did not pay for their prescriptions were significantly different (p < 0.05). The average anti-diabetic drug cost of the patients who paid out-of-pocket was $643.38 (US $1 = 40Baht) and their average total drug cost was 1853.12 Baht, while the average anti-diabetic drug cost of the patients who did not pay for their prescriptions was 437.91 Baht and their average total drug cost was 990.94 Baht. In drug cost per day basis, the results showed that the average anti-diabetic drug costs per day between two patient groups were not significantly different (p > 0.05). However, their average total drug costs per day were significantly different (p < 0.05). The average total drug cost per day of the patients who paid out-of-pocket was 26.76 Baht, while it was 17.56 Baht for the patients who did not pay for their prescriptions. Linear regression results showed that the patient’s type of payment significantly influenced both anti-diabetic and total drug cost per prescription and cost per day. CONCLUSIONS: A significant relationship between patient’s payment type and prescription drug costs for diabetic patients was found. The patients who paid out-of-pocket likely obtained more expensive prescription drugs than did the patients who did not pay for their prescriptions.

PDB33

PRESCRIBING TRENDS FOR COMBINATION PRODUCTS IN THE TREATMENT OF TYPE-II DIABETES

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OBJECTIVE: To examine prescribing trends of combination oral hypoglycemic therapy for persons with Type-II diabetes using prescription claims. METHODS: Prescribing trends were identified for patients using combination oral hypoglycemic agents for the treatment of diabetes during a three-month period beginning November, 2003-January, 2004. Persons were considered newly treated with type II diabetes if there were no prescription claims for insulin or oral diabetes agents during a three-month period prior to the first prescription for a combination product. Trends in patients already receiving oral hypoglycemic agents or insulin who were identified if combination therapy was added after minimally three months of therapy or if oral hypoglycemic combination therapy was added to an existing treatment regimen during the three-month observation period. Current recommendations for use of combination therapy were compared to the results of prescribing trends obtained from administrative data. RESULTS: On average, approximately 661,811 persons were identified with combination therapy on a monthly basis (211,922 in November, 2003; 227,981 in December, 2003; 221,908 in January, 2004). Of these, on average approximately 130,708 received metformin/rosiglitazone, 491,380 received metformin/ glyburide, and 38,011 received metformin/glipizide. Several prescribing trends were observed for these agents. Despite literature to the contrary, the combination metformin/rosiglitazone was prescribed as initial therapy for 19% of patients receiving prescriptions for that product. Combination products were prescribed as initial therapy for 11% to 19% of patients depending on product. Almost 1% of patients received a combination product plus two or more agents on a monthly basis. A small number of patients received two combination products in their daily regimen. CONCLUSION: Approximately one-fifth of patients receive initial oral hypoglycemic therapy outside of current prescribing recommendations. The prescribing patterns observed from this data suggest the need for treatment regimen management and for plans to carefully study the economic impact of multiple regimen treatments.

PDB34

NEEDLESTICK INJURY IN NURSES CARING FOR PATIENTS WITH DIABETES

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Objective: To quantify the incidence and risk of needlestick injury (NI) in nurses caring for patients with diabetes. METHODS: Four hundred nurses caring for patients with diabetes in 381 hospitals throughout the United States reported on their experience with NI, focusing on those occurring within the past year. If respondents experienced multiple NI during this period, detailed data were collected on the most recent event. RESULTS: Of the 400 nurses, 313 (78.3%) reported having ever had a NI, 110 (27.5%) reported having had a NI within the last twelve months, and 44 (40% of those 110) reported multiple NI. Nearly two-thirds of these injuries (n = 73; 66.4%) were punctures that drew blood, resulting in one case of contracted hepatitis C. The cumulative annual incidence of NI events was 448 NI per 1000 nurses. Nurses reported the injury in adherence with existing policies in 21.8% of cases. Disposable syringes were involved in 88 (80%) of the events. In half of the injuries (n = 55), the needle device was equipped with a safety feature that was ineffective, primarily because it was not fully activated (n = 47; 85.5%) or it malfunctioned (n = 2 to 5; 3.6% to 9.1%). NI most commonly occurred while nurses were injecting insulin (n = 33; 30%). In the two weeks following their NI, 60.1% of nurses were more afraid of needled devices than before the injury and 41.8% felt anxious, depressed, or stressed. As a direct result of the NI, nurses missed 77 days of work. CONCLUSIONS: This study is the first to show the relatively high risk both of NI and of NI that draws blood among nurses injecting insulin with a disposable syringe. Additionally, this study reveals significant post-NI emotional distress, suggests significant under-reporting of NI to hospital officials, and demonstrates the need for a more effective needle safety device.

