literature. The prevalence in specific subgroups with higher risk for OSA was as well lower than expected. Possible reasons for these findings include unawareness, under-diagnosis of OSA or under-coding of this specific condition in the required billing information. These observations suggest that the actual awareness of the disease is low among patients, physicians and paramedical staff involved in coding. Further research is required to better understand the underlying reasons for the low prevalance of OSA.

PND3

DISEASE PROGRESSION IN PEDIATRIC MULTIPLE SCLEROSIS: A NARRATIVE REVIEW

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OBJECTIVES: The occurrence of multiple sclerosis (MS) before the age of 18 years is relatively rare and approximately 2-10% of MS patients have their first manifestation before adulthood. There is limited evidence on progression of disease in pediatric onset MS (POMS) and how it is different from adult onset MS (AOMS), therefore our objective is to compare clinical and long-term outcomes in POMS vs. AOMS. **METHODS:** MEDLINE, Embase, the Cochrane Database of Systematic Reviews were queried using the OVID platform to identify publications related to disease progression in POMS. Studies published in the English language, between 2007 and March 2017 were included. **RESULTS:** Search generated 2,238 records, and 313 full-text articles were reviewed and of these, 42 were included in the review. Female preponderance was observed in both POMS and AOMS. Twenty-one studies reported data on disability accumulation as measured by EDSS and almost all reported a slower development of irreversible disability in POMS. However, POMS patients reached disability milestones at a younger age than AOMS. Ten studies reported data on relapse outcomes and, of these, four reported a comparison between AOMS and POMS. Three of them reported that relapses were more frequent in POMS than AOMS. A slightly higher number of relapses were observed in patients with MS onset before 11 years of age. Relapse frequency in early phase of disease showed some correlation with the development of disability in patients. Two studies comparing cognitive outcomes for AOMS and POMS showed that cognitive impairment was higher in POMS as measured on Symbol Digit Modalities Test and Paced Auditory Serial Additional Test. **CONCLUSIONS:** Even though accrual of physical disability is slower in POMS than AOMS, cognitive decline in combination with progressive disability may have a severe impact on a child's ability to achieve and perform in later life.

PND4

RELATIVE EFFICACY AND TOLERABILITY OF LACOSAMIDE VERSUS LEVETIRACETAM AS MONOTHERAPY FOR ADULTS WITH NEWLY DIAGNOSED FOCAL SEIZURES: A POST-HOC ANALYSIS OF RANDOMIZED CLINICAL TRIALS

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OBJECTIVES: Lacosamide was previously compared to other anti-epileptic monotherapies in adults with focal seizures in a network meta-analysis (NMA). The number of clinical trials in this NMA was too limited to assess the impact of heterogeneity on outcomes. To overcome the similarity assumption of the NMA, we performed a patient level data analysis of lacosamide and levetiracetam in newly-diagnosed adult epilepsy patients. **METHODS:** Pooled patient-level data from two clinical trials –evaluating lacosamide and levetiracetam monotherapy versus controlled-release carbamazepine (carbamazepine-CR)– were analyzed to assess efficacy (6 and 12-month seizure-freedom) and tolerability (discontinuations due to adverse events [AEs]) outcomes. A propensity score was calculated to adjust for confounding factors. Carbamazepine-CR arm outcomes were compared to assess residual confounding in the lacosamide-levetiracetam comparison. **RESULTS:** In total, 444 and 285 patients were treated with lacosamide and levetiracetam. Lacosamide treatment resulted in a higher probability of being seizure free for 6-months (OR 0.69; 95%CI 0.44-1.08 for not being seizure free) and a lower risk of discontinuations due to AEs (OR 0.59; 95%CI 0.31-1.11) compared to levetiracetam. After adjusting for confounding factors, patients treated with carbamazepine-CR in the lacosamide trial had a higher probability of being seizure free for 6-months (OR 0.81; 95%CI 0.50-1.32) and lower risk of discontinuations due to AEs (OR 0.55; 95%CI 0.32-0.95) compared to patients treated with carbamazepine-CR in the levetiracetam trial. These results were consistent in various propensity score models, subgroup analyses and 12-months seizure freedom outcomes. **CONCLUSIONS:** Carbamazepine-CR outcomes differed between the trials after propensity score adjustment, indicating residual confounding that prevents a meaningful lacosamide-levetiracetam comparison. Comparative assessments derived from NMAs are not biased by such confounding (randomization holds); however, they describe the average treatment effect in a population without reflecting on differences in treatment response between individuals and subgroups of patients with distinct epilepsy characteristics.

