studies was intermediate (score: 17 of 28). Almost all studies examined objective health measures, with most indicating non-significant differences between the Maps™ intervention and the control group's mixed results were found regarding the influence on HbA1c. The majority of studies reported no significant change in blood pressure and mixed results were found regarding other health indicators. Only five studies examined subjective measures and that they influence health behaviors, mostly reporting non-significant or positive findings. CONCLUSIONS: This review provides evidence about the limited number and relatively low quality of studies, which examined the influence of Maps™ on health outcome. Of note, the Maps™ hold the potential to improve health outcomes, there is a need to develop well-designed large-scale studies that enable to draw more conclusive results.

PD116
THE ROLE OF EDUCATION IN THE MANAGEMENT OF TYPE 1 DIABETES MELLITUS IN ENGLAND
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OBJECTIVES: Type 1 diabetes mellitus (T1DM) affects approximately 400,000 people in the UK, amounting to £1.8 billion in direct healthcare costs in 2012. Statistics from 2012/13 national diabetes audit (NDA) suggest that 92.4% of T1DM patients in England fail to achieve target haemoglobin A1C (HbA1c) levels (<8% mmol/mol [6.5%]). Current NICE draft guidance recognizes the importance of education on glycemic control; recommending courses for all T1DM patients within one year of diagnosis. However, only 4.1% of newly-diagnosed diabetics are offered structured courses such as the Dose Adjustment for Normal Eating (DAFNE). We sought to determine the relationship between educational course availability and uptake, and diabetes control (HbA1c achievement). METHODS: Educational course attendance data and HbA1c results for T1DM patients were extracted from the 2012/13 NDA for 9 regions in England, and DAFNE centre location records for 2014 were obtained. We explored the relationship between educational course uptake and optimal HbA1c achievement in newly-diagnosed patients, and also the number of DAFNE centres against overall T1DM HbA1c achievement. RESULTS: Newly-diagnosed T1DM patients have a far lower uptake of DAFNE courses compared to the general population. However, no association was found between education course uptake or the number of DAFNE centres per region, and optimal HbA1c achievement in newly-diagnosed patients. A weak positive correlation was found between the number of DAFNE centres per region and the overall T1DM population achieving optimal HbA1c (R2=0.3). CONCLUSIONS: Educational courses may help T1DM patients achieve better glycaemic control. However, uptake for courses is below current NICE draft recommendations. Increasing uptake for such courses could help improve target HbA1c achievement in the long-term, whilst also providing a societal benefit through cost savings. Examining potential socio-economic factors and their impact on course uptake could be investigated. More research is required into educational course uptake in the overall T1DM population.

PD117
DIABETES IN TURKEY: ANALYSIS OF PATIENT CHARACTERISTICS
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OBJECTIVES: As the number of people with diabetes grows worldwide, it becomes a challenge to solve the problem for public health budgets. The objective of this study is to investigate and analyze the main characteristics of diabetes in Turkey. METHODS: Claims data from Turkish Social Security Institution were collected for the diagnosed patients in the years 2009-2014 (IDD and NIDD) and the number of diabetes patients diagnosed between 2010 and 2014. Prevalence, incidence, age and gender distribution, and patients in the overall T1DM population achieving optimal HbA1c were calculated. RESULTS: In Turkey(183) is 4.6 times higher than reference countries’ average (40) in 2014. Compared to 5 EU countries, total insulin to DPP4s utilization ratio is consistently the highest (540 in 2010 and 183 in 2014) in Turkey between 2010-2014. As the number of countries, the sales ratio of total insulin to DPP4s is in Turkey (7,2), followed by Italy(9) and France(13). In Portugal, Spain and France this ratio is below one, indicating a superior DPP4 value. Diabetes compared to insulin to DPP4s in Turkey is also present between 2010-2013. CONCLUSIONS: Turkey has the highest insulin to DPP4 ratio for over five years among other countries. DPP4s access restriction might have caused early and disproportionate insulinization of patients. From health policy perspective, implementation of access restriction might have led cost reduction in the short run, however it may cause greater burden due to shifts to later treatment line qualifications.

