A221

PDB13

PREDICTING INPATIENT HOSPITALIZATION RISKS FOR MEDICAID DIABETES PATIENTS
Zeng F Patel BV, Gao S
MedImpact Healthcare Systems, Inc, San Diego, CA, USA

OBJECTIVE: To develop a model to predict the probability of diabetes patients having inpatient hospitalization in the following year. METHODS: A retrospective cohort study was conducted based on a population of 322 type II diabetes patients age \( \geq 19 \) and enrolled in a Medicaid managed care plan from the year 2003 to 2005. Models were developed by using medical/pharmacy utilization data to predict the probability of having the following events in the next year: (1) whether the patient had any inpatient hospitalization, (2) whether the patient had any micro/macro vascular inpatient hospitalization, (3) whether the patient had any metabolic related inpatient hospitalization and (4) whether the patient had any infectious inpatient hospitalization. Main predictors of interests are diabetes compliance and the use of statin. Covariates include diabetes treatment pattern, age, sex, co-morbidities among other variables. Logistic model is used to conduct the analysis. RESULTS: The study population was 74% female with an average age of 49.2 (S.D = 8.4). Non-adherence of diabetes drug (odds ratio = 1.57, 95% CI: 1.09–2.24), use of statin (odds ratio = 0.58, 95% CI: 0.39–0.85), and previous inpatient history (odds ratio = 3.50, 95% CI: 2.42–5.07) were significant in predicting any inpatient hospitalization. Non-adherence of diabetes drugs was not a significant predictor for micro/macro vascular events (odds ratio = 0.74, 95% CI: 0.33–1.67), but it was associated with significantly increased probabilities of having metabolic events (odds ratio = 1.58, 95% CI: 1.03–2.43) and infectious events (odds ratio = 2.70, 95% CI: 1.10–6.66). The use of statin was significant only for predicting metabolic events (odds ratio = 0.49, 95% CI: 0.32–0.77). It was not significant for predicting vascular events (odds ratio = 0.98, 95% CI: 0.45–2.15) and infectious events (odds ratio = 1.40, 95% CI: 0.49–3.72). CONCLUSION: The modeling results show that improving compliance of diabetes drug and encouraging the use of statin could be associated with reducing inpatient hospitalizations in a short period of time.

PDB12

CLINICAL AND ECONOMIC OUTCOMES RELATED TO A PAY-FOR-PERFORMANCE PROGRAM
Marebian J, Legorreta G, Hoffman J, Latino C, Chen JY
Health Benchmarks, Inc, Woodland Hills, CA, USA

OBJECTIVE: Physician pay-for-performance are gaining momentum as an approach to improve health care quality in the United States. The objective of this study was to show the beneficial effects of physician incentive programs for the treatment of diabetic patients as well as the potential for cost saving. METHODS: Administrative claims data from a large regional health plan were used through the 2004–2005 time-frame. Diabetic patients age 18–75 with private health insurance coverage were included in the analysis. Multivariate Poisson regression was used to model the likelihood of diabetes-related hospitalizations between patients who were being treated by a physician participating in the incentive program and those that were not. Likewise, cost savings associated with diabetic patients treated by physicians participating in the incentive program was also computed. RESULTS: Over a two year period, patients in the P4P program showed a lower combined predicted number of hospitalizations (0.31) than that of patients not in a P4P program (0.39). In addition, cost benefit analysis using decision tree modeling showed the costs of the P4P program was entirely covered by the reduction in cost resulting from decreased hospitalization rates. With the incentive program, the health plan saved approximately $24 per adult diabetic and a total cost savings of $675,000. Sensitivity analysis shows that the higher quality of care resulting from the incentive based programs directly benefits outcomes of diabetes patients with an added benefit of reducing program cost. CONCLUSION: The cost savings associated with physician pay-for-performance programs depend highly on the effectiveness of the program to improve delivery of quality care. Physician incentive programs have the potential to improve patient outcomes as well as lead to economic benefits for payers.

