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DIRECT HEALTH CARE COSTS OF DIABETES MELLITUS IN HUNGARY

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OBJECTIVES: Diabetes mellitus is responsible for a huge burden of disease. Our objective was to estimate the direct health-care costs of patients with diabetes in Hungary. **METHODS:** Real-world data were retreived from the National Health Insurance Fund database. Diabetic patients were defined as persons who filled in a prescription of oral antidiabetics (OAD) or insulin in Q3-Q4 2007. Study population was divided into two groups depending on whether they were hospitalized for major complications of diabetes in 2007–2008. Patients without hospitalization were further divided into three subgroups according to the use of drugs (only OAD, only insulin, OAD and insulin). In all subgroups, we estimated health-care costs for each cost item by age group in the whole study group and among those who actually used a particular service. Additionally, we took samples of patients who were hospitalized for specific complications, and estimated health-care costs for the first and second year after the occurrence of the complication. Hungarian Forint values were converted to Euros by employing the 2008 GDP specific PPP exchange rate (1€ = 157.64HUF). **RESULTS:** Mean health-care cost of 521,545 diabetic patients was €2125 in 2008. It was €4016 for those with hospitalization for complications, €1533 for OAD users without complications, and €2847 for insulin users without complications. Fifty-three percent of the total cost covered drug treatment and 27% acute hospital treatment; 26% of the total drug cost was spent on OADs and on insulin. **CONCLUSIONS:** Health-care cost of diabetes is already high in Hungary, especially care for its complications. Public health-care cost of diabetes exceeds 0.65% of GDP and 13% of total direct public health-care expenditure. Considering the burden of disease that manifests in premature mortality, reduction in QoL, and high cost, and the epidemiological trends, diabetes mellitus should be a public health priority in Hungary.

PDB25

RELATIONSHIPS OF QUALITY OF LIFE AND COSTS WITH CLINICAL CHARACTERISTICS OF DIABETES PATIENTS

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BACKGROUND: Recent research suggests that direct medical costs and quality of life in diabetes depends on number of diabetes-related complications. **OBJECTIVES:** To analyze relationships of quality of life and medical costs with clinical characteristics of diabetes mellitus patients. **METHODS:** A retrospective longitudinal cost of care study was conducted; type 1 and 2 diabetic patients accessing at two hospitals in the north-east area of Italy were recruited between October 2008 and March 2009. At enrollment data on demographic, clinical status and QoL (EQ-5D) were collected. Information on costs occurring during the previous 2 years was obtained from a chart review: hospitalizations, specialist medical visits, diagnostic examinations, drugs, and the main clinical parameters. Costs were quantified from the National Health Service (NHS), by applying tariffs and prices valid in 2009. Data were analyzed with a multivariable linear regression model. **RESULTS:** A total of 411 valid patients (mean + SD age = 64.1 + 12.7, 56.5% male) were enrolled: 15.9% had type 1, 83.4% type 2 diabetes, and 0.7% had other type of diabetes. Costs were on average €234.36/patient-month; hospitalization accounted for the greatest proportion of costs (58.5%), followed by pharmacological therapies (32.6%) and diagnostic exams (8.9%). With EQ-5D: VAS was on average + SD = 67.74 ± 16.71. Both Costs and HRQoL showed a linear-positive (costs) and -negative (HRQoL) relationship with number of diabetes-related complications (diabetic retinopathy, diabetic nephropathy, diabetic neuropathy, ischemic cardiopathy, vascular diseases, and diabetic foot), adjusting for age and gender and type of diabetes. On the contrast, no relationship was found with type of complications. **CONCLUSIONS:** Long-term complications carry a considerable impact on medical cost and HRQoL. Although apparently costly, strategies aimed to optimize the prevention of the onset of diabetic complications should be considered as a potential investment to gain health and reduce costs in the long run.