PD118
THE IMPACT OF HEALTHCARE POLICY BASED ON DRUG PLAN PERSPECTIVE VERSUS THE MINISTRY OF HEALTH PERSPECTIVE: A CASE STUDY OF THE ODPRN RECOMMENDATIONS OF RESTRICTING REIMBURSEMENT OF TESTOSTERONE REPLACEMENT THERAPY FOR HYPOGONADISM IN ONTARIO, CANADA
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OBJECTIVES: The Ontario Drug Policy Research Network (ODPRN) published recommendations to restrict reimbursement and implemented a wide range of testosterone replacement therapy (TRT) in Ontario. The ODPRN’s budget impact analysis (BIA) evaluated no reimbursement change (option A), restricting coverage of all forms of TRT (option B), restricting oral and topical forms only (option C), or restricting topical forms only (option D). The analysis assumed exponential growth of TRT expenditures and inappropriate use in 7%-46% of patients. The analysis was limited to drug prescription costs and excluded other costs affected by the recommendations, resulting in forecasted savings ranging from $7-$16 million over a 3-year period. JSS Medical Research performed the BIA from the ministry of health perspective. METHODS: Our hybrid epidemiological and claims-based BIA included costs of TRTs and key cost drivers, such as monitoring injectable TRTs, testosterone level testing and Exceptional Access Program evaluation and processing. Ontario prescription drug expenditures based on claims data, as well as published literature on drug cost impact were utilized. We evaluated the impact of the ODPRN scenarios with and without inappropriate TRT use over a 3-year period. RESULTS: Based on the JSS assumption of all patients qualifying for TRT and taking into consideration key cost drivers, option B would cost $1.01 million, option C $766,000, and option D $525,000. Based on ODPRN assumptions of inappropriate use, JSS forecasted savings of $737,000-$13,4 million as opposed to savings of $7-$16 million forecasted by the ODPRN. CONCLUSIONS: ODPRN savings exclude key cost drivers and assume a greater uptake shift. The burden of the policy change could completely offset savings and generate costs of up to $1 million to the healthcare budget. Healthcare policy recommendations based on drug costs alone underestimate the true cost, shifting, and in this case creating additional costs to other areas of the healthcare system.

PD119
DO ACCESS RESTRICTIONS ALWAYS IMPLY COST REDUCTION? CASE OF TURKISH DD4 MARKET IN TREATMENT OF TYPE II DIABETES
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OBJECTIVES: In Turkey, the DPP4 inhibitor market (metformin (Met) as first, Met + SU or other oral antidiabetic agents (i.e. DPP4is) or insulin as second or third line. This evidence based line allows the healthcare system in Turkey can be inclined to endocrinology or internal medicine specialists working on tertiary care since March 2010 to control DM treatment budget. This access restriction may naturally cause prescription shifts to non-restricted treatment options such as Met. The research’s objective is comparing yearly usage ratio of insulins and DPP4is in Turkey and 5 European country’s price reference countries. METHODS: Sales as international (USD) and value between 2010-2014 are obtained from IMS Dataview7. Yearly total sales of DPP4is as share of total sales is compared to other countries, France, Greece, Italy, Portugal, Spain. RESULTS: Insulin to DPP4is utilization ratio in Turkey(183) is 4.6 times higher than reference countries’ average (40) in 2014. Compared to 5 EU countries, total insulin to DPP4s utilization ratio is consistently the highest (540 in 2010 and 183 in 2014) in Turkey between 2010-2014. As the number of countries, the sales ratio of total insulin to DPP4s is in Turkey (7,2), followed by Italy(9) and France(13). In Portugal, Spain and France this ratio is below one, indicating a superior DPP4 value. Diabetes compared to insulin to DPP4s in Turkey is also present between 2010-2013. CONCLUSIONS: Turkey has the highest insulin to DPP4 ratio for over five years among other countries. DPP4s access restriction might have caused early and disproportionate insulinization of patients. From health policy perspective, implementation of access restriction might have led cost reduction in the short run, however it may cause greater burden due to shifts to later treatment line costs.

