long term health outcomes for patients with T2DM. Compared with exenatide, the cumulative incidences of eye disease, renal disease, stroke event, and myocardial infarction event with liraglutide were reduced by 1.657%, 1.45%, 0.639% and 1.392% respectively. Liraglutide 1.2mg was associated with improvements in life expectancy of 0.109 years and 0.092 quality-adjusted life years (QALYs) versus exenatide. The costs of complications were reduced by 1,769 CNY (111,567 vs 113,336), resulting in a total direct medical cost saving of 7,626 CNY. These results indicated that liraglutide 1.2 mg was cost saving approach in comparison with exenatide. Sensitivity analyses demonstrated the robustness of results. **CONCLUSIONS:** The treatment of liraglutide 1.2 mg improved patient health and economic outcomes versus exenatide, and was a dominant treatment approach for T2DM patients in clinical practice.

PDB24

LONG-TERM COST-EFFECTIVENESS OF BIPHASIC HUMAN INSULIN 30 IN PEOPLE WITH TYPE 2 DIABETES WITH INADEQUATE GLYCAEMIC CONTROL ON ORAL ANTIDIABETIC DRUGS IN CHINA

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OBJECTIVES: To evaluate long-term cost-effectiveness of switching to biphasic human insulin 30 [Isophane Protamine Biosynthetic Human Insulin Injection (premixed30R)] in people with type 2 diabetes (T2DM) poorly controlled with oral antidiabetic drugs (OAD) in China. **METHODS:** The validated IMS CORE Diabetes Model (V8.5) was used to project long-term life years, quality-adjusted life years (QALYs) and costs over 30 years. Patients' baseline demographics and treatment effects were based on the published 8-week observational study in China. Hba1c deceased from 10.18% to 7.57 after initiating biphasic human insulin 30 (±metformin) for people uncontrolled with sulfonylureas and metformin, and hypoglycaemic events was 0.80 per patient-year during the study period. Treatment costs were calculated by multiplying retail prices in China and dosage used in the trial. Management and complication costs were obtained from published data in 2011 and inflated to 2012 with consumer price index. An annual discounting rate of 3% was used for both costs and health outcomes. One-way sensitivity analyses were conducted. **RESULTS:** It was projected switching to biphasic human insulin 30 improved life expectancy by 0.655 years (13.113 vs. 12.458) and quality-adjusted life-years by 0.609QALYs (9.270vs. 8.661) per patient. Biphasic human insulin 30 decreased cumulative incidence of most diabetes-related complications, and was associated with decreased management and complication costs of -6787 RMB (147066 vs. 153853).Although offset by higher direct treatment cost (54671 vs. 54366), switching to biphasic human insulin 30 was projected to lower total direct medical cost of -6482 RMB lower (201737 vs. 208219). Sensitivity analyses demonstrate robustness of result. **CONCLUSIONS:** Initiating biphasic human insulin 30 for OAD failures was projected to improve life expectancy and reduce lifetime direct medical costs. Switching to biphasic human insulin 30 was a cost-saving treatment option for people with T2DM insufficiently controlled with OADs in China.

PDB25

ECONOMIC EVALUATION OF INSULIN ANALOGS VERSUS HUMAN INSULIN FOR DIABETES: A SYSTEMATIC REVIEW

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OBJECTIVES: Systematically review published literatures comparing the cost-effectiveness of insulin analogs versus human insulin [NPH], by which provide evidence for relevant health decision-making and clinical treatment. **METHODS:** earch literatures about the economic evaluation of insulin analogs versus human insulin in Chinese and English literature database. Basic information, data sources and results of included studies were analyzed and reviewed. **RESULTS:** Twenty seven studies in 16 published papers carried out in Canada, USA, European, Australia and China were included in the review. The results in the studies were significantly inconsistent, which was perhaps mainly due to the different data source, model selection, time horizon and hypothesis. However, the public health institutes in Canada, UK, Germany and Australia had reported highly suspiciousness on the cost-effectiveness of insulin analogs for diabetes patients, especially for type II diabetes. **CONCLUSIONS:** In lack of powerful evidence, it has not reached an agreement about the cost-effectiveness of insulin analogs and human insulin for diabetes. In countries like Canada, UK, Germany and Australia, the reimbursement policies on insulin analogs were recommended with cautious. As China is a developing country, diabetes patients should select appropriate regimes even more cautiously according to local health care system, personal disease characteristics and affordability. Future studies, comparing the cost-effectiveness of insulin analogs with human insulin, should be conducted with longer time horizon and be based on updated and more reliable clinical data.

