patients' lifetimes. Duration of treatment was assumed to be 5 years, before switching to a basal insulin regimen. Changes were made to the base-case assumptions. First, the utility change per BMI unit gained (in patients with a BMI > 25 kg/m^2) was decreased from −0.01 to −0.0061. Second, the treatment duration was increased from 5 to 10 years. All other variables were kept constant. **RESULTS:** In the comparison with rosiglitazone, liraglutide was associated with a base-case incremental cost-effectiveness ratio (ICER) of £6226 per QALY gained, which increased to £7545 with BMI utility changes and to £16,477 when the treatment duration was increased. Similar increases were seen for comparisons with glimepiride (£13,257 (base case) to £25,343 (BMI utility change) and £38,368 (10-year treatment)) and sitagliptin (£9,851 [base case] to £14,616 [BMI changes] and £17,089 [10-year treatment]). **CONCLUSIONS:** Increasing the treatment duration and decreasing the impact of BMI on quality of life increased the ICER of liraglutide versus comparators. Liraglutide was shown to be cost-effective in dual therapy (assuming a threshold of £20,000 per QALY gained) versus rosiglitazone and sitagliptin in all three scenarios (base case, BMI utility changes, and 10-year treatment).

PDB40

THE ECONOMIC IMPORTANCE OF "METABOLIC MEMORY" IN THE TREATMENT OF TYPE 2 DIABETES MELLITUS (T2DM) IN SWEDEN

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OBJECTIVES: Analysis of the post-interventional follow-up of the UKPDS found that the benefits of intensive therapy persisted even 10 years after the trial, a finding consistent with "metabolic memory" (i.e., early metabolic status influences long-term outcomes). We assessed the potential impact of "metabolic memory" on the cost-effectiveness of intensive versus conventional care in Sweden. **METHODS:** We used the Economic and Health Outcomes (ECHO)-T2DM model to simulate lifetime health outcomes (including QALYs) and medical costs for 500 cohorts of 2000 newly diagnosed patients. In each cohort, patients were randomized to intensive or conventional care and HbA1c treatment effects corresponding to the UKPDS study were applied for the first 10 years. Consistent with findings from the follow-up study, HbA1c values were assumed to converge by year 10. Subsequently, in the intensive care arm, "metabolic memory" effects (reduced risk for certain microvascular and macrovascular events and mortality) were applied. Two sets of "metabolic memory" effects from the UKPDS follow-up study were used: those observed in the sulfonylurea/insulin subsample and those observed in the metformin subsample. a scenario assuming no "metabolic memory" effects was simulated for comparison. Unit costs were derived from the Swedish literature (modeling studies and a regression analysis of inpatient care costs based on administrative hospital data linked to the Swedish National Diabetes Register). **RESULTS:** Including "metabolic memory" had a large effect on the cost-effectiveness estimates. The incremental cost-effectiveness ratio declined from SEK2,387,292 (~€250,000) without "metabolic memory" to SEK731,308 (~€75,000) assuming effects from the sulfonylurea/insulin sample and to SEK445,425 (~€45,000) assuming effects from the metformin sample. **CONCLUSIONS:** These results suggest that good glycemic control early in the disease continuum may confer significant medical cost savings over the long term. Evaluations of the cost-effectiveness of intensive glycemic control in newly diagnosed patients should potentially consider the health and cost consequences of "metabolic memory."