PD120
DO FREE MEDICATIONS IMPROVE OBSERVANCE AMONG DIABETIC PATIENTS?
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OBJECTIVES: Diabetes is a chronic condition for which effective medications must be taken continuously (i.e. patient must be observed). Research shows that introducing free medications may reduce non-adherence. However, there is little evidence that providing free medications improves diabetic patient observance. Taking advantage of a change in Quebec (Canada) policy the objective of this study was to assess whether the return to free medications (RFM) improved diabetic patient observance. METHODS: This study used a pretest-posttest design: drug use by diabetic patients in the 3 years prior to RFM was compared to their drug use in the 2 years following RFM. Data came from the Quebec public drug plan (QDP) for three groups: social welfare recipients, elderly receiving full guaranteed revenue supplement (GRS) and those receiving partial GRS. Data on oral antidiabetic drug consumption were obtained for a random sample of patients that were covered by the QDP during the full five year period (N total = 3308). Two indicators of observance were measured: whether a patient was using antidiabetic drugs at least 80% of days and the proportion of days where antidiabetic drugs were used. These were measured both for the 12 months following the first prescription prior to RFM and after RFM and for the pre-RFM and post-RFM periods. To compare pre and post RFM data, we used Chi-square test for the first indicator and t-test for the second indicator. RESULTS: The proportion of patients who were observant was significantly (p<0.001) higher after RFM compared to before RFM, both for 12 months (87.3% vs 82.8%) and the whole period (85.3% vs. 83.7%). The proportion of days where antidiabetic drugs were used also was significantly higher (92.3% vs. 89.2%, 90.8% vs 86.6%). CONCLUSIONS: Providing free medications to diabetic patients raised their observance and may have improved patient outcomes.

PD121
QUANTIFYING THE EFFICACY-EFFECTIVENESS GAP USING THE EXAMPLE OF METFORMIN
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OBJECTIVES: According to the literature, there is a gap between the results of clinical trials (efficacy) and the efficacy of the same intervention in real-life (effectiveness), although this so-called “efficacy-effectiveness gap” is often mentioned in
literature, there is little if any attempt to quantify it. We aim to quantify the difference in disease prevalence and effectiveness of Metformin in terms of reduc-
ing HbA1c in patients with type-2 diabetes. METHODS: First, a systematic review was carried out to identify relevant randomized controlled trials (RCTs) and non-
interventional studies (NIS). CENTRAL, MIDLINE (via PubMed) and clinicaltrials.
gov were searched for relevant articles published within the last 20 years. RCTs and NIS which evaluated the treatment effects of Metformin in adult patients with type-2 diabetes and analyzed glycemic control by means of change in HbA1c value were included. Studies in which Metformin was administered in addition to antidi-
abetic, studies with a study period of less than three months and studies analyzing subpopulations were excluded from further research. Only German and English papers were eligible. Second, mean values of HbA1c reduction were aggregated in a meta-analysis using a random-effects model. Statistical heterogeneity was measured by the I²-parameter. To test for publication bias we used funnel plots. RESULTS: In total 1151 articles were identified. 21 RCTs and 6 NIS were included in the quantita-
tive analysis. Overall, the mean value of HbA1c was reduced by 1.02% (95% CI: -1.186%, -0.839%). I² was 99.91% (RCTs: 99.932; NIS: 99.767) indicating high heterogeneity. The compari-
on of the two settings resulted in a small difference of 0.130% in HbA1c decrease between RCTs (-0.953%; 95% CI: -1.185%, -0.717%) and NIS (-1.083% 95% CI: -1.34%, -0.84%). The con-
tioned gap between clinical studies and real-world application does not exist in the treat-
ment of type-2 diabetes with Metformin.

PDB122
ANALYSIS OF THE CONSUMPTION AND PHARMACOECONOMIC EVALUATION OF USING DIFFERENT FORMULATIONS OF ALPHA-LIPOIC ACID IN THE PHARMACEUTICAL MARKET OF UKRAINE

