CONTRIBUTED PODIUM PRESENTATIONS

PODIUM SESSION I: DIABETES

RATES AND RISKS OF STARTING INSULIN IN DIABETES MELLITUS TYPE-2 PATIENTS

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Switching from oral antidiabetics to insulin injection is perceived as a major barrier by diabetes mellitus type-2 patients with fear for injection of insulin, but little is known about the extent. OBJECTIVE: To estimate the rate of starting insulin in newly identified diabetes mellitus patients, in patients starting a combination of two oral antidiabetics and in patients with uncontrolled HBA1c levels while taking two oral antidiabetic agents. METHODS: A retrospective cohort study was conducted in the IPCI general practice database during the period 1996–2004. Patients with diabetes mellitus type II (DM-2) were classified as prevalent if DM-2 was diagnosed prior to entry in follow-up and as incident if diagnosed during follow-up. Three cohorts were identified to assess the rate and risk of starting insulin. Cohort A: all incident DM-2 patients, cohort B: all patients newly starting with a multiple pill oral combination therapy, Cohort C was a subset of B and comprised all patients on oral combination therapy who had uncontrolled HBA1c levels after at least 3 months of treatment. RESULTS: The source population comprised 5693 incident and 7456 prevalent DM-2 patients. In incident DM-2 patients 80% was treated pharmacologically within one year, 3% received an insulin based regimen as initial treatment, 76% started on a single oral antidiabetic. The rate of starting insulin was 6.6/100 PY for patients in cohort B (n = 1858). The one-year risk of starting insulin in cohort C (n = 1167) was 3.8% (2.1–5.5%) for patients with HBA1c between 7–8% and 14.3% for patients with HBA1c above 8% at cohort entry. CONCLUSION: The rates and one-year risks of starting insulin are low even in DM-2 patients who remain uncontrolled after at least three months of oral combination therapy.

INSULIN THERAPY AMONG TYPE 2 DIABETES PATIENTS: IMPACT OF CONVERSION TO A PEN DEVICE ON ADHERENCE, HYPOGLYCEMIC EVENTS, AND COSTS

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OBJECTIVE: This study sought to evaluate the impact of converting to insulin administration with an analog insulin pen device from vial/syringe on adherence, hypoglycemic events, and health care costs among type 2 diabetes patients. METHODS: A pre-post conversion approach was adopted using an integrated medical and pharmacy claims database from >50 managed care health plans in the United States. Adults diagnosed with type 2 diabetes who converted to insulin pen therapy (FlexPen™) from either human or analog insulin vials between July 2001 and December 2002 with no prior use of FlexPen™ for six months were identified and retrospectively analyzed. Endpoints included adherence (medication possession ratio (MPR)), follow-up time adjusted odds ratio of hypoglycemic events, association between adherence and hypoglycemic events in a Poisson multivariate context, and diabetes-attributable (DA) and hypoglycemia-attributable (HA) costs. RESULTS: A total of 1156 subjects were identified and included (mean age 45.4 + 13.7; 51.5% previously on human insulin vials). Post-conversion, adherence improved significantly (MPR: 69% vs. 62%; p < 0.01). Additionally, fewer hypoglycemic events were observed [OR: 0.50 (CI: 0.37–0.68); p < 0.05] and such events requiring either emergency department visits and physician visits decreased by 56% [OR: 0.44 (CI: 0.21–0.92)] and 61% [0.39 (CI: 0.24–0.64)], respectively (p < 0.05). Incidence of hypoglycemic events in subjects with MPR > 70% as confirmed by a Poisson multivariate analysis, dropped by nearly two-thirds (0.35 (0.11–0.81); p < 0.05). Total annual HA costs fell 7% ($8827 vs. $8227; p < 0.01). CONCLUSIONS: Converting to insulin pen therapy from administration with vial/syringe was associated with improved adherence, which in turn was correlated with fewer hypoglycemic events and lower treatment costs among type 2 diabetes patients. Future studies should examine the impact of earlier use of insulin pen therapy on patient adherence as well as clinical and economic outcomes.

GLYCEMIC RESPONSE TO NEWLY INITIATED ANTIHYPERGLYCEMIC THERAPIES IN A LARGE MANAGED CARE ORGANIZATION

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OBJECTIVES: Comparisons of “real world” effectiveness of diabetes treatments within a single population are rare. We compared glycemic response after the addition of any of the four most commonly used therapeutic classes (metformin, sulfonylureas, insulin, thiazolidinediones) for type 2 diabetes. METHODS: We studied 15,126 type 2 diabetes patients initiating a single new antihyperglycemic therapeutic class (new user design) in 1999–2000 in Kaiser (health plan in USA). In ANCOVA models, we assessed pre-post (3–12 months after initiation) change in glycosylated hemoglobin (A1C), adjusted for baseline A1C, other antihyperglycemic therapy, demographics,
behaviors, medication adherence, clinical factors, and quality of care. Cross-product terms were specified to evaluate differential effectiveness for subjects with differing clinical conditions including renal insufficiency based on GFR, obesity, longer duration of diabetes, and older age. RESULTS: AIC was lowered by 1.14 points (95% CI: 1.11–1.17) within one year after initiating new therapy, but only 30.2% (95% CI: 29.2–31.1%) achieved target (AIC < 7%). Mean AIC was 9.01 (8.98–9.04) prior to initiation and 7.87 (7.85–7.90) at 3–12 months after baseline. While baseline disease severity differed across initiators of each therapeutic class, there were no statistically significant differences in glycemic lowering across classes, or across clinical conditions. CONCLUSIONS: Therapy initiation resulted in an impressive population-level benefit, similar in magnitude to that reported in randomized trials. Nonetheless, most patients failed to achieve glycemic targets after initiation possibly because providers had delayed intensification or patients failed to fill earlier prescriptions until they had advanced to very poor control. While no population-level differences in response by therapy were detected, in any one patient, differential response by class can not be excluded. The substantial glycemic response following initiation suggests that providers are probably choosing therapies for intensification wisely, but that earlier addition of a new agent may be beneficial.

