OBJECTIVES: The objective of this study is to assess and compare the characteristics of relapsing remitting multiple sclerosis (RRMS) patients taking Interferon beta 1b (Extavia) or Interferon beta 1a (Rebif) subcutaneously. **METHODS:** A large US administrative retrospective claims database was used to identify patients diagnosed with RRMS and were prescribed Interferon beta 1b (IB1a) or 1a (IB1b) between January 2010 and December 2012 were included in the study. All patients were ≥ 18 years of age and continuously enrolled in the same health plan at least a year. Descriptive statistics and chi-square tests were performed on the data. **RESULTS:** There were a total of 317 patients on IB1a and 10,190 on IB1b during the study period. Of these, more than 70% of the patients in both groups were females (76.7% vs 74.9%, p=0.484). IB1a patients were older than IB1b (48.57±11.47 vs 46.51±10.63 years, p=0.001) and majority of the patients were in the 40 to 65 years age group (72.2% vs 69.1%, p<0.001). The majority of the patients in IB1a were from Midwest (60.35% vs 35.6%) and the least number of patients were from East (5.4% vs 27.0%, p<0.001). More than half of the IB1b patients were on group coverage (21.5% vs 58.0%) and the majority of the IB1a patients were on unknown coverage (77.6% vs 38.9%, p<0.001). The majority of the IB1b patients prescriptions were on health plan formulary (34.1% vs 65.1%, p<0.001) and were diagnosed with mental health problems (18.9% vs 56.9%, p<0.001). IB1a patients enrolled in the same health plan longer (5.71±3.48 vs 4.52±2.45 years, p<0.001) and submitted more claims (491.72±485.80 vs 377.36±363.13, p<0.001). IB1b patients received more number of days of supply than IB1a (30.47±6.80 vs 31.48±13.55 days, p<0.001). **CONCLUSIONS:** IB1b patients were younger, on health plan formulary and received more number of days of supply.

PND58

IMPACT OF NEW ENTRANTS TO THE MARKET FOR MULTIPLE-SCLEROSIS DISEASE-MODIFYING DRUGS IN CANADA

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OBJECTIVES: Multiple sclerosis (MS) is one of the most common neurological diseases, and in Canada, MS rates are among the highest reported worldwide. Disease-modifying drugs (DMDs) for MS are used to prevent disability and delay disease progression. Ten DMDs are approved in Canada, of which four (oral therapies fingolimod, dimethyl fumarate and teriflunomide; monoclonal antibody alemtuzumab) have entered the market since 2011. The objective of this study was to evaluate the Canadian market for DMDs since 2011. **METHODS:** Data on retail prescriptions and on drugstore and hospital purchases of DMD in Canada were obtained from IMS Brogan. Numbers of prescriptions and purchases (in $Can) were collected for 12-month periods ending May 31st2011, 2013 and 2015. **RESULTS:** Total numbers of prescriptions filled for DMDs in Canada amounted to 174,503, 181,536 and 231,513 in the 12 months ending May 31st of 2011, 2013, and 2015, respectively. The number of prescriptions for the market leader, glatiramer acetate, remained stable during this period, but as a percentage of overall DMD prescriptions decreased from 33.6% (2011) to 24.5% (2015). Prescription volume of the four newest DMD entrants to the Canadian market underwent steady growth, from <1% to 37% of overall DMD prescriptions in the 12 months ending May 31st2011 and 2015, respectively. Total drugstore and hospital purchases for these therapies in Canada reached $181 million in the 12 months ending May 2015, representing 40% of the value of total DMD purchases. **CONCLUSIONS:** DMDs represent a market of more than $450 million dollars in Canada; this will likely continue to grow due to the increasing prevalence of MS in the general population. Since 2011, the market share of the four newest entrants to the Canadian market has grown rapidly so that in 2015, they captured approximately two-fifths of DMD prescriptions and purchases.

