maceutical form. As the medication is mostly a long-term regimen these resource uses were valued using biggest available packages. Prices were taken from the German "Rote Liste" with 2006 as price year. In addition, cost-influencing factors were analysed via correlation analyses. **RESULTS:** A total of 3150 pharmaceutical records from 301 CF patients were collected. Annual and daily medication costs were analysed for different age groups. Mean annual costs for medication are €21,603 per patient (range: €69; €86,790). Correlation analyses showed significant correlations ($p = 0.01$) between costs of medication and age, co-morbidities (like pancreatic insufficiency and diabetes mellitus and clinical parameters like the colonization of the lung with germs) as well as functional parameters (% of vital capacity, FEV_1, MEF_{25}). E.g. mean annual costs for medication are €14,884 (€23,815) for patients without (with) colonization of the lung with germs. Other correlation factors yielded similar cost dispersions in (un)affected patients. **CONCLUSIONS:** CF patients need specialized medication depending on age, co-morbidities and other clinical parameters. Non-optimal treatment leads to significantly higher costs for the health care system.

PND15

THE INDIRECT COST BURDEN OF EPILEPSY IN THE UNITED STATES

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OBJECTIVES: Compare annual indirect costs between privately insured employees with epilepsy and matched employee controls. **METHODS:** Employees with greater than or equal to 1 epilepsy diagnosis (ICD-9-CM: 345.x) in 2004, ages 18–64 years, were selected from a privately insured claims database containing disability data from 17 U.S. companies. A random sample of age and gender matched employees without epilepsy was selected as a control group. All were required to have continuous health coverage during 2004 (baseline) and 2005 (study period). Chi-squared tests were used to compare baseline comorbidities and differences in indirect resource use (disability and medically-related absenteeism). Wilcoxon rank-sum tests were used for univariate comparisons of mean disability and medically-related absenteeism days and associated annual indirect costs during the study period. Two-part models were used to compare indirect costs adjusting for differences in demographic/clinical characteristics. **RESULTS:** Employees with epilepsy ($n = 1,866$) averaged 48.4 years old (SD ± 10.4), and 55% were male. Compared with controls, employees with epilepsy had significantly higher rates of mental disorders, substance abuse, other neurological disorders and physical disorders measured by the Charlson Comorbidity Index. Employees with epilepsy were more likely to have a short- or long-term disability claim compared with controls (16.5% vs 5.6%, respectively; $P < 0.0001$), resulting in higher mean number of annual disability days (38.6 vs 6.6, respectively, $P < 0.0001$) and higher annual disability costs ($1836 vs $338, respectively; $P < 0.0001$). Medically-related absenteeism costs were also higher for employees with epilepsy compared with controls ($1356 vs $904, respectively; $P < 0.0001$). Average total indirect costs for employees with epilepsy were $3912 vs $1242 for controls ($P < 0.0001$) and remained significantly higher after adjusting for patient characteristics ($2793 vs $1578, respectively; $P < 0.0001$). **CONCLUSIONS:** Employees with epilepsy were three times more likely to have disability workloss, had six times the number of disability days, and three times higher indirect costs compared with matched employee controls.

PND16

INDIRECT COSTS OF ALZHEIMER'S DISEASE IN THE UNITED STATES

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OBJECTIVES: The objectives of this study were to estimate the number of people with Alzheimer's related morbidity and mortality and to estimate the indirect costs for Alzheimer's disease in the United States. Alzheimer's disease is a chronic progressive disease with a prevalence rate of 10% of the United States population at age 70 and a prevalence rate of 40% by age 90. **METHODS:** The Human Capital method was used to estimate indirect costs for Alzheimer's disease. The Medical Expenditures Panel Survey, a nationally representative database of U.S., non-institutionalized civilians was used to estimate the morbidity (missed work and bed days) portion of indirect costs. The value of a bed day was estimated at 40% of the daily wage rate the person would have earned if they were in the workforce. The 2004 National Vital Statistics Survey Mortality Data was used to estimate the mortality portion of indirect costs for Alzheimer's disease. **RESULTS:** A total of 26,745,385 bed days were reported by patients with Alzheimer's in 2004. Of the 65,965 deaths that were reported due to Alzheimer's, 8,320 occurred prior to life expectancy. In U.S. dollars the overall total for indirect costs for Alzheimer's patients in 2004 was over $1.3 billion. The majority of indirect costs for people with Alzheimer's were due to morbidity. **CONCLUSIONS:** By the year 2030, population estimates predict the most rapidly growing population segment will be those 85 and older. Given the increasing prevalence of Alzheimer's disease with advancing age, the number of persons developing Alzheimer's disease will increase dramatically over the next several decades as will the indirect costs. This study most likely underestimates the morbidity costs of Alzheimer's disease because patients in nursing homes and other institutions are not included in the Medical Expenditures Panel Survey.