PDB41

COST-EFFECTIVENESS OF LIRAGLUTIDE IN PEOPLE WITH TYPE 2 DIABETES IN THE SLOVAK REPUBLIC

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OBJECTIVES: This study aimed to assess cost-effectiveness of treatment with liraglutide added to a standard therapy with metformin (MET) or/and sulphonylurea (SU) compared with rosiglitazone and exenatide. **METHODS:** Our study used a health economic model (the CORE Diabetes Model) to project the long-term costs and clinical outcomes of liraglutide based on clinical data from LEAD-1 trial: liraglutide + SU versus rosiglitazone + SU; and LEAD-6 trial: liraglutide + MET+/–SU versus exenatide + MET+/–SU. The analysis was performed from the Slovak health-care services payer's perspective in a 20-year time horizon. The analysis used health-state utility values from published sources to assess the effect of treatment on QALYs. The unit costs of treatment and complications were derived from published sources and official tariff lists for health-care services paid by public payer. All figures are shown in EUR. **RESULTS:** QALYs increased with liraglutide 1.2 mg + SU versus SU + rosiglitazone 4 mg by 0.203. Total costs increased by €2561 resulting in incremental costs per QALY of €12,615. The incremental cost-effectiveness ratio for liraglutide 1.8 mg + MET+/–SU versus exenatide 10 µg + MET+/–SU was estimated at €24,013 per QALY gained (QALYs increased by 0.112). **CONCLUSIONS:** Using the CORE Diabetes Model and data from the LEAD 1 and LEAD 6 trials treatment with liraglutide is a cost-effective intervention compared with both rosiglitazone and exenatide. Sensitivity analysis showed the results are only moderately changing when altering the key parameters and assumptions.

PDB42

INCRETIN-THERAPY IN ADDITION TO METFORMIN AND/OR SULFONYLUREA FOR TYPE 2 DIABETES MELLITUS (T2DM): COST-EFFECTIVENESS OF LIRAGLUTIDE VERSUS EXENATIDE FROM THE PERSPECTIVE OF THE GERMAN STATUTORY HEALTH INSURANCE (SHI)

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BACKGROUND: Unlike most other antihyperglycemic drugs, glucagon-like peptide 1 (GLP-1) receptor agonists have a glucose-dependent action and promote weight loss. In a randomized clinical trial (RCT) over 26 weeks reported by Buse et al. (2009), the novel GLP-1 agonist liraglutide (1.8 mg once daily, OD) was found to be significantly more effective than exenatide (10 µg twice daily) in terms of HBA1c reduction. **OBJECTIVES:** To compare, from a German payer's (SHI) perspective, the long-term clinical and cost-effectiveness of liraglutide (1.8 mg OD) versus exenatide (10 µg BID) in T2D patients, based on data from the randomized clinical trial (RCT) by Buse et al. 2009. **METHODS:** The CORE Diabetes Model (CDM) was applied using RCT data. The model was calibrated to RCT baseline characteristics and background mortality in a German diabetes population, applying epidemiological data from long-term studies including UKPDS and Framingham to project morbidity and mortality of T2DM. Unit costs for direct costs were applied from an SHI perspective for year 2009. a discounting rate of 3% was used for costs and clinical effects. For hypothetical cohorts of 1000 patients, each followed for 20 years, patients were assumed to be maintained on liraglutide and exenatide, respectively, for 5 years and subsequently switched to insulin. Costs and effects were projected over a 20-year time horizon. **RESULTS:** Estimated 20-year survival rates were higher for liraglutide 1.8 mg once daily (36.8%) compared to exenatide 10 µg administered twice daily (35.6%), and cumulative costs were €46,308 (liraglutide) and €45,025 (exenatide), respectively. Base-case ICERs were €16,632 per life-year gained for liraglutide versus exenatide, and €11,606 for liraglutide versus exenatide per QALY gained. Sensitivity analyses indicated robustness of findings. **CONCLUSIONS:** Long-term projections combining RCT data with the CDM strongly suggest an acceptable to attractive cost-effectiveness of liraglutide compared to exenatide according to currently prevailing standards.

