Diabetes is the fourth leading cause of death in the U.S. and a major cause of blindness and heart disease. Studies have demonstrated that tight glycemic control prevents long-term microvascular/macrovascular complications and may offset the associated substantial healthcare costs. It has been demonstrated that 1.0% or greater improvement in glycemic control resulted in cost saving of $685–950/patient/year.

OBJECTIVES: To evaluate relationship between total healthcare costs/utilization and changes in hemoglobinA1c (HbA1c) levels as a proxy for aggressive glycemic control in type2 diabetic patients.

METHODS: A retrospective database analysis of laboratory data, pharmacy, and medical claims from a managed care organization. Patients were selected from a comprehensive diabetes management clinic and had at least two HbA1c tests that were between 3 and 9-months apart. All patients had at least one oral anti-diabetic medication 6-months prior to the first HbA1c-test. Follow-up time was between two HbA1c tests and varied among patients. Costs and utilization per-member-per-month were compared between two cohorts, improving glycemic control and worsening control stratified by HbA1c changes (+/-1%). Outcomes were adjusted by age, gender, co-morbid conditions, insulin-use, previous hospitalizations, physician visits, and prescription counts.

RESULTS: A total of 491 patients were identified, with mean age of 70.8 (+/-10.5) years, 46.6% female (n = 229), and mean initial-HbA1c-level of 7.2% (+/-1.4; min = 3.5, max = 13.8). Among them, 45.2% (n = 222) exhibited improved-control and 48.9% (n = 240) exhibited worsened-control. Patients with improved control had significantly higher adjusted average hospital costs than those who worsened, $1,374 vs. $449 (p < 0.05). Although not statistically significant, patients with improved control had a higher average number of anti-diabetic medications and physician visits than those who worsened.

CONCLUSIONS: Improved glycemic control is associated with greater short-term health care utilization and costs. Despite relatively well managed by the specialty-clinic, patients showed further improvement in glycemic control after hospital events. Future research is needed to assess the long-term impact of glycemic control on healthcare costs.

OBJECTIVE: To compare health services utilization and cost among commercially insured users of lispro insulin and non-lispro regular insulin.

Type 2 diabetes causes a significant economic burden on the healthcare system in developed countries. Management of macro and micro vascular complications contributes as a major part of the direct costs.

OBJECTIVE: Estimate the incidence, prevalence, current management and direct costs of cardiovascular and renal complications in type 2 diabetic patients in the French setting.

METHOD: A representative sample of 5,478 diabetic patients was randomly selected from a database collecting on-line medical data in a network of 650 French GPs. Patients were selected on the criteria of at least two visits to their physician on the period May 2000–April 2001. A questionnaire was sent by mail to the GPs to collect additional retrospective medical data on renal and cardiovascular complications. Corresponding costs were estimated with unit costs from external sources.

RESULTS: The mean duration of diabetes was 10.0 years and the mean age was 64 years. 29% of patients had a Hb1c <6.5% and 39.2% in the range 6.5–8%. Annual incidence of main complications (Myocardial Infarction, Stroke, Congestive Heart Failure, Chronic Renal Insufficiency and End-Stage Renal Disease) were estimated in the range 0.54 to 1%. 48% of the patients had BP > 140/80mmHg. The study showed that 26.7% of patients had no Hb1c testing during the last year, 48% no LDL cholesterol, 40% no creatininemia and 60% no ophthalmologic surveillance. The direct annual costs associated with these complications were estimated 1 Billion Euros for the whole French diabetic population (1.5 million). Contribution to this cost was as following: stroke 36%, MI 22.2%, CHF 17.4% and ESRD 24.4%.

CONCLUSION: Considering the current glycemic control and the quality of management of diabetic patients, substantial benefits could be achieved that would reduce the extra-costs of complications.
METHODS: This study used administrative claims data to identify continuously enrolled patients using insulin between 1/1/98 and 12/31/99. During a six-month identification period, patients receiving one or more prescriptions for lispro were categorized as lispro patients. Non-lispro patients were then matched to lispro patients using a Propensity Score (PS) derived from baseline characteristics. The PS model included variables such as age, gender, comorbidities, oral hypoglycemic use, dominant physician specialty, health plan location and baseline costs. After 1:1 matching, 12 months of follow-up cost and utilization data were then compared using unmatched t-tests.