PDB26

ECONOMIC BURDEN OF PAINFUL DIABETIC PERIPHERAL NEUROPATHY IN KOREA

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OBJECTIVES: The painful diabetic peripheral neuropathy (DPN) is the most common complication of diabetes. Despite the prevalence of painful DPN and its potential risk of foot ulcer and amputation, there has been no study about painful DPN on economic burden in Korea. This study was conducted to assess the patient-level economic burden among subjects with painful DPN. **METHODS:** A cross-sectional multicenter study was performed using a standardized questionnaire, to estimate recent 3-month health-care and non-health-care cost, and productivity loss of diabetic patients. a total of 4000 patients were recruited from 40 hospitals between December 2009 and May 2010. Cost items mainly included health-care cost such as outpatient, pharmacy, inpatient, and oriental medicine; non-health-care cost such as traffic expenses, nursing cost, complementary, and alternative medicine. Cost included insurance-covered cost as well as patient's out-of-pocket expenses during 3 months. To estimate productivity loss due to morbidity, days away from work due to painful DPN were also investigated. **RESULTS:** Among 2681 diabetic patients completed questionnaire (response rate = 67.0 %), 26.3% (n = 706) had painful DPN. Numbers of outpatient visit within 3 months were higher in patients with painful DPN compared to those in patients without painful DPN, 3.79 ± 2.83 and 3.25 ± 2.36, respectively ($P < 0.01$). Total costs over 3 months were also higher in patients with painful DPN than in those without painful DPN (1,049,477 ± 1,549,446 and 721,933 ± 1,394,970 KRW, respectively, $P < 0.01$); Median costs were higher among patients with painful DPN (656,585 vs. 421,668 KRW). Within 3 months, 8.2% and 43.5% of patients with painful DPN had been away from work and reported the decreased work productivity, respectively. **CONCLUSIONS:** Painful DPN increased health-care cost and decreased work productivity of diabetic patients in Korea.

PDB27

INDIRECT COSTS OF ILLNESS FOR DIABETES IN PORTUGAL

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OBJECTIVES: As in so many other countries, diabetes is one of the largest health problems faced by Portugal. Up to now, there have been no "cost of illness" studies for diabetes in Portugal. This paper provides a contribution to fill that gap by estimating the indirect costs of illness, more specifically the output loss due to short- and long-term disability attributable to diabetes in Portugal. **METHODS:** The estimates are based on the microdata of the 4th National Health Survey conducted in 2005/2006. An employment logit is estimated with covariates including age, gender, education levels, and regional dummies as well as a dummy for diabetes and dummies for other relevant health conditions for all people in the survey with ages between 20 and 74. a comparison of the baseline labor market participation/employment estimates and model predictions assuming zero diabetes prevalence provides the estimates for the labor market impact of diabetes. The estimates are specified by age groups and gender. At this point, the analysis uses microdata from the Labor Ministry, covering about 3 million workers, to estimate gross wages and employer Social Security contributions by age and gender, allowing us to use the human capital approach to put a value on the diabetes-induced labor market nonparticipation. **RESULTS:** The nonemployment estimates generated by the logit-based methodology are that diabetes reduces employment by 22,150 in a 4.6 million demographic group. The corresponding output loss is estimated to have been €324 million. **CONCLUSIONS:** The output loss is one of the main costs of diabetes in Portugal. Its amount is four times larger than the available estimates for diabetes' attributable inpatient care in National Health Service hospitals.

PDB28

HEALTH INSURANCE COST OF DIABETES MELLITUS IN HUNGARY: A COST OF ILLNESS STUDY

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OBJECTIVES: Diabetes is one of that chronic diseases in which the increase of the costs cause financial problems for the National Health Insurance Fund in Hungary. Aim of the study is the examination of it in a 5-year period from 2003 to 2008. **METHODS:** The number of diabetic patients, the type of treatment services, the financial support, and the costs were analyzed. Data were derived from the National Health Insurance Fund Administration. **RESULTS:** Measuring by the medical ID, the numbers of patient increased by 34% during 5 years. The numbers of case increased in the outpatient services by 14% (from 213,790 to 243,960). The numbers of the hospital treatment day decreased by 5% (3,342,857; 3,168,263) The day off work due to sickness and the cost of it increased by 345% (from 8275€ to 36,860€). While financial support of devices for the measurement of blood sugar increased by 93% €4900 to €9400 and support of insulin treatment increased 111%, than the increase of the number of insulin-treated patients was only 46%, 91,920 (2003) and 134,617 (2008). Similarities were seen in numbers (40%) and in costs (94%) in the noninsulin-treated patients from 195,662 to 274,886 and from €7900 to €15,300. The total change in financial support was 72%. **CONCLUSIONS:** Increase in the number of diabetic patients was seen during this 5-year period. The increase of the number in outpatient services was higher than in inpatient services. The decrease in numbers of hospital bed could explain it. The economic crisis could cause the growing in the numbers of day off work. The increase in the medical financial support compared to the number of patients had to be mentioned, because it could be caused by enhancement in the administration of the innovative medical products. Basic strategy should be found against health cost explosion.

PDB29

COST OF DIABETES MELLITUS TYPE 1 AND 2 STUDIES IN COUNTRIES OF CENTRAL AND EASTERN EUROPE—A SYSTEMATIC REVIEW OF THE LITARATURE

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OBJECTIVES: Despite the rapid development of pharmacoeconomics and outcomes research in new countries joining European Union (EU), there is still scarcity of cost of illness studies compared to old EU members. The aim of the study was to review all studies concerning costs of diabetes type 1 and 2 and its complications in old and new EU members. The following countries were taken into account: Slovenia, Poland, Czech Republic, Hungary, Slovakia, Bulgaria, Romania, Lithuania, Latvia, and