PDB43

LONG-TERM COST-EFFECTIVENESS OF LIRAGLUTIDE VS. SULPHONYLUREA IN POLAND

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OBJECTIVES: To assess the long-term cost-effectiveness of treatment with liraglutide on top of standard therapy with metformin (MET) compared with sulphonylurea (SU) in people with type 2 diabetes. **METHODS:** The extensively published and validated CORE Diabetes Model was populated with the clinical data from LEAD 2: liraglutide + MET versus SU + MET. The analysis was performed from the polish health-care services payer's perspective. a 20-year time horizon was chosen to reflect the costs and outcomes of diabetes as these are often only seen in the later stages of the disease. The analysis used health-state utility values from published sources to assess the effect of treatment on QALYs. The unit costs of treatment and complications were derived from published sources or based on expert opinion survey and Polish official tariff lists for health-care services paid by public payer. All figures are shown in EURO (1 EURO = 3.9 PLN). **RESULTS:** QALYs increased with liraglutide 1.2 mg + MET versus SU + MET by 0.191. Total costs increased by €3,349 resulting in incremental costs per QALY of €17,565. The incremental cost-effectiveness ratio for liraglutide 1.8 mg + MET versus SU + MET was estimated at €24,842 per QALY gained (QALYs increased by 0.207). Sensitivity analysis showed the results to be moderately changing when altering the key parameters and assumptions (for liraglutide 1.2 mg range from 12,944 to €30,275/QALY). **CONCLUSIONS:** Treatment with liraglutide is a cost-effective intervention compared with sulphonylurea and is likely to represent good value for money in Polish setting.

PDB44

THE COST-EFFECTIVENESS OF SAXAGLIPTIN VERSUS SULFONYLUREA (SU) IN THE TREATMENT OF TYPE 2 DIABETES MELLITUS (T2DM) IN GERMANY

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OBJECTIVES: This study evaluates the long-term economic consequences of saxagliptin versus sulfonylurea (SU, glipizide) as second-line therapy when used in combination with metformin (MET) after failure of monotherapy treatment with MET, in patients with type 2 diabetes mellitus (T2DM) in Germany. **METHODS:** A published discrete event simulation model with a fixed time increment was used and set to a 40-year (life-) time horizon. Disease progression was modeled using evidence from the UK Prospective Diabetes Study (UKPDS 68). The treatment sequence matched that of published guidelines, and efficacy and safety data were derived from published sources. The model assumes that quality-adjusted life-years (QALYs) are affected by complications and hypoglycaemic events over a lifetime. As such costs and utility decrements for macro- and micro-vascular complications, and adverse events such as severe hypoglycaemia are included. Costs were specific to the German setting where SUs are generic. Costs and effects were discounted annually at 3%. The perspective of the national sick funds was taken, and recommendations from the Institute for Quality and Efficiency in Health Care (IQWiG) were considered. **RESULTS:** Treatment with saxagliptin + MET was

associated with lower incidence of both symptomatic and severe hypoglycaemic events, resulting in an incremental benefit of 0.12 QALYs and an incremental cost-effectiveness ratio (ICER) of €13,931 per QALY gained. Modest reductions in all macro-vascular and micro-vascular complications were seen in those receiving saxagliptin + MET compared with SU + MET. Sensitivity analysis showed that treatment-related weight changes, as a risk factor for complications, represent the most influential driver of cost-effectiveness. **CONCLUSIONS:** Saxagliptin is associated with improved outcomes, a lower incidence of hypoglycaemic events, and weight neutrality, when compared with generic SU, at a cost that would likely be considered acceptable in the German setting.

PDB45

COST-EFFECTIVENESS ANALYSIS OF SAXAGLIPTIN IN THE TREATMENT OF DIABETES MELLITUS TYPE 2 IN SPAIN

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OBJECTIVES: Saxagliptin is indicated as an add-on combination therapy for adult patients with diabetes mellitus type 2 (T2D) to improve glycaemic control in combination with metformin, a sulphonylurea (SU) or a thiazolidinedione (TZD). The objective of this study was to evaluate the cost-effectiveness in Spain of saxagliptin when added to metformin in comparison with SU plus metformin or TZD plus metformin. **METHODS:** The analysis uses the Cardiff Long Term Model which simulates treatment pathways of pharmacological treatment of T2D from initiation of treatment until death. Efficacy and safety data are based on an indirect comparison of saxagliptin and SU and TZD based on the similarity in safety and efficacy between saxagliptin and sitagliptin demonstrated in a 18-week non-inferiority study (CV181,056). Available direct comparative trials between sitagliptin and TZDs and SUs are used to serve as data sources to assign efficacy and safety parameters. Spanish costs are used as for macro and micro-vascular complications as well as adverse events such as severe hypoglycemia. Utility decrements for ischemic heart disease, myocardial infarction, congestive heart failure, stroke, blindness, end-stage renal disease, transplant, amputation and body mass index are also accounted in the model. Health outcomes are measured in terms of QALYs, assuming that the lifetime QALY is affected by complications, occurrence of hypoglycaemic episodes and weight changes. The perspective used is that of the Spanish Health System. **RESULTS:** Saxagliptin as add on to metformin is cost-effective compared with SU and TZD (ICER < €10,000). Extensive univariate sensitivity analysis shows that the most influential factor is the weight variation, which increases with treatment with SU and TZD whereas DPP-4 inhibitors have shown to be weight neutral. **CONCLUSIONS:** The cost-effectiveness analysis shows that saxagliptin is cost-effective compared with both SU and TZD in combination with metformin for the treatment of T2DM in Spain.