PDB26

PHARMACOECONOMIC EVALUATION STUDY ON PREOPERATIVE TREATMENT OF ACROMEGALY WITH SOMATOSTATIN ANALOGUES IN SHANGHAI

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OBJECTIVES: To carry on a pharmacoeconomic evaluation study on preoperative treatment of acromegaly patients with somatostatin analogues (lanreotide and octreotide) in Shanghai. **METHODS:** Through a retrospective clinical study with cost minimization analysis (CMA) from a perspective of health service providers, to collect 89 acromegaly patients' medical records in a sampling hospital from January 1, 2009 through June 30, 2013, then comparing the clinical effectiveness (the overall cure rate based on IGF-I values returned into normal range after 3 months of post-operation) and the direct medical costs including drug cost, medical consultation fees, and costs for diagostic procedures, hospitalization, treatment costs for adverse drug reactions (ADRs) and other costs arising from medical intervention among the sole surgical treatment group (35 cases), the group of preoperative treatment with lanreotide (36 cases), and the group of preoperative treatment with octreotide (18 cases). **RESULTS:** Based on the good compatibility of tumor size, postoperative average length of stay in hospital, biochemical indicators (IGF-I, GH) among the three groups, there was no statistical difference in the clinical effectiveness ($x^2 = 2.81$, $P = 0.250$). As to the total medical costs per case, both octreotide group and lanreotide group were higher than the sole operation group with a statistical significant ($F = 21.05$, $P = 0.000$), and the lanreotide group (70521 ± 25677 Yuan) was lower than the octreotide group (80283 ± 21486 Yuan) with the Median non-parametric test ($P = 0.037$). The sensitivity analysis showed that the cost advantage of lanreotide relected in prolonging the length of the preoperative treatment. **CONCLUSIONS:** According to the data of direct medical costs from the sampling hospital in Shanghai, lanreotide has more cost advantage comparing with octreotide.

PDB27

COST MINIMIZATION ANALYSIS OF CLINICAL OPTION SCENARIOS FOR METFORMIN AND ACARBOSE IN TREATMENT OF TYPE 2 DIABETES: BASED ON DIRECT AND INDIRECT TREATMENT COMPARISON RESULTS

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OBJECTIVES: Metformin is the first-line oral hypoglycemic agent for type 2 diabetes mellitus (T2DM) per international guideline with proven efficacy, safety and cost-effectiveness. However, little information exists comparing it with acarbose. This study aims to ascertain both the effectiveness and cost-effectiveness of these two extensively-adopted agents in treatment of T2DM. **METHODS:** Randomised Controlled Trials comparing metformin and acarbose with placebo and sulfonylureas were systematically reviewed from Chinese (CNKI) and English (PubMed) literatures. Meta-analysis and Bucher-method-based indirect comparisons were conducted to compare the hypoglycemic-effects of metformin and acarbose directly and indirectly by using common comparators. The weighted-mean-difference and 95%CIs were calculated. Cost-minimization analysis was performed from the perspective of medical insurance. Common clinical scenarios were set according to clinical practices and physicians' prescribing behaviors in China, which could mirror real-life cost data. **RESULTS:** The direct comparison (8 trials) indicated treatment difference between metformin and acarbose for reduction of HbA1c was -0.06% (95% CI, -0.32 to 0.20). In the indirect comparisons (67 trials), using placebo and sulphonylureas as common comparators, metformin achieved significant HbA1c reduction than acarbose, by -0.38% (95% CI, -0.736 to -0.024) and -0.34% (95% CI, -0.651 to -0.029) respectively. Cost-minimization analysis was conducted on the assumption that these two agents had same hypoglycemic effects. In the first two scenarios, acarbose was assumed to titrate from 50mg/day up to 150 mg/day (weight<60kg) or 300mg/day (weight>=60kg) as usual max-dose, and the annual-costs were ¥2,656.36 and ¥5,208.84. In the last two scenarios, metformin was assumed to titrate from 500mg/day up to 1500mg/day or 2000mg/day, while the annual-costs were ¥1,568.04 and ¥2,070.28. Metformin would achieve cost-savings by 22.06% to 69.90% than acarbose, and sensitive analysis demonstrated its robustness. **CONCLUSIONS:** Findings from this study are consistent with previous studies of metformin in other countries. Metformin has significant hypoglycemic-effects and low costs in China.