PND17

ONE-YEAR EXPENSES FOR THE PHARMACOLOGICAL MANAGEMENT OF EPILEPSY WITHIN OUTPATIENT SETTING OF MONTENEGRO: RATIONAL OR NOT?

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OBJECTIVES: Our recent study has found that pharmacological management of epilepsy within outpatient setting of Montenegro has been slightly different in comparison to developed countries. This was probably the consequence of many medical and non-medical influences, whose separate contribution to prescribing cannot be fully explained. In this study we investigated the one-year expenses for the outpatient pharmacological management of epilepsy in our country, with particular highlight on potential cost-saving. **METHODS:** Data about antiepileptics (ATC code N03) which were prescribed for the treatment of epilepsy (G40 code according to ICD-X revision) during 2005 were extracted from the National database which was set up within Republic Health Insurance Fund of Montenegro since 2003. Standard DDD/ATC (defined daily dose/anatomic-therapeutic-chemical) methodology for the outpatient drug utilization was used. Than we multiplied the number of prescribed DDDs per 1000 inhabitants per day (DTIDs) with the average price of one DDD for each drug. Our country has a population of approximately 660,000 people and currency is

EUR. **RESULTS:** The overall prescribing of antiepileptics (N03) within outpatient setting of Montenegro during investigated period was 2.85 DTIDs, that was 232516.68 EUR. Although combination of sodium-valproate and valproic acid was prescribed approximately 13% (0.36 DTIDs), it participated in total expenses extensively more (40.28%, 93661.92 EUR). Newer antiepileptic agent, lamotrigin, was prescribed less than 4% (0.11 DTIDs), but It formed a one third of total costs (€33.28%, €77,377.08). The expenses for the two most frequently prescribed drugs phenobarbital and carbamazepine were almost equal (€25,439.04 and €21,199.20, 20.06%), although those drugs formed more than 80% of total prescribing. The participation of other drugs (sodium-valproate, clonazepam, gabapentin) in total expenses was about €14,839.44(6.38%). **CONCLUSIONS:** Our doctors mostly prescribed older, accessible, long-term experienced and lower priced antiepileptics. In order to fully estimate the expenses for the pharmacological management of epilepsy is rational or not, we have to explore this problem with more detail.

PND18

RUFINAMIDE IN THE ADJUNCTIVE TREATMETN OF LENNOX-GASTAUT SYNDROME (LGS): A COST EFFECTIVENESS ANALYSIS

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OBJECTIVES: To evaluate the cost-effectiveness of rufinamide relative to topiramate and lamotrigine as adjunctive treatment of Lennox-Gastaut Syndrome (LGS) a severe and devastating form of childhood epilepsy. **METHODS:** A Markov state transition model was developed with 4 health states WC75, WC50, NC (corresponding to ^{3}75%, ^{3}50% and <75%, and <50% reduction in tonic-atonic (drop attack) seizure frequency respectively) and "death". Efficacy and safety data were obtained from the literature. Transition probabilities were derived from patient level trial data for rufinamide. In the absence of head to head clinical studies, indirect/mixed treatment comparisons were used to obtain efficacy and safety estimates. LGS related health state utilities were obtained from a utility study which was carried out among the UK general public and caregivers/parents using the time trade off (TTO) method and EQ-5D questionnaires. Treatment benefit, as reflected with percent of patients achieving a given degree of reduction of drop-attack SF over a three year horizon, were translated to quality adjusted life years (QALYs). Medical resource and cost data were obtained from an expert panel survey and published sources. Costs were estimated from the perspective of the UK NHS and personal social services. Probabilistic sensitivity analyses were carried out. Cost and benefits were discounted according to UK guidelines. **RESULTS:** The primary base-case analysis using TTO utilities found that, over 3 years, rufinamide was associated with an incremental cost per QALY of £20,538 relative to topiramate and £154,831 relative to lamotrigine. A secondary analysis using EQ5D utilities found that rufinamide was associated with an incremental cost per QALY of £12,034 relative to topiramate and £56,446 relative to lamotrigine. **CONCLUSIONS:** This study with its underlying assumptions and data demonstrates that rufinamide should be considered as a treatment option for LGS, particularly as treatment choice is important for this rare and devastating condition.

