resource utilisation and the costs associated with health care management of MS in Slovakia and to provide a basis for cost-effectiveness evaluations. **METHODS:** Descriptive epidemiological data of 2,552 MS patients from 27 MS-centers across Slovakia were collected electronically and analyzed. In 152 selected patients followed up in 2011-2012 in 34 MS centers, all types of health care services and costs were analyzed. These patients were randomly included in the study. Continuous variables were calculated using standard descriptive statistical methods. **RESULTS:** 77% of patients had the relapsing-remitting form of MS (RRMS); 60 % of patients were in EDSS 1-3, mean age of patients at the time of diagnosis was 32.3 (± 9.7) years, and 68% of patients were females. Total direct health care costs, DMT excluded, ranged from €752 to EDSS 1 to €2,839 to EDSS 7, being the lowest for EDSS9 (at €963). Costs for DMT ranged from €8,584 for EDSS1 to €13,026 in EDSS4, being lower for EDSS6 (€1,668) and none for EDSS7-9.67% patients were receiving 1st line DMT, and 14 % receiving 2nd line treatment. DMT was mostly applied in EDSS 2 (97%). The most frequently used DMTs were glatiramer acetate (20%), interferon beta-1a IM (15%), natalizumab (9%) and fingolimod (5%). The most expensive grade 1/2 adverse events were abdominal pain (46.62 €), pain in joints, back and arms (39.35 €). **CONCLUSIONS:** This cross-sectional study determined the average annual direct cost per MS patient to be €1,640; DMT excluded. As the EDSS increases, DMT costs decrease (except of EDSS1-2) and the costs of medical devices rise.

PND38

COST OF HEALTH CARE SERVICES OFFERED BY PARKINSON DISEASE ASSOCIATIONS IN SPAIN

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OBJECTIVES: In Spain, Parkinson Disease Associations (PDA) offers a wide range of care services with partial and variable financial support from the government. The study objective was to estimate the costs of PDA services and to calculate the potential savings that they represent to the National Health System (NHS). **METHODS:** A survey conducted by the Federation of PDA collected information on their location, number of members, type and use by patients of the offered services. Services were classified according to whether or not they were financed by the NHS, based on the existing national portfolio for reimbursed services. Weekly use was recorded and costs were calculated upon official rates (updated to €, 2014). Potential savings for the NHS were estimated by calculating the weekly cost associated to unfinanced services that were provided by the PDA. **RESULTS:** 42 Spanish PDA that embraced a total of 11,420 patients participated in the study. From the 26 services offered, speech therapy (n=41), physiotherapy (n=39), cognitive stimulation (n=23) and occupational therapy (n=23) were the most frequently offered and used. The weekly cost associated to the provided services was €655,219.87 [mean: €15,980.97 (SD: 22,662.98)] per PDA. 53.8% of services were classified as potentially refundable by the NHS. Costs assaignable to potentially financed services represented 78.29%, reaching savings for the NHS of €512,971.60/week. The cost of physiotherapy (27.3%) and of the adapted transport (21.3%) were the main components. Costs attributable to services not usually financed by the NHS accounted for 21.71% (€142,248.23), mostly attributable to cognitive stimulation costs (63.39%). **CONCLUSIONS:** PDA offer valuable services to patients and carers and afford a major proportion of the costs of the supportive and complementary care of the disease. Their economic efforts imply great savings to the NHS in Spain.

PND39

THE IMPACT OF ADHERENCE AND DEVELOPMENT OF NEUTRALIZING ANTIBODIES TO INTERFERONS B ON TREATMENT OF MULTIPLE SCLEROSIS IN THE CZECH REPUBLIC

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OBJECTIVES: To compare clinical outcomes (reduction in relapse number) and costs associated with multiple sclerosis (MS) treatment with one of the interferon β in the Czech Republic in five-year horizon based on development of neutralizing antibodies (NAbs) and patient non-adherence. Intramuscular (IM) interferon β-1a is characterized by very high adherence rate and low rate of NAbs production. **METHODS:** Markov cohort model was developed with one-year cycle length. In the Czech Republic, patients with MS initiate treatment with one of the interferon β. NAbs-positive patients (in the model, NAbs are detected during the second year of treatment and thereafter) are switched/escalated to a different disease modifying drugs; DMD (glatiramer acetate, fingolimod, natalizumab). If patients experience two or more relapses during one year of treatment, they are escalated to fingolimod or natalizumab. Adherence data, development of NAbs, relapse rate and costs were sourced from the literature. **RESULTS:** One hundred patients, who initiated treatment with IM interferon β-1a, experienced 287 relapses over 5 years. Those, who started treatment with subcutaneous (SC) interferon β-1a and interferon β-1b, experienced by 15 and 19 relapses more. In one hundred patients, total cost of treatment with IM interferon β-1a was 6.4 million €. This was about 139-200 thousand € less compared to SC interferon β-1a and interferon β-1b. Hence incremental cost-effectiveness ratio was -262 thousand €/relapse avoided and -285 thousand €/relapse avoided. **CONCLUSIONS:** Intramuscular interferon β-1a represents dominant intervention in MS treatment, i. e. cost-saving treatment from payer's perspective and simultaneously more efficacy intervention in terms of reduction in number of relapses due to better patient adherence and lower incidence of NAbs compare to the other interferons β in the Czech Republic. The one-way sensitivity analyses showed that results are the most sensitive to DMD costs and relapse rate.