PND5

DEFLAZACORT OR PREDNISONE TREATMENT FOR DUCHENNE MUSCULAR DYSTROPHY: A META-ANALYSIS OF DISEASE PROGRESSION RATES IN RECENT MULTICENTER CLINICAL TRIALS

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OBJECTIVES: Deflazacort and prednisone/prednisolone can slow the loss of ambulatory function in patients with Duchenne muscular dystrophy (DMD). We compared rates of decline in ambulatory function between patients receiving these corticosteroids, in conjunction with modern supportive care and physical therapy, on placebo arms of recent DMD trials. **METHODS:** Ambulatory patients with DMD were included from the placebo arms of recently concluded Phase III trials of ataluren (n=115, all with nonsense mutations) and tadalafil (n=116, unselected by genotype). Both trials required ≥6 months of prior corticosteroid use and stable baseline dosing. Associations between corticosteroid type and 48-week changes in ambulatory function were estimated using mixed models with repeated measures analyses adjusting for baseline age, corticosteroid duration, and functional assessments including six minute walk distance (6MWD), visit week, and interactions between visit week and other characteristics. Placebo arm analytic results from the ataluren trial were extracted from a publication; placebo arm data from the tadalafil trial were analyzed directly. Adjusted differences between deflazacort and prednisone/prednisolone were pooled across trials in a meta-analysis. **RESULTS:** Compared with patients receiving prednisone/prednisolone, those receiving deflazacort experienced slower declines, preserving 28.3 meters of 6MWD [95% confidence interval: (5.7, 50.9); p=0.01)], 2.9 seconds on rise from supine, [(0.9, 4.9); p<0.01], 2.3 seconds on 4 stair climb [(0.5, 4.1); p =0.01], and 1.15 points on NSAA total score [(-0.01, 2.3); p=0.05] in the meta-analysis results. Changes in 4 stair descend and 10 meter walk/run did not differ between groups. Associations were generally consistent in magnitude and direction across trials. A limitation of this post-hoc analysis is that steroid assignment was not randomized, and results may be confounded by unobserved baseline differences. **CONCLUSIONS:** In this adjusted analysis of corticosteroid groups from two clinical trials, patients receiving deflazacort experienced significantly slower rates of functional decline over 48 weeks than those receiving prednisone/prednisolone.

PND6

ADJUSTING FOR TREATMENT SWITCHING IN THE RELAPSING-REMITTING MULTIPLE SCLEROSIS CLARITY TRIAL AND THE CLARITY EXTENSION STUDY

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OBJECTIVES: Oral cladribine is a disease modifying treatment for multiple sclerosis. The CLARITY trial evaluated the efficacy of cladribine (LL) versus placebo (PP) over 96-weeks. After CLARITY, participants could enter a 96-week extension study, where placebo (PP) treated patients from CLARITY received cladribine (PPLL), and cladribine treated patients were randomised to placebo (LLPP) or continued cladribine. In the absence of a placebo arm across both 96-weeks (PPPP), we used statistical adjustment methods to compare 96-weeks low-dose cladribine to placebo alone over the combined CLARITY and extension periods for time to first qualifying relapse (FQR) and time to 3-month confirmed disability progression (3mCDP). **METHODS:** Adjustment for treatment switching from placebo to low-dose cladribine was performed using the rank preserving structural failure time model (RPSFTM), and the Iterative Parameter Estimation (IPE) algorithm. Other methods including the two-stage approach and inverse probability of censoring weights were not considered as all placebo patients who entered the extension study switched to cladribine. To gauge whether the effect of cladribine appeared to wane over time, hazard ratios (HR) from the treatment switching analysis (LLPP vs PPPP) were compared with the HRs from CLARITY (LL vs PP). **RESULTS:** Without adjustment, the HR for FQR was 0.44 (95% CI 0.34-0.58) (LL versus PP). The RPSFTM resulted in a HR of 0.48 (95% CI 0.36-0.62). The IPE resulted in a HR of 0.48 (95% CI 0.37-0.62). For 3mCDP, the HR was 0.60 (95%CI 0.41-0.87) (LL versus PP). RPSFTM resulted in a HR of 0.62 (95% CI 0.46-0.84) and IPE resulted in a HR of 0.62 (95% CI 0.45 to 0.83). **CONCLUSIONS:** The RPSFTM and IPE (LLPP vs PPPP) HRs compared to the unadjusted (LL vs PP) HRs indicate that there is only slight waning of the cladribine treatment effect over the extension period.