SELF MONITORING OF BLOOD GLUCOSE IN PATIENTS WITH TYPE 2 DIABETES: COST UTILITY ANALYSIS IN A UNITED STATES THIRD-PARTY PAYER SETTING
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OBJECTIVES: Previous studies have shown that for patients with type 2 diabetes, self monitoring of blood glucose (SMBG) can improve glycemic control (with HbA1c improvements of 0.3–0.6%), depending on treatment received. This in turn, can reduce risks of disease complications. Because monitoring supplies can have high acquisition costs, country-specific evaluations of SMBG cost-effectiveness are needed. The aim of this analysis was to estimate, within a US setting, the cost-effectiveness of using SMBG. METHODS: A validated, published model for type 2 diabetes (The CORE Diabetes Model) was used to project improvements in quality-adjusted life expectancy (QALE), long-term costs and cost-effectiveness of SMBG. A series of Markov models simulated the progression of diabetes-related complications (cardiovascular, neuropathy, renal and eye disease). Transition probabilities and HbA1c-dependent adjustments came from major epidemiological studies. Costs of complications were derived from published sources. From a US third party payer perspective, direct costs of diabetes complications and of SMBG were projected over patient lifetimes. Outcomes were discounted at 3% annually. RESULTS: Depending on type of treatment (diet/exercise, oral medications, or insulin), greater glycemic control with SMBG improved (discounted) QALE by 0.13 to 0.32 QALYs and increased total costs by $2089 to $4661 per patient. The resulting incremental cost-effectiveness ratios ranged from $13,848 to $35,880 per QALY gained, and were well within current willingness-to-pay limits. SMBG was most cost-effective in patients being treated with oral antidiabetic medication, and those being treated with insulin therapy. CONCLUSIONS: Within the three treatment regimens examined, the addition of SMBG was associated with increased glycemic control and with improved clinical and economic long-term outcomes. The incremental cost-effectiveness ratios were of magnitudes typically considered to indicate good value for money. Additional comparative studies are needed to further assess Utilities and other standard outcomes associated with SMBG in patients with type 2 diabetes.

ECONOMIC STUDIES I

COST-UTILITY ANALYSES OF NEW MEDICAL TECHNOLOGIES: OFTEN COST-EFFECTIVE, SOMETIMES COST-INEFFECTIVE, DOMINANT, OR DOMINATED, BUT ALMOST NEVER “DECREMENTALLY” COST-EFFECTIVE
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OBJECTIVES: Technological innovations may be cost-increasing and quality-improving (CIQI), cost-saving and quality-improving (dominant), cost-increasing and quality-decreasing (dominated), or cost-saving and quality-decreasing (CSQD). We endeavored to determine how cost-utility analyses of new medical technologies are distributed across these categories. METHODS: We systematically searched computerized databases including MEDLINE, HealthSTAR, CancerLit, Current Contents and EconLit to identify cost-utility analyses published in 2002 to 2003. Trained auditors summarized each study using standardized forms. All costs were converted to 2002 US dollars. RESULTS: We identified 640 separate published cost utility analyses. These papers compared 657 interventions against a standard. Of analyzed interventions, 79.0% (519) were CIQI, 13.5% (89) were dominated, 6.7% (44) were dominated, but only 0.8% (5) were CSQD. Among CIQI interventions, 64.6% (335) had a cost-effectiveness ratio (CER) below $50,000 per QALY and 79.0% (410) had a CER below $100,000 per QALY. Among CSQD interventions, 60% (3) had a CER below $50,000 per QALY and 2 had a CER above $100,000 per QALY. CONCLUSIONS: Most published cost-utility analyses are performed on CIQI technologies, and most of these have a CER below conventionally accepted thresholds. Cost-utility analyses of CSQD technologies are extremely rare.

DIRECT MEDICAL COSTS OF SOLID ORGAN TRANSPLANT IN BRITISH COLUMBIA, CANADA
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OBJECTIVE: Solid organ transplants are among the most resource intensive of treatments. There exists only limited knowledge of the current costs of solid organ transplants in Canada because existing studies were derived from single centres, included different resource categories, covered different time periods, and used different cost methodologies. The purpose of this study was to derive population-based estimates of the direct medical costs of kidney, liver, lung and heart transplants in British Columbia (BC), Canada, from 1995 to 2003. METHODS: Province wide resource utilization data were extracted from the BC Transplant Society. This population-based registry includes records of all persons undergoing solid organ transplantation in BC. Unit cost data were obtained from publicly available sources. Health resources categories included inpatient hospital stays, outpatient visits, physician fees, laboratory and diagnostic tests and immunosuppressive medications. Mean (standard deviation (SD)) costs were derived separately for the transplant pro-