PDB28

COST MINIMIZATION ANALYSIS OF U100 INSULIN AND U40 INSULIN IN EGYPTIAN DIABETIC PATIENTS

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OBJECTIVES: The complications for the use of both concentrations U100 insulin (100 units [U]/ml) and U40 insulin (40 units [U]/ml) were not studied in Egypt. The objective of the study was a cost minimization analysis of the two available concentrations for U100 insulin and U40 insulin from the health care system's perspective. **METHODS:** A decision analysis model of patients with diabetes was constructed. Prevalence rate of diabetes in Egypt and complication rates of both the use of U100 insulin and U40 insulin were obtained from international published sources. Direct medical costs were derived from the Ministry of Health tender list. All costs were reported in Egyptian pounds of the financial year 2014. Deterministic sensitivity analysis was conducted. **RESULTS:** Total expected costs for U100 insulin and U40 insulin were LE 262,218,165 and LE 345,582,844 respectively. In the base case, the use of U100 insulin displayed a cost advantage over U40 insulin for the treatment of diabetic patients with a minimal percent of complications. The model resulted in total savings of LE 83,364,678 in favor of Insulin 100 units. Sensitivity analyses determined that the cost of U100 insulin and U40 insulin had the potential to impact the base case model. **CONCLUSIONS:** This cost-minimization study illustrates that Conversion to U100 insulin would result in lower overall treatment costs in patients with diabetes from the health care system's perspective. An intensive information campaign providing detailed advice for patients, physicians and pharmacists is essential for the prevention of medication errors and reduction of overall costs.

PDB29

COST UTILITY OF DIABETES DRUGS USING HBA1C AS A DIRECT PREDICTOR FOR QUALITY OF LIFE, DIABETES COMPLICATIONS AND MORTALITY

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OBJECTIVES: Cost utility analyses (CUA) of diabetes treatments have traditionally been performed using HbA1c as a surrogate endpoint for diabetes complications and mortality. This study introduces a novel approach to CUA modelling of diabetes whereby blood sugar control as measured by HbA1c is used to directly

predict quality of life utilities, diabetes complications and mortality. **METHODS:** A microsimulation model was constructed which followed people with newly diagnosed diabetes over a period of 10 years. HbA1c level determined when a person was assumed to undergo escalation in diabetic treatment (from monotherapy with non-insulin hypoglycaemics to dual therapy to triple therapy and insulin). Information on efficacy and toxicity of therapies were derived from clinical trial data. Health care utilisation and costs were sourced from Australian government websites. Risk equations using change in HbA1c as a predictor for complications, quality-adjusted life years (QALYs) and death were derived from published data from large Australian diabetes cohorts. Probabilistic sensitivity analyses were undertaken. Two classes of drugs were investigated as alternatives to sulphonylurea when given in combination with metformin: DPP-IV inhibitors (sitagliptin, vildagliptin, saxagliptin, linagliptin, alogliptin) and SGLT-2 inhibitors (canagliflozin, dapagliflozin). **RESULTS:** In general, the results for the CUA were similar between the two drug classes compared to sulphonylureas, with ICERs ranging from AU$40K/QALY to AU$50K/QALY. The proportion of diabetes complications dropped by 3-4%, insulin treatment was delayed on an average of 2-3 years and a drop of 1-2% in mortality was observed. **CONCLUSIONS:** This model illustrates a new way of assessing the cost utility of diabetes medications. Furthermore, it shows that both DPP-IV and SGLT-2 inhibitors represent cost-effective alternatives to sulphonylurea in combination with metformin.

PDB30

ANTI-DIABETIC DRUG UTILIZATION AND DYNAMIC TRENDS IN A TERTIARY HOSPITAL IN BEIJING (2008-2012)