PND40

AN ECONOMIC EVALUATION OF SUBCUTANEOUS AND INTRAMUSCULAR INTERFERON BETA-1A IN MULTIPLE SCLEROSIS USING A DIRECT HEAD-TO-HEAD STUDY

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OBJECTIVES: To use health economic modeling techniques to quantify and compare the clinical and economic outcomes associated with the use of subcutaneous interferon beta-1a (scIFNβ1a) vs. intramuscular interferon beta-1a (imIFNβ1a) over 2 years in the management of relapsing forms of multiple sclerosis (MS) from a US health care payer perspective. **METHODS:** The 2-year decision analytic model was populated with IMS LifeLink Plus prevalence and treatment data, and clinical data from the EVIDENCE (EVidence of Interferon Dose-response: European North American Comparative Efficacy) study, a direct head-to-head comparison of 44 mcg scIFNβ1a three times a week vs. 30 mcg imIFNβ1a once a week. Relapse data from 16-month results were extrapolated for the 2-year model. Disease-modifying drug (DMD) costs were based on 2014 wholesale average cost with consideration of patient copayment in the base case. The model was created with the ability to customize the rate of copayment as well as to incorporate contractual discounts, if desired. One-way sensitivity analyses were conducted on key parameters using alternate plausible values, including the rates of real-world DMD adherence. **RESULTS:** For a hypothetical health plan with 1 million members, it is estimated that 911 patients with MS would be treated with DMDs. More relapses were avoided with scIFNβ1a over 2 years (979) than with imIFNβ1a over 2 years (778). The average cost-effectiveness of 44 mcg scIFNβ1a was lower (more favourable) than the average cost-effectiveness of 30 mcg imIFNβ1a ($123,854 vs. $148,749 per relapse avoided). Sensitivity analyses around model input values showed the model was robust and cost-effectiveness results were consistent. The model results are most sensitive to drug cost. **CONCLUSIONS:** Cost-effectiveness assessment may facilitate the decision-making process in selecting MS treatments. Using the highest-quality clinical data (Level 1, head-to-head study, EVIDENCE), the cost-effectiveness of 44 mcg scIFNβ1a was shown to be favourable compared with 30 mcg imIFNβ1a.

PND41

COST-EFFECTIVENESS EVALUATION OF DATA FROM THE EVIDENCE (EVIDENCE OF INTERFERON DOSE-RESPONSE: EUROPEAN NORTH AMERICAN COMPARATIVE EFFICACY) STUDY

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OBJECTIVES: To evaluate the cost-effectiveness of 44 mcg subcutaneous interferon beta-1a (scIFNβ1a) and intramuscular interferon beta-1a (imIFNβ1a) during the comparative and open-label extension phases of the EVIDENCE (EVidence of Interferon Dose-response: European North American Comparative Efficacy) study. **METHODS:** A decision analytic model from a US health care payer perspective was populated with 2-year data from the EVIDENCE study of imIFNβ1a and 44 mcg scIFNβ1a (comparative and open-label extension phases). EVIDENCE results showed that the annualized relapse rate of 44 mcg scIFNβ1a patients was 0.46 during the comparative phase and 0.34 during the open-label extension phase. The annualized relapse rate of imIFNβ1a patients during the comparative phase was 0.64. imIFNβ1a patients who switched to 44 mcg scIFNβ1a for the open-label extension phase had an annualized relapse rate of 0.32. These data were used to model the cost-effectiveness of 44 mcg scIFNβ1a and imIFNβ1a patients during the comparative phase as well as for the combined comparative and open-label extension phases (for patients remaining on scIFNβ1a throughout and for those switching from imIFNβ1a in the comparative phase to scIFNβ1a in the open-label extension). Disease-modifying drug (DMD) cost was based on 2014 wholesale average cost with consideration of patient copayment in the base case. **RESULTS:** The cost-effectiveness for 44 mcg scIFNβ1a and imIFNβ1a during the comparative phase was $123,854 and $148,749 per relapse avoided, respectively. The cost-effectiveness of patients who remained on 44 mcg scIFNβ1a throughout the study was $99,398 per relapse avoided, while the cost-effectiveness of imIFNβ1a patients who switched to 44 mcg scIFNβ1a for the open-label extension was $116,404 per relapse avoided. Sensitivity analyses showed that the model was robust and was most sensitive to DMD cost. **CONCLUSIONS:** This decision analytic model evaluation shows that remaining on 44 mcg scIFNβ1a and switching from imIFNβ1a to 44 mcg scIFNβ1a were cost-effective treatment strategies.

