

and with levodopa in PD patients (72.7%, all $p < 0.05$). **CONCLUSIONS:** A high and comparable level of compliance was observed across PD drugs. Persistence was significantly higher than other drugs with rasagiline in treatment-naïve patients and with levodopa in previously treated patients.

PND60

DISEASE-MODIFYING THERAPIES (DMT) FOR MULTIPLE SCLEROSIS (MS): ANALYSIS OF ITS EVOLUTION IN SPAIN BETWEEN 2004 AND 2012

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OBJECTIVES: To analyze determinants of recent evolution of DMT consumption for MS in Spain. **METHODS:** Available DMT market data comprised monthly figures for the period 2004–2012. Monthly and annual evolution of consumption, treated patients and annual cost of treatment were calculated for each DMT. This analysis was replicated for first-line (intramuscular and subcutaneous interferon (IFN) β -1a, subcutaneous IFN β -1b, and glatiramer acetate) and second-line therapies (natalizumab and fingolimod). Evolution of these variables was analyzed for both the whole period 2004–2012 and since 2007 (when second-line therapies become available in Spain). **RESULTS:** DMT expenditure in Spain increased by 147% in 2004–2012 (from €115.5M to €284.9M, 11.95% annually). This evolution can be decomposed into: the growth in the figure treated patients (126%; 10.70% annually) and the increase in the average annual cost per patient (9%, from €11,739 to €12,839; 1.13% annually). For 2007–2012 subperiod, DMT spending increased by 73% (11.57% annually) is attributable to 59% more treated patients (9.73% annually) and an increase of 9% (1.68%) in annual cost per patient. Cost per patient in second-line is 70% higher (average 2007–2012) than average cost per treated patient (€ 21,074 vs. € 12,372) and 82% higher than annual cost of first-line therapy (€ 21,074 vs. € 11,549). Between 2007 and 2012, second-line therapies accounted 32% of new treatments and 48% of incremental cost per patient. By omitting year 2007 from analysis (68 second-line treatments and €1.44M associated consumption), second-line therapies account for 38% of new treatments and 55% of incremental cost per patient. By 2012 second-line therapies already represent 50% of new treatments and 67% of DMT cost increase. **CONCLUSIONS:** The increase of patients treated with DMT in Spain (10.70% annually in 2004–2012), more costly new therapies incorporation and its growing consumption are crucial factors in handling hospital pharmacy budgets for prevalent diseases such as MS.

PND61

ASSOCIATION BETWEEN NON-MOTOR SYMPTOMS AND HEALTH CARE UTILIZATION AMONG PATIENTS WITH PARKINSON'S DISEASE IN THE UNITED STATES

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OBJECTIVES: To investigate the characteristics and extent of health care utilization among patients with Parkinson's disease (PD) with and without non-motor symptoms (NMS). **METHODS:** Data were obtained from a US administrative claims database (SDI/IMS). Index date was 1 June 2010, and study duration was 12 months. Patients were required to have at least two PD diagnoses before the index date. They were subsequently matched 1:1 to control patients (no PD diagnoses) based on propensity scores derived from age and pre-index Charlson comorbidity index for each gender. **RESULTS:** In total, 127,630 patients with PD were matched to controls. Patients with PD had higher annual mean numbers of primary care (16.4 vs 12.3; $p \leq 0.0001$) and neurologist visits (6.7 vs 0.4; $p \leq 0.0001$) compared with matched controls. In the PD group, 48,823 patients (38.3%) had a diagnosis for at least one NMS, of whom 15,242 (31.2%) were also treated for at least one NMS. Most frequently reported NMS were pain (27.2%), mood disturbance (depression, anxiety or nervousness; 12.7%) and sleep disorder (7.4%). Patients with pain, mood and sleep disorders ($n=1,159$), had higher total annual primary care and neurologist visits than patients with no NMS (50.7 vs. 17.2). Patients who received treatment for pain, mood and sleep disorders ($n=118$), had a higher total number of annual primary care and neurologist visits (66.6) compared with patients treated only for mood (26.0; $n=3,233$) only for pain (35.6; $n=9,432$), or only for sleep (30.6; $n=676$). **CONCLUSIONS:** Results of the study demonstrate that treatment of NMS increases health care utilization – patients with PD suffering from NMS had a substantially greater number of health care visits than those with no NMS. Results also indicate that there are substantial levels of undertreatment of NMS among patients with PD, with less than a third being treated.

PND62

NATALIZUMAB TREATMENT IS ASSOCIATED WITH REDUCED NEUROLOGICAL OUTPATIENT APPOINTMENTS, UNPLANNED HOSPITAL ADMISSIONS AND LENGTH OF STAY

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OBJECTIVES: Global wellbeing of patients is an important outcome in research and clinical practice. Multiple Sclerosis (MS) is a degenerative, neurological condition, characterised by progressive disability, affecting approximately 110 per 100,000 people in England and Wales. Natalizumab is a humanised monoclonal antibody, licensed for use in highly active relapsing-remitting MS and administered as an IV infusion every 28 days. The purpose of this study was to explore the impact of natalizumab on both patients and use of health service resource in clinical practice in England. **METHODS:** Health Episode Statistics (HES) data were used to perform a retrospective cohort study. A structured coding search elucidated a comprehensive list of natalizumab users by hospital trust. Analysis of health service usage, including outpatient appointments and admissions, was undertaken. Comparison of use during the year before and after treatment initiation was conducted. **RESULTS:** A total of 2,196 patients with at least 1 year of available HES data after treatment initiation were identified. In this cohort, natalizumab treat-