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OBJECTIVES: In China, the age-standardized prevalence of diabetes is 9.7% (92.4 million adults). The rapidly-growing economic burden caused by diabetes renders the anti-diabetic drug utilization research more important than ever. This study intends to assess the utilization and its dynamic trends of anti-diabetic drugs in a tertiary hospital in Beijing, China. **METHODS:** Data were extracted from pharmacy department of a tertiary hospital in Beijing between 2008 and 2012. Descriptive analysis was conducted using SPSS 20. By applying the Anatomical-Therapeutic-Chemical methodology (ATC) and Defined Daily Dose system (DDD) recommended by WHO, the collected data were used to calculate the number DDD per 1000 inhabitants per day (DDD/1000/day). Annual average growth rate (AAGR) was calculated to demonstrate dynamic trends in utilizations over time. **RESULTS:** There are three major findings: 1) By pooling the five year data together, we found the top three drug categories were sulfonylureas (3032.87 DDD/1000/day), human insulin (2677.48 DDD/1000/day) and biguanides (1830.52 DDD/1000/day), accounting for 30.95%, 27.32% and 18.68% of the total DDDs, respectively. 2) In each category, the rankings in utilization according to DDD were gliclazide, glimepiride, gliquidone for sulfonylureas, and Novolin 30R, Novolin R, humulin for human insulin, and metformin for biguanides. 3) Drug utilizations increased rapidly from 1647.13 DDD/1000/day in 2008 to 9798.86 DDD/1000/day in 2012, with AAGR of 13.41%. The utilization of insulin analogue increased fastest (AAGR 33.21%), followed by glinides (AAGR 27.18%) and biguanides (AAGR 20.77%). **CONCLUSIONS:** In a tertiary hospital in Beijing, the total DDD of anti-diabetic drugs was largely contributed by sulfonylureas, human insulin and biguanides, in descending order. Utilization of anti-diabetic drugs increased significantly during 2008-2012, possibly driven by increasing prevalence, new treatments, and so forth.

DIABETES/ENDOCRINE DISORDERS – Patient-Reported Outcomes & Patient Preference Studies

PDB31

DEMOGRAPHICS AND HEALTH OUTCOMES ASSOCIATED WITH ADHERENCE AND NON-ADHERENCE AMONG TYPE2 DIABETICS IN CHINA

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OBJECTIVES: Adherence to treatment is an important predictor of health status. This study investigated medication adherence among respondents with type 2 diabetes (T2D) in China. **METHODS:** This study included data from the 2013 China (N=19,987) National Health and Wellness Survey (NHWS), a cross-sectional survey of self-reported demographics, health outcomes, and behaviors among urban (mainly Tier I and II cities) adults (≥18 years). Respondents diagnosed with T2D and taking a prescription medication for T2D were analyzed (n=510). Adherence was measured using the 8-item Morisky Medication Adherence Scale (MMAS). Adherence was classified as scoring between 0-2 on the MMAS. Characteristics of non-adherent and adherent respondents were reported descriptively. Multivariable regressions, adjusting for demographics and health behaviors were performed to explore differences on health status (SF-36v2), resource utilization in the past six months and productivity loss (Work Productivity and Activity Impairment questionnaire) between adherent (n=184) and non-adherent respondent groups (n=326). **RESULTS:** Respondents who were non- adherent to diabetes medications tended to be younger, employed and had regular consumption of alcohol when compared to respondents who were adherent. Controlling for covariates, respondents who were adherent to their medications had higher mental component summary and health utility scores compared to non-adherent respondents ($p<0.05$). Among the employed sample, non-adherent respondents reported greater absenteeism (13.1% vs. 7.7%), greater presenteeism (39.8% vs. 30.9%), and greater overall work impairment (44.8% vs. 33.7%) compared to adherent respondents. Non-adherent vs. adherent respondents reported more activity impairment (38.8% vs. 33.7%). Physician visits in the past six months was higher among those who were not adherent (6.0 vs. 4.6), but there was no significant difference in hospitalization and ER visits among the two groups. **CONCLUSIONS:** A greater number of T2D respondents were not adherent to their diabetes medication. Not surprisingly, health outcomes were worse among adults not adhering to their medications.

PDB32

A PROSPECTIVE, CROSS-SECTIONAL STUDY ON COST AND ADHERENCE OF ANTIDIABETIC PRESCRIPTIONS AT A TERTIARY CARE TEACHING HOSPITAL IN SOUTH INDIA