PND59

COST ANALYSIS OF PATIENTS WITH MULTIPLE SCLEROSIS NEWLY INITIATING SUBCUTANEOUS INTERFERON β-1A VERSUS ORAL DISEASE-MODIFYING DRUGS

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OBJECTIVES: Evaluate costs among patients with multiple sclerosis (MS) newly initiating subcutaneous interferon beta-1a (scIFNβ1a) vs oral disease-modifying drugs (DMDs; ie, teriflunomide, fingolimod, dimethyl fumarate). **METHODS:** Patients from IMS LifeLink PharMetrics Plus™ met the following criteria: MS diagnosis (ICD-9-CM:340.xx); initiation of scIFNβ1a, teriflunomide, fingolimod, or dimethyl fumarate between 1/1/2012–6/30/2013 (1st claim=index date); continuous eligibility 12 months pre- and post-index; no DMD 12 months pre-index (treatment-naïve); and age 18–63 years. Total (all-cause) and medical costs (excluding DMD cost) were examined 12-months post-index (reported in 2014 US dollars). Generalized linear models with gamma distribution and log link controlled for demographics (age, sex, region) and clinically-meaningful disease severity measures (90-day pre-index relapse, neurologist visits, MRI). **RESULTS:** 1665 patients (686 scIFNβ1a, 118 teriflunomide, 455 fingolimod, 406 dimethyl fumarate) met inclusion criteria (mean age=44.4 years; 75.5% female). After adjustment, estimated least squares mean 12-month total cost for scIFNβ1a was $57,558 compared with teriflunomide ($55,414; p=0.4977), fingolimod ($69,478; p<0.0001), and dimethyl fumarate ($69,798; p<0.0001). Age (p<0.0001) and 90-day pre-index relapse (p<0.0001) were significant predictors of cost. Estimated least squares mean 12-month medical cost for scIFNβ1a was $13,562 compared with fingolimod ($15,840; p=0.0234), teriflunomide ($17,148; p=0.0350), and dimethyl fumarate ($20,987; p<0.0001). Age (p<0.0001), region (p=0.0006), and each clinically-meaningful disease severity measure (all p<0.0001) were significant predictors of cost. Interactions between DMD and region were identified, as was between DMD and no 90-day pre-index relapse. Among patients with no 90-day pre-index relapse, medical costs were lower for patients initiating scIFNβ1a compared with patients initiating an oral DMD. **CONCLUSIONS:** In this real-world assessment, after controlling for demographics and clinically-meaningful disease severity measures, patients initiating scIFNβ1a had lower 12-month total costs compared to fingolimod and teriflunomide and lower 12-month medical costs compared with patients initiating any oral DMD. Examination of interactions identified effects between various covariates and cost.

PND60

FINGOLIMOD VERSUS TEIFLUNOMIDE: HEALTH CARE COSTS ASSOCIATED WITH PATIENTS DIAGNOSED WITH RELAPSING REMITTING MULTIPLE SCLEROSIS TAKING DISEASE MODIFYING THERAPIES IN THE UNITED STATES

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OBJECTIVES: The objective of this study is to assess and compare the health care costs associated with patients diagnosed with relapsing remitting multiple sclerosis (RRMS) and taking Fingolimod capsules or Teriflunomide tablets. **METHODS:** A large US administrative retrospective claims database was used to identify patients diagnosed with RRMS and were prescribed Fingolimod or Teriflunomide between January 2010 and December 2012 were included in the study. All patients were ≥ 18 years of age and continuously enrolled in the same health plan for a year. Descriptive statistics, chi-square tests and regression analysis were performed on the data and statistical significance level was set a priori at 0.05. **RESULTS:** There were a total of 3,102 patients on Fingolimod and 114 on Teriflunomide that met the study criteria. Patients on average were charged $5168.66±2371.50 and $3811.13±1377.13 for their treatment (p<0.001). However, the amount allowed (p<0.001) by the health plan was $5013.07±2351.37 and $3705.05±1373.52 and the actual amount paid (p<0.001) was $4905.78±2344.11 and $3630.08±1375.79 for a month supply. On average, patient's deductible (p=0.748) was $12.12±106.89 and $8.40±55.13 and patient co-payment (p=0.887) was $75.14±239.49 and $78.74±159.46 for Fingolimod and Teriflunomide. The majority of the Fingolimod (54.9%) and Teriflunomide (92.1%) patients were charged anywhere between $50K to $100K and $25K to $50K for their treatment per year. For patients whose prescription was on their health plans formulary ($148.37±12.99 vs $126.88±15.62) on average charged per day lower compared to patients on non-formulary status ($158.22±25.40 vs $125.98±39.61). The regression analysis shows that patients receiving drug supply ≤30 days, having mental health issues, individual coverage, patient's <65 years of age and patients receiving Fingolimod were more likely (p<0.05) to have higher charges. **CONCLUSIONS:** The cost of Fingolimod treatment for RRMS patients is higher than Teriflunomide.