PND42

ECONOMIC EVALUATION OF LACOSAMIDE IN THE MANAGEMENT OF EPILEPTIC PARTIAL ONSET SEIZURES IN GREECE

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OBJECTIVES: To assess the cost-effectiveness of Lacosamide (LCM) in the management of epileptic partial onset seizures (POS) versus standard AED therapy in Greece, as well as its impact on the health care budget. **METHODS:** A cost-effectiveness model was developed simulating the treatment pathway of a hypothetical cohort of 1000 patients over two years. A comprehensive literature search was conducted to identify local resource use data for medical, pharmaceutical and hospital treatment. Due to lack of relevant data, an expert panel with 8 neurologists was convened. The perspective was that of the Social Insurance Fund, and unit costs were taken from officially published sources (Ministry of Health and Social Insurance Fund). Primary and secondary analyses were carried out, in which the treatment algorithm was based on trial data and was adapted to the Greek setting, respectively. Deterministic and probabilistic sensitivity analyses were conducted to test the model' results. In addition, a budget impact analysis (BIA) was carried out to estimate the annual cost of treating uncontrolled epileptic patients in Greece. **RESULTS:** Treatment with LCM was shown to be dominant compared to standard therapy, as it is associated with 38 additional QALYs and reduced cost by €410,024 and €754,684 in the primary

and secondary analysis, respectively. Extensive sensitivity analyses indicated that results were robust. The most influential parameters were the utility estimates, probability of hospitalization per seizure and unit cost of hospitalization. The BIA showed that the annual cost of treating uncontrolled epileptic patients with LCM in Greece ranges between €274.9 and €271.5 million, in the primary and secondary analyses, respectively, compared to the respective costs with standard AED (€277.3 and €279.9 million). **CONCLUSIONS:** LCM appears to be both less costly and more effective compared with standard AED treatment in Greece and results in cost savings ranging between €2.4 and €8.3 million. Study funded by UCB Pharma.

PND43

COST-EFFECTIVENESS OF SUBCUTANEOUS VERSUS INTRAMUSCULAR INTERFERON BETA-1A IN PORTUGAL BASED ON THE FINDINGS OF COCHRANE COLLABORATION REVIEW OF FIRST-LINE TREATMENTS FOR RELAPSING-REMITTING MULTIPLE SCLEROSIS

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OBJECTIVES: To estimate the cost-effectiveness of Interferon beta-1a subcutaneous (SC) when compared with Interferon beta-1a intramuscular (IM) in Portugal, based on the findings published by the Cochrane review of first-line treatments for relapse-remitting multiple sclerosis. **METHODS:** An Excel-based model estimated the number of relapses and costs incurred by a cohort of 3,000 patients treated with two types of interferon beta-1a. The model evaluated the consequences of each treatment based on the findings of a Cochrane meta-analysis (Filippini 2013). The analysis was performed from a Portuguese NHS perspective, including only direct costs. Costs of relapse were obtained from a local publication (Mateus C, 2000) whereas costs of both drugs were obtained from local official databases (Cat@ logo). Although efficacy was kept constant as Cochrane did not report outcomes based on EDSS, costs of relapse were available for patients with different EDSS values, thus allowing estimation of cost-effectiveness for different types of population. **RESULTS:** According to the model, over a 2 year period and in a population with EDSS ≤ 3, treatment with IM interferon beta-1a will result in a total of 2,228 relapses, and a total cost of 69,572,717€, whereas treatment with SC interferon beta-1a will result in 1,709 relapses and a total cost of 70,480,835€. For a population with EDSS between 3.5 and 4.5 cost values for IM and SC are 72,141,975€ and 72,451,135€, respectively. Cost-effectiveness ratios were 1,748€ per relapse avoided when EDSS ≤ 3 and 595€ per relapse avoided when EDSS was between 3.5 and 4.5. **CONCLUSIONS:** Considering that the cost of a relapse varies between 3,896€ (EDSS ≤ 3) and 5,139€ (EDSS between 3.5 and 4.5) the incremental cost-effectiveness ratios found for interferon beta-1a SC seem to indicate that that SC interferon beta-1a is a cost-effective alternative to the use of IM interferon beta-1a.