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OBJECTIVES: To study prescription pattern, calculate the cost of antidiabetic drugs and to evaluate the adherence to treatment guidelines in diabetic patients attending the medicine outpatient department in a tertiary care teaching hospital. **METHODS:** A prospective observational study was carried out for a period of 5 months. The diabetic patients who visited the medicine outdoor department were included. Demographic data and complete prescription details were recorded in the structured case record form. Cost of the drug therapy was calculated from the patient's bills. Indian Council for Medical research guidelines-2005 for diabetes management was used to evaluate the adherence. **RESULTS:** A total of 250 patients were enrolled in the study with mean age 57.91 ± 9.37. Out of 250 patients 126 (50.4%) were male and rest were female. A total of 1,391 drugs were prescribed, with mean of 5.56 ± 2.52 drugs and out of which 539 drugs were antidiabetics with mean of 2.18 ± 0.96. In monotherapy, metformin was frequently 218 (40.45%) prescribed. Glimepiride and metformin was the most frequently prescribed in 119 (76.28%) out of 156 antidiabetic drug combinations. Most commonly used drugs other than antidiabetics were aspirin 146 (18.9%) and atorvastatin 119 (15.41%). Mean cost of therapy for a month for a diabetic patient was 354.60 ± 305.72 INR. Majority 209 (83.6%) of prescriptions was in accordance to guidelines. **CONCLUSIONS:** Metformin was the most frequently prescribed drug in the diabetes patient. Metformin and glimepiride being the most frequent combination used. Majority of the prescriptions followed standard guidelines. The cost of prescription can be reduced by choosing the most economic drugs (generic) without changing its quality.

PDB34

MEDICATION COUNSELING BEYOND INSTITUTIONAL: IMPACT OF PHARMACIST-LED HOME MEDICATION REVIEW IN TYPE 2 DIABETES PATIENTS

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OBJECTIVES: To evaluate the impact of home medication review programme (HMR) towards Type 2 Diabetes patients from public primary centre in Penang, Malaysia. **METHODS:** A prospective randomised control study was conducted at Primary Clinic in Bukit Minyak, Penang. Eligible Type 2 diabetes patients with HbA1c > 6.5% and taking ≥ 3 medications who stayed at their own house were recruited and randomly allocated into control and intervention group by coin tossing. Control group patients received usual care from the clinic whereas intervention group patients received additional 2 visits at their home by pharmacist. During both visits, education on quality use of medications and life-style modifications were performed.Blood pressure monitoring, point of care for sugar and total cholesterol levels were conducted in each visit. Patients adherence and knowledge were assessed using validated questionnaire. Pill count was conducted and excessive medications were collected to calculate the costing component. Primary outcomes were medication adherence and level of knowledge. Secondary outcomes included HbA1c, FBS and total cholesterol changes as well as patients' satisfactions towards HMR and direct cost saving from the programme. **RESULTS:** A total of 150 patients were recruited and randomly assigned in two groups (n=75 each group). Fifty patients in the intervention group completed the study. After 2 home visits there were significant improvements in the adherence score for the intervention group (mean score=6.90,SD=0.94) compared to the control group (mean score=4.05, SD=1.51). There was a significant improvement in knowledge score after HMR programme, intervention group (mean score=10.04, SD=1.75) and the control group (mean score=5.45, SD=1.89). A direct cost analysis of the medication wasted reveals that HMR can help to save RM 2805.50 (USD 855.34) throughout the eight months period. **CONCLUSIONS:** Pharmacist-led HMR have improved patients' adherence and knowledge as well as helping the policy makers to save money on excessive medication wastage.

PDB35

DOES DIABETES HAVE AN IMPACT ON HEALTH-STATE UTILITY? A STUDY OF ASIANS IN SINGAPORE

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OBJECTIVES: To compare the time trade-off (TTO) values of EQ-5D-3L health states elicited from Asians with and without type 2 diabetes mellitus (T2DM) and T2DM patients with and without complications in Singapore. **METHODS:** The TTO values of 10 EQ-5D-3L health states were elicited from a consecutive sample of T2DM patients and a general Singaporean population sample using an identical valuation protocol. In face-to-face interviews, T2DM patients and members of the general population were asked to value 5 and 10 health states, respectively. The difference in TTO values between the two samples and between T2DM patients with and without complications was examined using multiple linear regression models. **RESULTS:** A total of 109 T2DM patients and 46 persons without T2DM provided data for this study. All 10 health states considered, the mean TTO value was 0.04 for T2DM patients and -0.02 for the general population sample, with the difference (95% confidence interval [95%CI]) being -0.06 (-0.16, 0.03). The general population sample had systematically lower TTO values for mild health states, with the difference being -0.15 (95%CI: -0.24, -0.06); while the two samples had similar mean TTO values for severe health states, with the difference being 0.001