RESULTS: Of 11,443 patients, 3,341 (29.2%) had at least one prescription for lispro insulin, while the remaining 8,102 (70.8%) had at least one regular (non-lispro) insulin prescription. At baseline, lispro patients tended to be younger, were more often Type 1 with a history of insulin use, had fewer comorbidities, visited endocrinologists over family practice physicians and had lower total costs. PS balancing assured that only the 1,832 most appropriate patients of each type were then used in outcomes comparisons. Lispro patients had significantly higher average office visits (p = 0.0022) and pharmacy prescriptions (p = 0.0163) but lower inpatient hospital visits (p = 0.0028) compared to non-lispro patients. Cost results were similar with lispro insulin patients having significantly higher average office visit costs (p = 0.0237) and pharmacy costs (p < 0.0001) but lower inpatient hospital costs (p = 0.0227). Total costs were not significantly different (p = 0.5266).

CONCLUSIONS: Lispro insulin and non-lispro regular insulin patients did not incur significantly different total costs. While lispro patients had higher pharmacy and office visit costs, they did not incur higher total medical costs. More intensive ambulatory care in such chronic disease patients does not appear to be associated with higher overall medical costs.

DIABETES—Quality of Life Presentations

PDB12

FACTORS PREDICTING SELF-RATED HEALTH AND PATIENT SATISFACTION IN A MANAGED CARE DIABETES POPULATION

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OBJECTIVES: To determine the relationship of demographics, severity of illness and quality of care measures with general health perception (GHP) and patient satisfaction (PS) levels among managed care diabetes patients.

METHODS: The sample included 300 adult diabetes patients enrolled in an IPA-model HMO. All data were collected through surveys and medical claims. Survey data from July 1999 were merged with medical and pharmacy claims data from July 1998 through June 1999. Our analysis consisted of two multiple regression models with GHP (100 point transformed scale, higher score = better health) and PS (9 point scale, higher score = greater satisfaction) being the dependent variables, respectively. Predictor variables in both models included: demographics (age, gender, education, income), severity of illness (insulin use, duration of diabetes), number of comorbidities, receipt of foot and eye exams, diabetes education, lipid tests, microalbumin tests, frequency of self-monitoring of blood glucose, and the frequency of tests for HbA1c and blood glucose.

RESULTS: Mean (SD) for GHP and PS scores were 49.8 (25.0) and 7.8 (1.8), respectively. The $R^2$ for model 1 (GHP) and model 2 (PS) were 0.20 and 0.10, respectively. Significant predictors (p < 0.05) of GHP included comorbidities (beta = 0.11), income (beta = 0.26), and HbA1c tests (beta = 0.19). Thus, higher GHP was associated with having fewer comorbidities, higher income and more frequent testing of HbA1c in the prior year. Significant predictors of PS included comorbidities (beta = 0.15), foot exams (beta = 0.16), and diabetes education (beta = 0.16). Thus, higher satisfaction was associated with fewer comorbidities, receipt of a foot exam from any healthcare provider, and participation in a diabetes education program.

CONCLUSION: When controlling for demographics, comorbidities and severity of illness, those patients who received more frequent HbA1c monitoring reported higher self-rated health, and patients who received foot exams and diabetes education were more satisfied with the care they received for diabetes.

DIABETES—Health Policy Presentations

PDB13

TRENDS IN INSULIN THERAPY FOR TREATMENT OF TYPE-2 DIABETES MELLITUS

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OBJECTIVES: New oral antihyperglycemic drugs (OADs) have been introduced in recent years, and diabetes treatment guidelines are increasingly suggesting that insulin be used for type-2 diabetes only when other therapies are ineffective. This study evaluates the resulting impacts on trends in insulin mono and combination therapies for type-2 diabetic patients from 1997–2000.

METHODS: Commercially insured patients who had one or more diabetes diagnoses or drugs are selected from over 3 million employees, retirees, and dependents in each of the years 1997–2000 of The MEDSTAT Group MarketScan database. Patients likely to have type-1 diabetes are identified and removed from the database. Descriptive analyses compare the percentages of type-2 diabetes patients treated with insulin monotherapy and specific combination therapies in each of the four years.