PND19

NATALIZUMAB REDUCES RELAPSE-ASSOCIATED COSTS OF HOSPITALIZATIONS IN PATIENTS WITH RELAPSING MULTIPLE SCLEROSIS

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OBJECTIVES: To estimate relapse-associated cost savings due to reduction in MS-related hospitalization rates among natalizumab patients with relapsing multiple sclerosis (MS), including those with highly-active disease. **METHODS:** A probabilistic model was developed to estimate natalizumab-associated cost savings based on reductions in annualized MS-related hospitalization rates due to relapse. Hospitalization rate data were obtained from the randomized, double-blind, placebo-controlled, phase 3, natalizumab monotherapy clinical trial (AFFIRM). Among the 942 patients with relapsing MS who received natalizumab 300 mg (n = 627) or placebo (n = 315) intravenously for up to 116 weeks, those who reported ≥2 relapses in the prior year and ≥1 Gd+ enhancing lesions were considered highly-active (n = 148 for natalizumab, n = 61 for placebo). Natalizumab reduced the annualized MS-related hospitalization rate by 65% ($p < 0.001$) among all patients (0.034 natalizumab vs 0.097 placebo) and by 89% ($p < 0.001$) among those with highly-active disease (0.015 natalizumab vs 0.137 placebo). Cost savings associated with such reductions were assessed using MS hospitalization costs obtained from a random sample of the PharMetrics database ($19,750/episode, 2007 US Dollars). The model ran 1,000 simulations to estimate the mean costs of MS hospitalizations and associated 95% confidence intervals (CI). **RESULTS:** Due to relapse-associated hospitalization rate reductions, the 2-year per-patient MS hospitalization cost was $1,338 (95%CI: $842, $1964) for natalizumab and $3828 (95%CI: $2628, $5281) for placebo, resulting in a cost savings of $2490 (95%CI: $1,143, $3980). In patients with highly-active disease, the 2-year per-patient MS hospitalization cost was $604 (95%CI: $86, $1643) for natalizumab and $5436 (95%CI: $2558, $9593) for placebo, resulting in a cost savings of $4832 (95%CI: $1988, $9111). **CONCLUSIONS:** Natalizumab significantly reduced relapse-associated costs of MS-related hospitalizations in patients with relapsing MS, with the magnitude of reduction being even larger among those with highly-active disease.

NEUROLOGICAL DISORDERS— Patient-Reported Outcomes Studies

PND20

MEASURING THE IMPACT OF NARCOLEPSY ON QUALITY OF LIFE: A SYSTEMATIC REVIEW

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OBJECTIVES: Narcolepsy is a disease resulting in excessive daytime sleepiness (EDS) and cataplexy (an abrupt temporary loss of voluntary muscular tone, sometimes evoked by an emotional stimulus). Narcolepsy affects more than 20,000 people in the UK and has many implications for health-related quality of life (HRQL). The objective of our systematic review was to identify and assess the suitability of instruments used to measure the impact of narcolepsy on HRQL. **METHODS:** A systematic search of Scopus (1966–2008) was conducted using terms synonymous with "narcolepsy" combined with terms associated with measuring "QoL". Once the measures were identified, further searches were undertaken to explore their use, development history and demonstrated measurement properties.