ment was associated with 38% fewer unplanned admissions (981 vs. 604, $X_1^2 = 89.2$, $p < 0.001$) and 58% fewer unplanned bed nights (8,817 vs. 3,681, $X_1^2 = 2109.8$, $p < 0.001$) in the year following treatment initiation compared with the year before. A 14% reduction in all outpatient appointments was also observed, due principally to a 25% reduction in neurological outpatient appointments (from 7,826 to 5,901, $X_1^2 = 269.7$, $p < 0.001$). Evidence from this study indicates that duration of treatment is a significant factor in this response; patients receiving between 12 and 14 doses ($n=1,122$) experienced 70% reduction in unplanned admissions and 90% reduction in unplanned bed nights. **CONCLUSIONS:** Our data support the notion that natalizumab treatment significantly reduces unplanned hospital treatment and outpatient attendance.

PND63

PRESCRIBING PATTERNS OF PARKINSON'S DISEASE

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OBJECTIVES: Parkinson's disease has the second largest number of patients among 56 designated diseases/syndrome of the Specified Disease Treatment Research Programme for rare and intractable disease programme. The purpose of this study was to investigate prescribing patterns of Parkinson's disease and its pharmaceutical expenditures. **METHODS:** We analysed the Social Health Insurance (SHI) claims data processed from February to April 2011 provided by the Planning, Review and Research Institute for Social Insurance and Medical Program. **RESULTS:** During the three months, 52,851 patients in Social Health Insurance programme received medical treatments that cost 9,391,451,520 JPY. Average costs for inpatient care without meal expense and for outpatient care were 263,782 JPY and 33,209 JPY respectively. Except the cases that fell into Diagnosis Procedure Combination (DPC), 37% of the total cost, 3,515,091,420 JPY was for pharmaceutical expenditure including dispensing fee. Only 7,437,873 (23.5%) of 31,699,153 dispensed drugs were generics on a volume basis. If all the pharmaceutical that have generics had been substituted, estimated 899,586,280 JPY would have been saved in the study period by simple arithmetic. Generic usage is fewer in the elderly than in the younger generation in all therapeutic categories. **CONCLUSIONS:** Percentage of pharmaceutical expenditure in total health expenditure for Parkinson's disease is high. Our study find that generic substitution rate is low in general and even lower in the elderly. This might be partly related to the medical expense subsidy under the Specified Disease Treatment Research Programme, which exempts eligible patients from co-payment according to their income. There seems to be a room for prescribing pattern change for cost optimization and further study is expected.

PND64

COSTS OF FORMAL AND INFORMAL HOME CARE AND QUALITY OF LIFE OF PATIENTS WITH MULTIPLE SCLEROSIS IN SWEDEN

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OBJECTIVES: To describe and to estimate costs of formal and informal home care and quality of life related to multiple sclerosis. **METHODS:** A random sample of 1500 members of the Swedish organization for patients with neurological diseases (NHR), specifically MS, were mailed a questionnaire between February–March 2012. Collected data included number of hours per month of home care received, type of help, productivity losses, quality of life (EQ-5D) and disease characteristics. The recall period was one month. Using published Swedish unit cost data, the costs for home care were estimated in 2012 euros. A semi-logarithmic linear regression evaluated other factors that may influence the likelihood of getting home care. **RESULTS:** Of 839 respondents, 65.5% had progressive MS, 24.5% had RRMS and 10% had no information. Formal care was given to 27% of respondents at an average of 238.7 hrs/month at a mean cost of €2873 per person with MS per month. Informal care was received by 49% of respondents at an average of 47.3 hrs/month at a mean cost of €389 per person with MS per month. Based on disease severity, the mean total home care costs/patient/month were: mild (EDSS 0–3) = €63, moderate (EDSS 4–6) = €461 and severe (EDSS > 6.5) = €8446. Total home care costs were three-fold higher in persons with moderate MS and seven-fold higher in persons with severe MS versus mild MS. Total home care costs of patients cohabiting with another person were nearly 70% higher compared to people living alone. The reported average utility was 0.513 (sd 0.307). Utilities across disease severity: mild MS=0.709 (sd 0.233), moderate MS=0.562 (sd 0.232) and severe MS=0.284 (sd 0.283). **CONCLUSIONS:** Total home care costs, of which formal care costs accounted for a large proportion, increased with increasing disease severity. Informal caregiving contributes significantly to MS home care and is an important complement to formal home care in Sweden.

PND65

A COMPARISON OF DEMOGRAPHIC AND CLINICAL VARIABLES OF DOWN SYNDROME PATIENTS IN UTAH AND THE UNITED STATES

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OBJECTIVES: To explore the demographics, comorbidities and medication exposure of Down Syndrome (DS) patients in Utah compared to a national cohort. **METHODS:** National and local data on adult patients with DS were extracted from the General Electric Healthcare National Clinical Data Services Warehouse and the University of Utah Healthcare System Enterprise Data, respectively. The ICD-9 code for Down Syndrome (758.0) was used to identify patients, alive through 2012, and their associated comorbidities and prescribed medications. We used descriptive statistics, t-test, test of proportion and Fisher's exact test to examine relationships between demographics, comorbidities and pharmacotherapies and compared results between local and national cohorts. **RESULTS:** Data was extracted on 513 patients in Utah and 11,736 nationally, 98% and 64% of patients are adults in cohorts, respectively. Through 2012, adult DS patients in Utah were younger (37 vs. 39, $p < 0.005$), more likely to be female (54.08% vs. 50.47%, $p < 0.05$)