PDB35

FACTOR ANALYSIS AND PRELIMINARY VALIDATION OF INSULIN DELIVERY SYSTEM QUESTIONNAIRE

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OBJECTIVE: For patients with type-1 diabetes, having a preferred insulin delivery system may lead to better compliance and better clinical and patient-reported outcomes. The purpose of this study was to assess the reliability and validity of the Insulin Delivery System Questionnaire (IDSQ), an instrument developed to measure overall insulin satisfaction and preference for an insulin delivery system. METHODS: The IDSQ was administered to 137 patients with type-1 diabetes at screening, baseline, crossover, and endpoint of a randomized, noninferiority, crossover trial designed to compare the glycemic control of injectable vs. inhaled insulin. Psychometric analyses included internal consistency (Cronbach's alpha), factorial validity (principal component analysis with Promax rotation), discriminant validity (ANCOVA model with baseline score and other covariates), and responsiveness (t-tests). RESULTS: Exploratory factor analysis indicated that there were three factors accounting for 73% of the variance. All items loaded above >0.50 on either Factor one, lifestyle impact; Factor two, ease of dosing; or Factor three, satisfaction/preference with the exception of the “easy to control my blood sugar” (BG) item. Cronbach's alpha coefficients calculated for the factors were 0.93, 0.86, and 0.86,
respectively. Each of the three factors and the BG item discriminated between those patients who preferred inhaled insulin and those who preferred injectable insulin (all \( p < 0.001 \)). Factors one and three and the BG item demonstrated the ability to detect change from baseline (injectable treatment) to following treatment with inhaled insulin (all \( p < 0.001 \)). Factor analysis and interscale correlations indicated that the 16 items could be summed to a total IDSQ score. Cronbach’s alpha for the total score was 0.93. CONCLUSION: The IDSQ is a reliable and valid instrument to assess insulin delivery system satisfaction in patients with type-1 diabetes.

PDB36

RELIABILITY AND VALIDITY OF THE GENERAL DIABETES KNOWLEDGE TEST

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OBJECTIVES: Public health education is a cornerstone in primary prevention of diabetes mellitus (DM). However, valid and reliable tools to evaluate outcomes of DM education among the general public are lacking. We aim to evaluate the reliability and validity of the General Diabetes Knowledge Test (GDKT) for use among subjects with and without DM. METHODS: The GDKT is a 36-item questionnaire (range 0–100) constructed based on existing public DM education materials and covers six content areas: overview, risk factors, symptoms, complications, management and monitoring (for both Type-1 and 2 DM). To achieve wide representation, English-speaking subjects (aged > 21) were recruited by convenience sampling at a public health promotion event. The GDKT was first administered to 54 DM and 42 non-DM subjects. Eighteen subjects voluntarily participated in retest (all were DM). Internal consistency of GDKT was assessed using Kuder-Richardson Formula 20 (KRF20). Item difficulty was assessed by calculating the ratio of number of correct answers to number of respondents, range 0.00 (most difficult) to 1.00 (least difficult) and compared between DM and non-DM subjects using Students’ t-test. Test-retest reliability was assessed using intraclass correlation coefficient (ICC). Construct validity was assessed using a known-group approach where DM subjects were expected to have higher GDKT scores than non-DM subjects. RESULTS: Internal consistency of GDKT was high (KRF20 = 0.9289). Item difficulty ranged from 0.59–0.97 and was significantly different (\( p < 0.05 \)) between subjects with and without DM for 8 items. Test-retest reliability was moderate (ICC = 0.54, median = 94.4, range = 72.2–100.0, 95% CI: 0.77). Mean scores at first (91.8 ± 9.83) and second (93.3 ± 1.24) administrations were not significantly different (\( p = 0.38 \)). As expected, DM subjects reported better mean (±SD) GDKT scores (90.8 ± 11.35) compared to non-DM subjects (85.7 ± 20.80) although the difference was not statistically significant (\( p = 0.13 \)). CONCLUSION: The internal consistency and construct validity of the GDKT was demonstrated in this study.

