlikely to result in significantly different results compared with the UKDFS68 IEs.
The CDM model has been extensively validated using the UKPDS 68 risk equations and resulted in common, rather than prevention (70%). Most used a health care payer perspective (71%) and diabetes CUAs. Most examined pharmaceuticals (55%) and focused on treatment ratios. We used the 2008-2012 Humedica electronic medical record data to estimate CE Registry. We also examined factors independently associated with favorable rate predictions from the UKPDS 82 and 68 REs within the CDM. Simulation cohorts mirroring baseline characteristics of each of the type 2 diabetes profile: 55 years of age, duration of diabetes of 5 years and baseline nonlinearity in base case simulation predictions of costs and quality adjusted life years (QALY).

The IMS CORE Diabetes Model (CDM) is a widely published and previously validated decision support tool. The model uses the UKPS 68 risk equations (REs) to predict cardiovascular events and recent studies have demonstrated the model’s ability to predict cardiovascular event rates consistently with those reported in the experimental T2DM outcomes studies. The CDM has been updated to include the new UKPDS 82 REs; consequently the objective of this study was to compare the event rate predictions from the UKPDS 82 and 68 REs within the CDM. METHODS: A total of 86 randomization stratified (by age, gender and base case) clinical trials were simulated. Simulation cohorts were validated against the data on 1,896 eligible patients from the Diabetes Control and Complications Trial (DCCT) and the UKPDS. Logistic regression analysis showed that higher-quality CUAs or CUAs conducted from the US perspective were more likely to report favorable ratios. Ratios for survival interventions and interventions recommended by diabetes guidelines were more favorable than other intervention types. Of 7,087 eligible patients, a 1,500 could be shifted to cost-saving treatments, saving more than $11 million and gaining more than 1,800 QALYs. CONCLUSIONS: Our findings suggest that most diabetes interventions evaluated by CUAs are recommended by practice guidelines and may provide good value for money. Our results also indicate that patients and the health care system could benefit considerably from shifting to greater use of cost-saving interventions.

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