PDB14

BUDGET IMPACT OF ADDING FIXED-DOSE COMBINATION OF PIOGlitAZONE PLUS GLIMEPIRIDE TO A FORMULARY PLAN OVER A THREE-YEAR TIME FRAME
Lobo F1, Thomas S1, Sill B1, Hede S1, Pandya B2
1Takeda Pharmaceuticals North America, Deerfield, IL, USA, 2Takeda Global Research and Development Center, Inc, Deerfield, IL, USA

OBJECTIVE: To assess the budgetary impact of adding the fixed-dose pioglitazone plus glimepiride to a managed care formulary plan over a three-year period (2006–2008). METHODS: This model is an Excel-based spreadsheet which assumes a hypothetical scenario wherein a plan comprising one million covered lives assesses the financial impact of pioglitazone plus glimepiride to formulary. The prevalence of type 2 diabetes is assumed to be 4.64% or approximately 46,400 members. Existing oral anti-diabetic (OAD) agents on the formulary include TZDs (pioglitazone, rosiglitazone, TZD combinations with metformin, & rosiglitazone plus glimepiride), sulfonylureas (glipizide, glyburide, glimepiride), metformin, & a DPP4 inhibitor (sitagliptin). Costs for these agents were based on WAC (2006). Market shares were based on internal market research and IMS data. Metrics of budgetary impact are reported in terms of annual treatment costs & per member per month (PMPM) costs. These
metrics were adjusted for patient compliance with OADs as reported in the literature. These metrics are reported as adjusted and unadjusted estimates for patient compliance over a three-year time frame. RESULTS: In this scenario, market share for pioglitazone plus glimepiride was assumed to increase from 0.04% (2006) to 0.36% (2007) to 0.50% (2008). Projected annual treatment costs adjusted for compliance ranged from €222,240 (2006) to €200,164 (2007) to €278,006 (2008). Unadjusted estimates range from €35,295 (2006) to €317,652 (2007) to €441,183 (2008). Projected PMPM costs adjusted for compliance ranged from €0.002 (2006) to €0.017 (2007) to €0.023 (2008). Unadjusted PMPM estimates range from €0.003 (2006) to €0.026 (2007) to €0.037 (2008). CONCLUSION: The budget impact of adding pioglitazone plus glimepiride on formulary was minimal over a three-year time frame in both scenarios. This is driven by anticipated market projections estimating the utilization of pioglitazone plus metformin among the class of OAD agents.

**METHODS**: Budget impact analysis has been programmed using Microsoft Excel® 2003. Five-year population-based model assumes that Apidra® will gain market shares from rapid- and short acting insulins in proportion to their original market shares distribution. Limit and reimbursement rate of Apidra® was set equal to that of other rapid/short acting insulins. In addition to the cost of insulins, the cost of blood glucose monitoring strips was included in the total annual costs. The perspective of: 1) public payer, 2) public payer + patient; was considered separately. A range of compliance levels were also taken into account. Sensitivity analysis (including the analysis of extreme scenarios—most pessimistic and optimistic) was performed to account for uncertainty in input parameters. RESULTS: Financing Apidra® from public means will have no consequences for a public payer, which results from equal limits for all rapid- and short acting insulins. From the perspective of both payers for health care services (NHF and patient), incremental costs associated with introducing Apidra® to the market increase from €642–1,018 PLN (0.0001–0.0002%) in year one to 20,307–32,226 PLN (0.0044–0.005%) in the 5th year post-launch, depending on the drug compliance level assumed (230 or 365 days/year). Results were most sensitive to the change of Apidra® price. CONCLUSION: Results of the analysis indicate that decision to finance Apidra® from public means in Poland would have no consequences for a public payer, and the impact from the perspective of both payers (public payer and patient) is not likely to be significant.