PDB37

HEALTH ECONOMIC COMPARISON OF INSULIN ASPART, A FAST-ACTING INSULIN ANALOG, VERSUS HUMAN INSULIN AS MEALTIME INSULIN IN THE TREATMENT OF TYPE-1 DIABETES IN AUSTRIAN, DANISH, DUTCH, FINNISH, GERMAN, NORWEGIAN, SPANISH AND SWEDISH SETTINGS

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OBJECTIVES: The aim of this study was evaluate the long-term costs and clinical outcomes of using either insulin aspart or human insulin (HI) at mealtimes in patients with type-1 diabetes, based on the clinical findings of a multicentre, randomized, open-label comparative trial in 882 patients, which showed that mean \( \pm \)SEM HbA1c was lower after 12 months with insulin aspart than with HI (7.78 ± 0.03 versus 7.93 ± 0.05, \( p = 0.005 \)). METHODS: Long-term clinical and cost outcomes were estimated using the CORE Diabetes Model, a peer-reviewed, validated model that employs standard Markov/Monte Carlo simulation techniques to describe the incidence and progression of diabetes-related complications. Transition probabilities were derived from major clinical studies. Published country-specific costs, health care resource utilization, clinical data and recommended discount rates were used. A lifetime horizon and third party payer perspective was taken (direct costs only). Extensive sensitivity analyses were performed. RESULTS: Discounted quality-adjusted life expectancy (QALE) was improved by 0.08 to 0.22 years with insulin aspart versus HI in the nine countries investigated. Lifetime cost savings were observed with insulin aspart in the Austrian, Dutch, French, and Norwegian settings. Overall costs were increased with insulin aspart versus HI in Denmark, Finland, Germany, Spain and Sweden, with incremental cost-effectiveness ratios of DKK20,814, €4434, €9553, €20,916 and SEK32,541 per QALY gained respectively. CONCLUSION: Improvements in glycemic control associated with insulin aspart led to improved QALE due to reduced incidence of complications versus HI. Insulin aspart was projected to be either cost-saving or cost-effective compared to HI over patient lifetimes according to accepted international thresholds.

PDB38

MEASURING THE EFFECT OF THE VARIABILITY OF INSULIN USE ON HEALTH CARE COSTS IN DIABETES

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OBJECTIVES: Using claims data, develop a measure of variability in insulin use that could be used as a proxy measure of non-adherence to insulin. Measure the effect of variability of insulin use on total and diabetes-attributable health care costs in a managed care population. METHODS: Using a large managed care administrative claims database, all patients with a prescription for long- or intermediate-acting insulin from January, 2000 through June, 2001 were selected (\( n = 12,336 \)) from among continuously eligible patients age 18 years and older. Total insulin units dispensed with each prescription were computed by multiplying quantity (ml) from the claims data and strength (units/ml) from NDC reference data. Units-per-day were computed for each prescription pair by dividing units dispensed by the number of days until the next prescription. A time series of units-per-day was created for each patient during a one year follow-up period.