Kryuchenko O, ikovleva L, Mishchenko O, Bezditko N, Gerasymova O National University of Pharmacy, Kharkiv, Ukraine OBJECTIVES: To conduct the National Unified Clinical Protocol of Primary and Secondary (Specialized) Medical Care, for type 2 diabetes mellitus preparations of alpha-lipoic acid (ALA) at high doses are recommended as a pathogenetic therapy of peripheral and autonomic neuropathy of the health issue market of the pharmaceutical market of Ukraine prepared. In the course of this study, we evaluated 2 oral formulations of ALA preparations: standard and HRF (High Release form). Pharmacokinetic studies [MMW Spezial, Münch. med. Wschr. 1999, 141: page 2] showed that comparing with the standard formulation HRF of ALA reduces the inter-
vention absorption by 58% thus ensuring optimal absorption in most patients. The objective of the study was to assess the consumption of oral for-
mulations of ALA preparations in the pharmaceutical market of Ukraine and to conduct pharmacoeconomic evaluation. METHODS: The consumption of oral for-
mulations of ALA preparations was assessed in indicator DDD/1000 inhabitants/day (DDIs). To conduct the pharmacoeconomic evaluation, results of pharmacokinetic studies were used [MMW Spezial, Münch. med. Wschr. 1999, 141: page 2]. RESULTS: In 2011, the consumption of ALA preparations in the pharmaceutical market of Ukraine was 1.79 DDDs. The portion of HR formulation accounts for 5.35% of the total amount of consumption and the consumption of the standard oral formulation of ALA preparations accounts for 94.65%, respectively. According to authors of the study, the indicator of the inter-individual variability in absorption was 22% for HRF and 59% for standard ALA formulation. Thus NNT indicator is 1/0.37 = 2.7. Calculating the cost of achieving a therapeutically effective plasma level in 1/0.37, the NNT indicates that one patient treated with ALA in the blood plasma needs 2.7 times more costs when administering the standard ALA formulation compared to HRF. CONCLUSIONS: HR formulation of ALA has a higher cost effectiveness compared to the standard oral formulation, which makes it more efficient to use.

PDB123
IMPROVING THE SYSTEM OF HEALTHCARE PROVISION FOR PATIENTS WITH HYPOTHYROIDISM IN UKRAINE

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OBJECTIVES: To assess medical technologies in order to increase efficiency and reduce the cost of thyroid disease treatment. METHODS: We made the retrospective analysis of 81 patients’ medical records with hypothyroidism that were hospital-
ized to the endocrinology department of Terrnopol University Hospital (Jan-Dec 2012). The cost of replacement therapy with levothyroxine drugs, which were preferred in practice, was analyzed. We also checked the appropriateness of diagnostics and specialist consultations according to the Protocol of medical care for patients with endocrine system disorders. RESULTS: The result of retrospective analysis of 81 patients’ medical records with hypothyroidism showed that all patients received replacement therapy with levothyroxine. Among them 74 patients were treated with drugs of Ukrainian production while 7 patients were taking medicine of foreign manufacturer. The cost of pharmacotherapy with foreign medicines was 125% more expensive compared to Ukrainian drugs. When comparing diagnostics and specialists consultations with a Protocol of medical care for patients with endo-
ctrine system disorders we have established compliance. However, given the preva-
ence of complications of underlying disease by cardiovascular system disorders (in 10.2% of patients), it necessitated 17% sulphur dihydroxy-methionine and 3.8% pharma-
cotherapy. Protocol. CONCLUSIONS: It is advisable to use domestic drugs in pharmacotherapy of hypothyroidism. Cardiologist consultation should be added to Protocol of medical care for patients with hypothyroidism.