PND44

TREATING VERSUS NON-TREATING OBSTURICTIVE SLEEP APNEA IN ITALY AND FRANCE: A MARKOV MODEL-BASED COST-EFFECTIVENESS ANALYSIS

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OBJECTIVES: To investigate the cost-effectiveness of treating vs. not treating obstructive sleep apnea (OSA) in Italy and France **METHODS:** A 5-year, 10-state Markov model with disease states including; disease and event-free with OSA, diabetes, hypertension, myocardial infarction [MI], post-MI, stroke, post-stroke, atrial fibrillation [AF], heart failure [HF], and death; was developed to compare costs, outcomes, and event-free life-years (LYS) of treating vs not treating OSA from the Italian National Health Service (INHS) and French National Health System (FNSH) viewpoint. Health care resources included those related to diagnosis, treatment (CPAP only) and follow-up of OSA; management of hypertension, diabetes, HT, AF, post MI, and post-stroke (per year); MI, and stroke (per episode). Health care resources were valued at Euro (€) 2012 using published sources. **RESULTS:** After 5 years the number of incremental event-free LYS per patient treated for OSA reaches 0.31 (Italy: 4.15 vs 3.84; France: 4.07 vs 3.76). Treating OSA incurs an incremental cost of €1011.01 and €2998.45per patient for Italy and France, respectively. The ICER of treating OSA is €3212.39 for Italy and €9777.09 for France, respectively. **CONCLUSIONS:** Treating OSA can be considered highly cost-effective for both the INHS and the FNSH when compared to the acceptability range for incremental cost effectiveness proposed for Italy (€25,000-€40,000) and for Europe (€50,000).

PND45

COST-EFFECTIVENESS OF SUBCUTANEOUS INTERFERON BETA-1A IN A SUB-POPULATION OF MULTIPLE SCLEROSIS PATIENTS (KURTZKE EXPANDED DISABILITY STATUS SCALE [EDSS]: >3.5–5.0)

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OBJECTIVES: To evaluate the cost-effectiveness of 44 mcg subcutaneous interferon beta-1a (scIFNβ1a) in patients with multiple sclerosis (MS) with Kurtzke Expanded Disability Status Scale (EDSS) score >3.5–5.0. **METHODS:** The analysis was performed from a US payer perspective. The time horizon of the analysis was 2 years. The decision analytic model was populated with real-world inputs and related assumptions, as well as pivotal placebo-controlled clinical trial data for 44 mcg scIFNβ1a 3 times a week (PRISMS Study). Clinical inputs were obtained for the overall study population as well as a subpopulation of patients with Kurtzke EDSS score >3.5–5.0. Disease-modifying drug (DMD) cost was based on 2014 wholesale average cost with consideration of patient copayment in the base case. Sensitivity analyses were conducted on key input variables to assess their impact on cost per relapse avoided. **RESULTS:** Model results showed that the mean number of relapses avoided with 44 mcg scIFNβ1a in patients with EDSS >3.5–5.0 was 1.21 per patient over 2 years. The mean number of relapses avoided for the overall study population was 0.74 per patient over 2 years. The average cost-effectiveness of 44 mcg scIFNβ1a was estimated to be $107,861 per relapse avoided for the EDSS >3.5–5.0 cohort. The average cost-effectiveness for the overall study population was estimated to be $181,208 per relapse avoided. Sensitivity analyses showed that results were robust to changes in key input parameters such as DMD costs, the number of relapses in untreated patients, the relative risk reduction in clinical relapse rates, the rate of adherence, and the average cost of relapse. **CONCLUSIONS:** Based on model results, the average cost-effectiveness of 44 mcg scIFNβ1a was favorable for both the overall study population and the EDSS >3.5–5.0 cohort.