PND61

HEALTH ECONOMIC EVALUATION OF ORALLY VERSUS SUBCUTEANOUSLY ADMINISTERED DISEASE MODIFYING THERAPIES FOR PATIENTS DIAGNOSED WITH RELAPSING REMITTING MULIPLE SCLEROSIS

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OBJECTIVES: The objective of this study is to conduct a health economic evaluation and compare the health care costs associated with patients diagnosed with relapsing remitting multiple sclerosis and taking orally or subcutaneously administered disease modifying therapies (DMTs). **METHODS:** A large US administrative retrospective claims database was used to identify patients diagnosed with RRMS and were prescribed either orally or subcutaneously administered DMTs between January 2010 and December 2012 were included in the study. All patients were ≥ 18 years of age and continuously enrolled in the same health plan at least a year. Descriptive statistics, chi-square tests and logistic regression analysis were performed on the data and statistical significance level was set a priori at 0.05. **RESULTS:** There were a total of 3,216 patients on Orals and 10,507 on Subcutaneous DMTs that met study criteria. Patients on average were charged $5120.54±2356.75 and $3966.75±1904.01 for their treatment with Orals and Subcutaneous DMTs (p<0.001). However, the amount allowed (p<0.001) by the health plan was $4966.70±2336.18 and $3615.94±1752.21 and the actual amount paid (p<0.001) was $4860.56±2328.56 and $3504.89±1745.19 for a month supply. The annual cost of treating patients with Orals was higher than Subcutaneous DMTs ($61,446.57±28281.09 vs $47,601.01±22848.23, p<0.001). The majority of the Orals were charged anywhere between $50K and $100K (53.1% vs 11.9%, p<0.001) and Subcutaneous were charged between $25K and $50K (36.1% vs 80.4%) for their annual treatment. The mean cost of DMTs per day of treatment is higher for Orals compared to Subcutaneous ($151.04±21.25 vs $117.93±35.24, p<0.001). The logistic regression analysis showed that patients receiving Orals were eight times more likely to have costs for their treatment more than $50K per year compared to subcutaneous DMTs (OR 8.0, p<0.001). **CONCLUSIONS:** Patients on Orals DMTs have a higher treatment costs than Subcutaneous administered DMTs.

PND62

HEALTH ECONOMIC EVALUATION OF INTERFERON BETA 1B VERSUS 1A FOR PATIENTS DIAGNOSED WITH RELAPSING REMITTING MULTIPLE SCLEROSIS

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OBJECTIVES: The objective of this study is to conduct a health economic evaluation and compare the health care costs associated with patients diagnosed with relapsing remitting multiple sclerosis and taking Interferon beta 1b (Extavia) or Interferon beta 1a (Rebif) subcutaneously. **METHODS:** A large US administrative retrospective claims database was used to identify patients diagnosed with RRMS and were prescribed Interferon beta 1b (IB1a) or 1a (IB1b) between January 2010 and December 2012 were included in the study. All patients were ≥ 18 years of age and continuously enrolled in the same health plan for a year. Descriptive statistics, chi-square tests and regression analysis were performed on the data and statistical significance level was set a priori at 0.05. **RESULTS:** There were a total of 317 patients on IB1a and 10,190 on IB1b that met study criteria. Patients on average were charged $3378.06±963.58 and $3985.06±1923.06 for their treatment (p<0.001) with IB1a and IB1b. However, the amount allowed (p<0.001) by the health plan was $3060.36±917.77 and $3633.22±1769.11 and the actual amount paid (p<0.001) was $2977.23±912.96

and $3521.31±1762.29 for a month supply. The annual cost of treating patients with IB1b was higher than IB1a ($40,536.80±11563.02 vs 47,820.77±23076.74, p<0.001). The majority of the IB1a and IB1b patients were charged anywhere between $50K and $100K (93.1% vs 80.0%) and a smaller percentage (0.9% vs 6.5%, p<0.001) of patients were charged over >$100K for their treatment per year. Patients on group coverage ($36,172.54±6049.21 vs $41,592.60±8714.17) had lower annual costs compared to patients on non-group coverage ($43,736.44±14846.43 vs $44,945.83±19077.93). The regression analysis shows that patients receiving drug supply >30 days, were on non-group coverage and patients receiving IB1b were more likely (p<0.05) to have higher annual charges. **CONCLUSIONS:** Patients on IB1b treatment and non-group coverage had higher annual costs.