PND7

EFFECT OF VITAMINS IN PREVENTION OF ALZHEIMER'S DEVELOPMENT: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

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OBJECTIVES: Vitamins have demonstrated anti-Alzheimer's efficacy in clinical investigations however, results are inconclusive therefore, we conducted this meta-analysis. **METHODS:** Systematic literature searches were conducted on electronic databases using different combinations of key words for vitamins and Alzheimer's disease. Randomized controlled trials of vitamins reporting ADAS CoG and MMSE scores were included. Effect size and 95% confidence interval (CI) were pooled separately for both endpoints. **RESULTS:** The search yielded 40 studies, 6 of them met inclusion criteria. Three studies were pooled for ADAS-cog change from baseline. The combined results showed that there was no significant difference between the placebo and the vitamin group (mean difference: -0.19, 95% CI: -1.38 to 1.00, P= 0.76). The I2 value (82%), and P value for distribution (P= 0.004) showed that data were heterogeneous. The sensitivity analysis showed that the mean difference between the two treatment arms varied from -0.72 to 0.37. Six studies were pooled for MMSE change from baseline. The combined results showed that there was no significant difference between the placebo and vitamin group (mean difference: 0.28, 95% CI:-0.08 to 0.63, P= 0.12). The I2 values was 0%, showing a homogeneous distribution. The sensitivity analysis showed that the mean difference between the two treatment arms varied from 0.06 to 0.37. **CONCLUSIONS:** Overall, the treatment effect of vitamins was comparable to the effect of placebo. There was no significant difference between two therapies in prevention of Alzheimer's disease.

PND8

REAL WORLD EVIDENCE (RWE) ON LONG-TERM PERSISTENCE OF FINGOLIMOD IN RELAPSING-REMITTING MULTIPLE SCLEROSIS (RRMS) IN AUSTRALIA

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OBJECTIVES: This study aimed to examine and compare patient persistence of fingolimod to all reimbursed disease modifying therapies (DMTs) for relapsing-remitting multiple sclerosis (RRMS) in Australia. **METHODS:** The Australian Government Medicare Database was used in this study. For patients to be eligible for the study they needed to have received a script for a reimbursed MS disease modifying therapy between September 2011 and February 2016. Persistence was defined as a patient that remained on a DMT with a gap in scripts of no longer than 4 months. Individual patients could be included multiple times if they initiated a new DMT during the study period. Persistence was derived using Kaplan-Meier method and hazard ratios (HR). Persistence to individual treatments was compared to the average persistence observed across all treatments; p-values were based on the log-rank test. **RESULTS:** A total of 720 unique patients were eligible for the study. The majority were female (73.5%) and aged between 36-65 (64%). These patients contributed 1827 observations that were used for analysis (i.e. 2.5 new initiations/patient). Overall the median persistence (MP) to therapy was 29.6 months with 67.7% of patients remaining on therapy for 12 months. The only DMT that had significantly better persistence compared to the overall average, was fingolimod (HR 0.65 (95%CI: 0.57-0.73; p<0.001). Patients had an MP of 60 months on fingolimod and 79.5% of patients were persistent at 12 months. Patients were significantly less persistent to interferon Beta-1a (MP: 9.8-11.0 months), interferon Beta-1b (MP: 8.8 months), glatiramer acetate (MP: 11.4 months) and dimethyl fumarate (MP: 19.2 months) (hazard ratios above 1.27 (p values all ≤ 0.001) whilst the remaining DMTs, teriflunomide (MP: 27.7 months) and natalizumab (MP: 34.3 months), showed no significant difference from the average persistence. **CONCLUSIONS:** In this Australian Medicare utilization data, patients were most persistent to fingolimod treatment amongst all DMTs.