PND46

A COST-UTILITY ANALYSIS OF SACRAL ANTERIOR ROOT STIMULATION (SARS) COMPARED TO MEDICAL TREATMENT IN COMPLETE SPINAL CORD INJURED PATIENTS WITH A NEUROLOGICAL BLADDER

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OBJECTIVES: To estimate the cost-utility of sacral anterior root stimulation (SARS, using the Finetech-Brindley device) compared to medical treatment (anticholinergics + catheterization) in complete spinal cord injured patients with a neurological bladder. **METHODS:** A probabilistic Markov model was elaborated with a 10-year time-horizon, one-year cycles and a 2.5% discount rate. Three irreversible states were defined: 1) treatment without urinary complication; 2) surgery for urinary complication (sphincterotomy, urinary derivation); 3) death. Reversible states (urinary calculi; Finetech-Brindley device failures) were integrated in the two first irreversible states. A systematic review and meta-analysis were performed to estimate transition probabilities and Quality Ajusted Life Years (QALYs). In the perspective of the French Healthcare System, costs were estimated from a published comparative cost-effectiveness research (Neurosurgery 2014; 73: 600), and through simulations using the 2013 French prospective payment system (PMSI) classification. **RESULTS:** In the primary analysis, the cost-utility ratio was 10,647€/QALY gained. At a 30,000€ ceiling ratio the probability of SARS being cost-effective compared to medical treatment was 63%. If the French Healthcare System reimbursed SARS for 200 patients/year the two first years and 50 patients/year during 8 years (anticipated target population) the expected incremental net health benefit would be 222 QALYs, and the expected value of perfect information (EVPI) would be 4,570,000€. The highest partial EVPI is reached for transition probabilities toward urinary calculi (4,420,000€). With discount rates of 1% and 6% the cost-utility ratios were 6,951 and 19,770€/QALY gained, and the probabilities of SARS being cost-effective were 66% and 58%, respectively. **CONCLUSIONS:** Our model shows that SARS using Finetech-Brindley device offers the most important benefit and should be considered cost-effective at a 30,000€ ceiling ratio. Despite a high uncertainty, EVPI and partial EVPI may indicate that further research would not be profitable to inform decision making.

PND47

COMPARISON OF A MARKOV COHORT MODEL AND A DISCRETE-EVENT SIMULATION FOR ECONOMIC ANALYSES OF TREATMENTS FOR MULTIPLE SCLEROSIS

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OBJECTIVES: Multiple sclerosis (MS) is a disease with lifelong impact, making the cost-effectiveness (CE) of its treatments particularly sensitive to assumptions embedded in model designs. Traditional sensitivity analysis (SA) can test many assumptions, but it is not designed to investigate sensitivity to structural assumptions. The aim of this study was to compare a Markov cohort model (MM) and a discrete-event simulation (DES) model of MS that were based on common clinical data but developed independently to understand the impact of their structural differences on model predictions. **METHODS:** A similar population was simulated in the MM and the DES model; aggregated cost and utility estimates were compared over varying time horizons. The average expanded disability status scale (EDSS) and the distribution of EDSS were also compared over time to study the dynamics of disease progression and treatment effects. **RESULTS:** The two modeling approaches led to different natural history behavior over longer time horizons, even after short-term behaviors were well-aligned, with the DES model predicting slightly fewer life-years (25.9 vs. 26.2 in the MM) but more quality-adjusted life-years (9.6 vs. 8.1 in the MM). These differences reflect slower progression of EDSS in the DES model, particularly to higher EDSS states. When disease history (including a baseline EDSS term) was excluded from the DES model, the natural history simulations of the two models agreed more closely. **CONCLUSIONS:** Structural SA can help quantify the impact of key modeling decisions. In this study, a comparison of an MM and a DES model showed that natural history predictions diverge over long time horizons, in part due to the consideration of disease history in the DES model. A better understanding of the differences between the two model designs helps ensure interpretation of the model results while taking into consideration the assumptions embedded in those designs.

PND48

THE LONG-TERM VALUE OF GLATIRAMER ACETATE FOR THE TREATMENT OF RELAPSING REMITTING MULTIPLE SCLEROSIS IN THE NETHERLANDS

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OBJECTIVES: To evaluate the cost-effectiveness of glatiramer acetate (Copaxone®) as a disease-modifying treatment (DMT) for relapsing-remitting multiple sclerosis (RRMS) compared to intravenous [natalizumab (Tysabri®), alemtuzumab (Lemtrada®)] or subcutaneous injectables [interferon-beta-1b (Betaferon®), interferon-beta-1a 44mcg, 22mcg, 30mcg (Rebif-44®, Rebif-22®, Avonex®)] and oral DMTs [fingolimod (Gilenya®), dimethyl fumarate (Tecfidera®), teriflunomide (Aubagio®)]. **METHODS:** A Markov model followed patients over 50 years through 21 health