**PDB15**

**COSTS OF PEN (NOVOPEN®(r) 3) VERSUS SYRINGE IN THE TREATMENT OF DIABETES MELLITUS TYPE 2— A PHARMACOECONOMIC STUDY FROM THE SLOVAK REPUBLIC**

Bielic J1, Ehsan N2, Lacka J1, Pastucha M3

1Trencín University, Trenčín, Slovak Republic, 2Private diabetology out-clinic dpt, Nové Mesto nad Váhom, Slovak Republic, 3Novo Nordisk A/S, Bratislava, Slovak Republic, 4General Health Insurance Company; Trenčín, Slovak Republic

OBJECTIVE: There is a practically stable 5.3% prevalence of diabetes mellitus (DM) in Slovakia. The treatment ratio was as follows: 47.6% patients are on diet, 30.8% on PAD and 21.6% on insulin. The main objective of this study was to determine if the intensified insulin therapy with insulin pen is cost-effective compared to conventional therapy. METHODS: Direct medical and non direct costs were evaluated in retrospective randomized study in patients with DM type 2. A group of 48 patients on intensified insulin therapy (IIT) was compared with a group of 28 patients treated with conventional therapy (CT). RESULTS: The average duration of DM was 113.51 months in IIT group and 147.67 months in CT group. The significant difference (p < 0.05, s) was observed in age (53.19 in IIT vs. 55.11 in CT) and in serum cholesterol (6.14 in IIT vs. 6.65 in CT). The hospital costs were higher in IIT: €568 vs. €311 in CT. The laboratory costs were lower in IIT: €133 vs. €167 in CT. IIT had higher costs for reimbursed drugs, glucometers and insulin pens by Health Insurance Companies: €1065 vs. €1024 in CT. No statistical difference was recorded in co-payments: €99 in IIT vs. €100 in CT. Indirect patients costs based on time loss were €185 in IIT vs. €227 in CT. The total costs per patient per year were €1972 in IIT vs. €1964 in CT. CONCLUSION: The treatment of DM type 2 with insulin pen NovoPen® 3 is clinically and economically effective in comparison to the treatment with syringe. The estimated costs of LYS are €4759 in men and €6519 in women per patient with DM in Slovakia.

**PDB16**

**THE BUDGET IMPACT OF APIDRA(r) (INSULIN GLULISINE) REIMBURSEMENT IN POLAND**

Walczak J1, Mucha J1, Augustynska J1, Gierczynski J2, Nogas G1

1Arcana Institute, Cracow, Poland, 2Sanofi-Aventis sp. z o.o, Warsaw, Poland

OBJECTIVE: To assess the impact of Apidra®, a new rapid-acting insulin analog used in type 1 and 2 diabetes, on the health care system in Poland. METHODS: Budget impact analysis has been programmed using Microsoft Excel® 2003. Five-year population-based model assumes that Apidra® will gain market shares from rapid- and short acting insulins in proportion to their original market shares distribution. Limit and reimbursement rate of Apidra® was set equal to that of other rapid/short acting insulins. In addition to the cost of insulins, the cost of blood glucose monitoring strips was included in the total annual costs. The perspective of: 1) public payer, 2) public payer + patient; was considered separately. A range of compliance levels were also taken into account. Sensitivity analysis (including the analysis of extreme scenarios—most pessimistic and optimistic) was performed to account for uncertainty in input parameters. RESULTS: Financing Apidra® from public means will have no consequences for a public payer, which results from equal limits for all rapid- and short acting insulins. From the perspective of both payers for health care services (NHF and patient), incremental costs associated with introducing Apidra® to the market increase from €642–1,018 PLN (0.0001–0.0002%) in year one to 20,307–32,226 PLN (0.0044–0.005%) in the 5th year post-launch, depending on the drug compliance level assumed (230 or 365 days/year). Results were most sensitive to the change of Apidra® price. CONCLUSION: Results of the analysis indicate that decision to finance Apidra® from public means in Poland would have no consequences for a public payer, and the impact from the perspective of both payers (public payer and patient) is not likely to be significant.