PND9

A RETROSPECTIVE CLAIMS ANALYSIS ON RATES OF COMPLIANCE AND DISCONTINUATION AMONG CANADIAN MULTIPLE SCLEROSIS PATIENTS TREATED WITH DISEASE-MODIFYING THERAPIES AT 6, 12 AND 24-MONTH PERIODS

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OBJECTIVES: To assess compliance and discontinuation rates with DMTs in Canadian patients with RRMS. **METHODS:** In this Canadian retrospective claims analysis based on Rx Dynamics® data from IMS Health Canada Inc., compliance and discontinuation rates were collected at 6, 12 and 24-month (cohorts from 2013-2017, rolling 36 months total). Patients had ≥1 prescription filled for each DMT (oral: fingolimod, dimethyl fumarate (DMF), teriflunomide; injectable (BRACE): interferon beta-1a, interferon beta-1b, glatiramer acetate; infusible: natalizumab). A medication possession ratio (MPR) of ≥80% was used to reflect patient compliance to their treatment. Discontinuation rates were calculated based on patients who stopped therapy (60 day window) or who were switched to another DMT. **RESULTS:** Compliance and discontinuation data was collected after 6 month (n=12543, n=9460 respectively), 12 month (n=7665, n=7234) and 24 month (n=6047, n=6030) periods. The percentage of patients deemed compliant after 6, 12- and 24-months across Canada was higher for fingolimod (75%, 76%, 71% respectively), compared to natalizumab (72%, 73%, 56%), DMF (71%, 68%, 55%), and BRACE (52%, 46%, 35%) and comparable to teriflunomide (76%, 77%, 68%). Patients on fingolimod had the lowest discontinuation rate after 6, 12 and 24-month periods (26%, 25%, 29% respectively) compared to: BRACE (48%, 35%, and 55%); natalizumab (34%, 29%, and 49%) and DMF (31%, 30% and 43%); and similar to teriflunomide (26%, 25%, 31%). **CONCLUSIONS:** The compliance for patients treated with fingolimod remained stable at all time point and was higher than for other DMTs but was comparable to teriflunomide. Unlike other DMTs, the discontinuation rate with fingolimod did not significantly increase over the 24-month period and remained lower than other DMTs and similar to teriflunomide. These findings may inform MS management strategies in Canada which may lead to improved clinical and economic outcomes.

PND10

DISPENSING PATTERNS OF ANTI-MIGRAINE AGENTS WITH THE FOCUS ON SEASONAL VARIATIONS IN PRESCRIBING

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OBJECTIVES: Studies of weather sensitivity in migraineurs have reported some seasonal variation in migraine attacks with a slight dependency of migraine attacks on months. The primary aim of the study was to determine the dispensing patterns of anti-migraine agents in a private healthcare setting in South Africa, with the focus on seasonal variations in the prescribing of these agents. **METHODS:** A retrospective, cross-sectional drug utilisation study was conducted on a South African medical insurance administrator database for 2016. The database contained 3 567 170 records for medicine, medical devices and procedures. All products in MIMS category 1.9 (Anti-migraine agents) were extracted from the database and analysed. **RESULTS:** A total of 914 anti-migraine products were dispensed to 505 patients (69.70% females) at a cost of R167 302.00. The average age of patients was 41.57 (SD=13.77) years, with 62.38% of patients between 35 and 64 years of age. The majority (78.01%) of products were dispensed by pharmacies. Of the eight active ingredients, clonidine was the most often dispensed (34.68%), followed by rizatriptan (28.01%) and ergotamine (26.04%). Proportionally, more clonidine prescriptions were dispensed to females than to males (39.31% versus 19.82%). Prescribing peaks were observed for active ingredients in February to April, and again in October. These months coincide with the change in seasons to winter and to summer in South Africa. There was a general decrease in the dispensing of anti-migraine agents towards the end of the year. **CONCLUSIONS:** The sample size was too small to make definite conclusions, but it seems as if the prescribing of anti-migraine agents showed peaks during the times of year when the seasons change (autumn and spring) confirming that weather is a possible trigger factor in migraine.

PND11

EPIDEMIOLOGY OF MULTIPLE SCLEROSIS: LITERATURE REVIEW FOR PREVALENCE AND TREND OVER TIME IN 5 EUROPEAN COUNTRIES AND CANADA