PDB46

COST-EFFECTIVENESS OF NEW ANTIDIABETICS IN TYPE 2 DIABETES: A REVIEW

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OBJECTIVES: Although having substantial costs, the new antidiabetics for Type 2 diabetes treatment present more alternatives for glycemic control of the disease. To evaluate their cost-effectiveness, the New Antidiabetics for Type 2 diabetes indexed on PubMed, EMBASE databases and American Diabetes Association abstracts were evaluated. **METHODS:** The cost-effectiveness of Type 2 diabetes based on the new antidiabetics was analyzed through literature review. Searches were carried out in PubMed, EMBASE and ADA abstracts to identify the articles published from 2008 to 2010, keying in the terms "cost-effectiveness" and "type 2 diabetes" with language filtering, "English." The language filter for "Turkish" was also used but no result was achieved. Upon this filtration, the abstracts were reviewed to determine whether they included antidiabetics. **RESULTS:** Ten full texts, seven abstracts and three peer reviews were identified. In all studies, the cost-effectiveness of antidiabetics was assessed using the validated CORE Diabetes Model, except for two based on the Discrete Event Simulation Model. The outcomes from IMPROVE, PROactive, PRESENT, UKPDS and PREDICTIVE trials were used. In these studies, biphasic insulin aspart, exenatide, pioglitazone, insulin detemir, insulin glargine and sitagliptin were all studied under different settings and against various comparators. Biphasic insulin aspart versus human premix insulin was mostly found to be cost-effective in certain studies. Exenatide versus insulin glargine was established to be likely cost-effective in two studies. Pioglitazone was found to be dominant compared to rosiglitazone. Insulin detemir was established to be cost-saving in comparison with OAD or NPH insulin, or insulin glargine. Sitagliptin was regarded as either cost-effective or cost-saving compared to rosiglitazone. **CONCLUSIONS:** Different results in terms of cost-effectiveness of various antidiabetics under certain settings and against varied comparators were achieved. In future, demonstrated gains in QALYs will be found to be essential for these antidiabetics to be regarded as cost-effective.

PDB47

THE COST-EFFECTIVENESS OF CONTINUOUS GLUCOSE MONITORING IN TYPE 1 DIABETES PATIENTS IN THE NETHERLANDS

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OBJECTIVES: Continuous glucose monitoring (CGM) has been found to improve glycemic control in type 1 diabetes in recent trials. The objective of this study is to assess the cost-effectiveness of CGM compared with self-monitoring of blood glucose (SMBG) in type 1 diabetes patients, from a societal perspective in the The Netherlands. **METHODS:** The analysis was performed using the CORE Diabetes model with inputs for the The Netherlands. Clinical effectiveness of CGM in terms of lowering HbA1c was taken from the GuardControl study. Costs of complications and complication-related days off work were based on data from Erasmus University Rotterdam. Annual treatment costs were estimated using cost information from the Healthcare Insurance Board. Costs and effects were discounted at 4% and 1.5%, respectively. a lifetime horizon (60 years) was adopted for the analysis. a range of sensitivity analyses were conducted. **RESULTS:** The total costs per patient over 60 years for the CGM arm were €10,069 (73,348) higher than costs for the SMBG arm. Complication costs were lower, and treatment costs were higher for the CGM compared to the SMBG arm. Compared to the SMBG arm, 0.463 (3.063) QALYs were gained in the CGM group. The cost per QALY gained was €21,731. Probabilistic sensitivity analyses showed that this result is robust. **CONCLUSIONS:** At a willingness to pay threshold of €40,000 per QALY, CGM appears to be a cost-effective treatment option compared to SMBG in patients with type 1 diabetes.