PDB124
BURDEN OF DIABETES OF DIABETES MELLITUS TYP-2 IN AUSTRIA

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OBJECTIVES: Type 2 diabetes mellitus affects 538,267 individuals in Austria and exerts a substantial economic burden on patients, healthcare systems and society. The main objective of this study is to analyse the burden of disease as well as the direct and indirect healthcare costs of type 2 diabetes in Austria. METHODS: A population-based prevalence study with all kinds of costs, including direct costs, quality adjusted life years (QALYs) and disability adjusted life years (DALYs) were calculated. This study uses a prevalence-based bottom-up approach and pro-
jects costs over the time horizon of one year. Data were collected via literature review, cross-sectional surveys, clinical trials. Consequences were taken from the societal perspective. The direct costs include hospital, treat-
ment and physician consultation costs. Indirect costs cover patient care giver costs as well as work absenteeism costs. RESULTS: The average costs per year of a Diabetes Type 2 are 5,242.91 EUR. Inpatient care is a major contributor to costs, accounting for 81% of total costs while drug costs account for an average of 14%. The estimated total direct annual cost for all patients diagnosed with type 2 diabetes is 1.2 billion EUR. This represents a share of 3.3% of the country’s total healthcare expendi-
tures. The average annual indirect costs for patients with diabetes mellitus type 2 amounts to 781 million EUR. Compared to the healthy population, the diabetes mellitus type 2 patients will lose 19,853 DALYs within one year. CONCLUSIONS: Type 2 diabetes mellitus is a common disease and the prevalence is expected to increase considerably in the future. The findings of this study demonstrate the high economic import of the disease.

PDB125
INTERNATIONAL DIABETES MANAGEMENT PRACTICE STUDY (IDMPS): RESOURCE USE ASSOCIATED WITH TYPE 2 DIABETES IN AFRICA, MIDDLE EAST, SOUTH ASIA, EURASIA AND TURKEY

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OBJECTIVES: Although type 2 diabetes (T2DM) has been globally recognised as a major public health issue, disease-related healthcare utilisation and costs vary significantly across regions. The aim of this study is to describe health care resource utilisation (HCRU) associated with T2DM in Africa, Middle East, South Asia, Eurasia and Turkey. METHODS: Cross-sectional studies were conducted across 18 countries (18 countries). Data was collected between 2008 and 2010. The mean (SD) annual number of diabetes-related hospital inpatient days was 1.5 (6.8), 16.0 (30.0), 4.7 (22.7), 1.1 (6.1) and 10.8 (34.3) respectively. The mean (SD) annual number of sick days due to diabetes for the same regions were 4.6 (7.9), 17.5 (35.4), 11.6 (44.4), 1.4 (6.8) and 8.0 (34.4). Presence of macrovascular complications was a key driver of incidence of hospitalisations [Incidence Rate Ratio - IRR (CI 95%) in South Asia [3.4 (1.4–8.4)], Eurasia [1.1 (1.1–1.8)], Africa [3.9 (2.1–7.3)], Middle East [8.9 (4.6–15.7)] and Turkey [2.9 (1.8–4.6)]. Microvascular com-

PDB126
HEALTHCARE USE AND EXPENDITURE FOR DIABETES IN BANGLADESH: A MATCHED-CASE-CONTROL STUDY

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OBJECTIVES: Diabetes imposes huge social and economic impact on nations. However, information on the costs of treating and managing diabetes in develop-
ing countries is limited. The aim of this study was to estimate healthcare use and expenditure for diabetes in Bangladesh. METHODS: We conducted a matched case-control study during January and July 2014 among 591 adults with diag-
nosed diabetes mellitus (DMs) and 591 age, sex, and residence matched persons without diabetes mellitus (non-DMs). We recruited DMs from consecutive patients and non-DMs from accompanying persons in BIRH hospital in Dhaka, Bangladesh. We estimated the impact of diabetes on healthcare use and expenditure by calcu-
lating ratios and differences between DMs and non-DMs and tested for statistical difference using t-tests. RESULTS: DMs had two times more days of inpatient treatment, 1.3 times more outpatient visits, and 9.7 times more medications than non-DMs (all p<0.005). The total annual per capita expenditure on medical care was 6.12 times higher for DMs than non-DMs (USD 635 vs. 104, respectively). Among DMs, 9.8% reported not taking any antidiabetic medications, 46.4% took medication under medical insurance, 7% sulphur dihydroxy-methionine and 14.2% took anti-lipids over the preceding 3 months. CONCLUSIONS: Diabetes significantly increases healthcare use and expenditure and is likely to impose a huge economic burden on the healthcare systems in Bangladesh. The study highlights the importance of prevention and optimal management of dia-
betes in Bangladesh, and other developing countries, to gain a strong economic incentive through implementing multi-sectoral approach and cost-effective preven-
tion strategies.

PDB127
EPIDEMIOLOGY AND COSTS OF PERIPHERAL ARTERIOPATHY IN DIABETIC PATIENTS: A POPULATION-BASED STUDY