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OBJECTIVES: To analyze and compare published prevalence rates and trends over time for multiple sclerosis (MS) and predict patient numbers in 2017. **METHODS:** Systematic search (1990-2017 May) in Medline, Embase, back-referencing and additional searches in Registries / HTA websites/ Health Insurers. Key words: "multiple sclerosis; epidemiology, prevalence". Inclusion criteria: published after 1989; prevalence reported, all kinds of observational studies, country of interest, no language-restriction. Based on retrieved data yearly increase (absolute and relative to year 2016) was calculated and patient numbers for 2017 were predicted. **RESULTS:** 98 full text articles and two public available health claims databases [Statutory health insurance (SHI) Germany and France] were included. Prevalence rate/100k, number (#) of MS patients and yearly absolute/relative increase of prevalence rate, based on a linear trend (if not indicated otherwise) were as follows: **France**: 143/100k; #88,600; 3.8/2.8% [SHI France 2008-2015] and 2.6/1.7% [7 articles 2003-2015]; **Germany**: 310/100k, #245,400; 10/3.4% [SHI 2011-2017] and 7.2/2.5% [8 articles 1990-2010]; **Italy**: 149/100k (weighted average by sample size), #86,100; 5.6/2.7% [37 articles 1990-2010]; **Spain**. 104/100k (weighted average by sample size), #50,400, 2.3/2.4% [29 articles 1991-2014]; **UK**: 147/100k, #110,100; 3.3/1.9% [6 articles 1993-2013]; **Canada**: 267/100k, # 81,900; 4.5/1.7% [11 articles 1990-2010]. All included countries showed an increase of prevalence rate over the last decades whereas incidence was only slightly increasing and mortality decreased (data not shown). Health claims data provided the most recent data and report more patients compared to the published literature. Additional reasons for increased prevalence are discussed and include new diagnostic criteria since 2010, increased awareness, migration as well as Vitamin D level. **CONCLUSIONS:** MS prevalence varies widely within regions but increased comparable by 2-4% per year in Europe and Canada, whereas incidence increased only slightly for the last 5 years. Additional research for risk factors for MS should be undertaken.

PND12

MULTIPLE SOURCE OF INFORMATION TO CHARACTERIZE THE CLINICAL, THERAPEUTIC MANAGEMENT AND ECONOMIC BURDEN OF PATIENTS WITH MULTIPLE SCLEROSIS IN FRANCE

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OBJECTIVES: The objective is to describe the characteristics, therapeutic management and cost of Multiple Sclerosis (MS) in France by using different data sources. **METHODS:** The French regional MS Lorrain registry (ReLSEP) contains MS patients' characteristics, clinical data and therapeutic management, but no associated costs. Selected populations for this analysis were MS patients with first symptoms between 2000 and 2014. The French Health insurance databases (SNIIRAM and EGB) contains drug/medical device consumptions, medical visits, hospitals stays and associated costs, but limited patients 'characteristics, no clinical information, and no possibility to distinguish the form of the disease. Selected population for this analysis was prevalent MS patients in 2014. SNIIRAM is exhaustive (all French insured population), EGB is a 1/97th representative sample of the SNIIRAM. **RESULTS:** From the 6090 MS patients registered in the ReLSEP database, 1926 MS patients met all the predefined selection criteria: 72% were female, mean age at first symptoms was 33±11 years. 1663 patients with Remitting form of MS (RRMS) at initial diagnosis (86%) and 263 (14%) with Primary Progressive (PPMS). 180 (11%) RRMS and 73 (28%) PPMS patients have never been treated during the observation period. Median follow-up was 9 years (Q1-Q3: 5-12). From the 940 MS patients extracted from the EGB database, 71% were female and mean age at extraction was 51±14 years with more than 50% of patients having first MS Long-Standing-Condition-Status > 10 years. In 2014, 70% of cost resulted in drug expenses/hospitalizations, while 56% of patients had no delivery of treatment and 94% no hospital stay. From the SNIIRAM database in 2014, around 90000 patients were diagnosed with MS. Cost of MS patients represented 0.8% of the annual spending in France. **CONCLUSIONS:** Multiple source of information is necessary to evaluate clinical, therapeutic and economic burden of Multiple Sclerosis in France, as complementary/confirmatory information are retrieved.

PND13

HEALTH CARE UTILIZATION AND COSTS OF MULTIPLE SCLEROSIS PATIENTS IN THE NETHERLANDS: A HEALTH CARE CLAIMS DATABASE STUDY

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BACKGROUND: Up-to-date incidence and prevalence estimates of Multiple Sclerosis (MS) and real world information on health care use and costs in the Netherlands is lacking. **OBJECTIVES:** This study aimed to: i) investigate the incidence and prevalence of MS in the Netherlands by using claims data, ii) create insight in the health care use and related costs of MS patients. **METHODS:** A large health care claims database was analysed including approximately twenty-five percent of the Dutch population. Nine years of claims data were available: 2006-2014. Data contained an anonymized patient ID, gender, age and survival. Outpatient and inpatient drug prescriptions and drug prices were available. For hospital care, the database included the diagnoses codes and the corresponding costs. Incidence was estimated