PDB48

COST-EFFECTIVENESS OF 2 DIABETES HEALTH CARE PROGRAMMES IN BELGIUM

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OBJECTIVES: A multifaceted quality improvement programme for the care of diabetes was implemented in two different Flemish regions (Aalst and Leuven) and with slightly different modalities. The overall objective of the programmes was to improve adherence to evidence-based guidelines on diabetes in primary care physicians. The aim of this study was to assess the cost-effectiveness of the programs compared to regular care in both regions. **METHODS:** Short-term effects of the programmes were extrapolated to long-term hard endpoints, using the validated UKPDS Outcomes Model, supplemented by two self-developed Markov models to account for benefits on process parameters (screening for retinopathy and nephropathy). a simulation of the evolution of patients was made over a time horizon of 25 years with cycles of 1 year, from a public health care payer perspective. Cost data of the different disease states and extra direct medical costs due to intensified patient management were collected from literature and from the National Institute for Health and Disability Insurance. For the self developed Markov models, utility data for all states were obtained from published studies and transition probabilities were obtained from local epidemiological studies and published trials. In the simulation, the intervention was assumed to be implemented three times over the predicted life expectancy. Deterministic sensitivity analyses were performed on the combined results of outcome and process parameters. **RESULTS:** At a cost of intervention of €185 (Aalst) and €284 (Leuven) per patient, the analyses show ICER'S for Aalst and Leuven of respectively €15,206.70/QALY and €10,397.96/QALY. Sensitivity analyses show few influence of changed input variables. **CONCLUSIONS:** When using a ratio of €30,000/QALY as threshold of willingness to pay for health gain, the diabetes health care programmes have an acceptable ICER in both regions.

PDB49

PHARMACOECONOMICS MODELING OF LONG TERM RESULTS OF TYPE 2 DIABETES MELLITUS TREATMENT IN PATIENTS USING MODERN INSULIN ANALOGUES IN CONTRAST TO ORAL ANTIDIABETIC DRUGS OR DIET

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OBJECTIVES: To analyze the effectiveness and safety of three treatment regimens, and to project and compare long-term outcomes and costs of complications of type 2 diabetes mellitus (T2DM). **METHODS:** Data of 3678 patients (mean age 49.6 ± 0.19 years; 47% men; mean diabetes's duration—6 years) included in "evaluation of diabetes mellitus complications" program were taken for mathematic simulation using the validated Center for Outcomes Research (CORE) Diabetes Model. Patients were randomly divided into three groups: insulin therapy (NovoMix® 30), oral antidiabetic drugs (OAD; combination of glibenclamide + metformin in most cases) and diet. Life expectancy, cumulative incidence of cardiovascular, ocular events and health care costs were estimated over period duration—50 years. **RESULTS:** Estimated life expectancy was higher in insulin group compared with OAD and diet groups (17.2, 16.5, and 16.0 years). The best QALY's results were also achieved in insulin group (10.7, 10.2 and 9.9 years) due to decreased rates of myocardial infarction (morbidity/mortality), decompensated heart failure, ocular complications and diabetic retinopathy. Higher direct costs for years of life gained in insulin group (1287, 1203, and 1180 thousands of rub.) were associated with concomitant decreasing of indirect costs (362.7, 382.5, and 381.3 thousands of rub.). The costs for one patient with T2DM per 1 year were nearly the same in three groups (95.9, 95.9, and 97.6 thousands of rub.). **CONCLUSIONS:** use of the CORE Diabetes Model life expectancy, diabetes complications, and costs favored insulin NovoMix® 30 therapies compared with OAD or diet in treatment of T2DM.