PND63

FINGOLIMOD VERSUS TEIFLUNOMIDE: CHARACTERISTICS OF PATIENTS DIAGNOSED WITH RELAPSING REMITTING MULTIPLE SCLEROSIS AND TAKING ORAL DISEASE MODIFYING THERAPIES

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OBJECTIVES: The objective of this study is to assess and compare the characteristics of relapsing remitting multiple sclerosis patients taking Fingolimod capsules or Teriflunomide tablets. **METHODS:** A large US administrative retrospective claims database was used to identify patients diagnosed with RRMS and were prescribed Fingolimod or Teriflunomide between January 2010 and December 2012 were included in the study. All patients were ≥ 18 years of age and continuously enrolled in the same health plan for a year. Descriptive statistics and chi-square tests were performed on the data and statistical significance level was set a priori at 0.05. **RESULTS:** There were a total of 3,102 patients on Fingolimod and 114 on Teriflunomide during the study period. Of these, more than 70% of the patients in both the groups were females (75.9% vs 73.7%, p=0.595). Fingolimod patients were younger than Teriflunomide patients (46.54±10.28 vs 48.86±9.86 years, p=0.018). The majority of the patients were in the 40 to 65 years age group (71.1% vs 80.7%, p=0.083). Approximately, one third of patients in both the groups were from East (26.1% vs 31.6%), South (34.7% vs 26.3%) and Midwest (33.2% vs 32.5%) regions with no significant difference between them (p=0.117). There were more number of patient's prescription was on health plan non-formulary status (40.6% vs 41.2%) than formulary status (32.7% vs 28.1%). Majority of the patients were under group coverage (58.1% vs 61.4%, p=0.771) and were diagnosed with mental health problems (56% vs 54.4%, p=0.061). Fingolimod patients received more number of days of supply than Teriflunomide (31.59±13.65 vs 29.44±8.8 days, p=0.048). There was no significant difference in the number of years patients continuously enrolled in the same health plan between the two groups (4.59±2.48 vs 4.45±2.32 years, p=0.535). **CONCLUSIONS:** Teriflunomide patients were older and received more number of days of supply than Fingolimod patients.

PND64

ORALS VERSUS SUBCUTANEOUS ADMINISTRATION OF DISEASE MODIFYING THERAPIES: A COMPARISON OF CHARACTERISTICS OF PATIENTS DIAGNOSED WITH RELAPSING REMITTING MULTIPLE SCLEROSIS

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OBJECTIVES: The objective of this study is to assess and compare the characteristics of patients taking orals or subcutaneously administered disease modifying therapies (DMTs) for the treatment of relapsing remitting multiple sclerosis (RRMS). **METHODS:** A large US administrative retrospective claims database was used to identify patients diagnosed with RRMS and were prescribed either orally or subcutaneously administered DMTs between January 2010 and December 2012 were included in the study. All patients were ≥ 18 years of age and continuously enrolled in the same health plan at least a year. Descriptive statistics and chi-square tests were performed on the data. **RESULTS:** There were a total of 3,216 patients on Orals and 10,507 on Subcutaneous DMTs during the study period. Of these, more than 70% of the patients in both groups were females (75.8% vs 75.0%, p=0.359). There is no significant difference in the mean age of two groups (46.62±10.27 vs 46.57±10.68 years, p=0.822). And, the majority of the patients were in the 40 to 65 years age group (71.5% vs 69.2%, p=0.030). Thirty four percent of the patients were from South region (34.4% vs 27.0%, p<0.001). More than half in both groups patients were on group coverage (58.2% vs 56.9%, p=0.201). The majority of the Subcutaneous patients prescriptions were on health plan formulary (32.9% vs 85.5%, p<0.001). There was no significant difference in the distribution of patients between the groups with mental health problems (56.0% vs 56.0%, p=0.851). The great majority of the patients were received ≤30 days' supply of DMTs in both the groups (93.2% vs 93.6%, p=0.022). In both groups, patients enrolled in the health plan for similar number of years (4.59±2.48 vs 4.55±2.49, p=0.473). **CONCLUSIONS:** There is no much difference in the characteristics of patients between the two groups. It shows that the populations that take these DMTs are similar.

PND65

CURRENT STATUS OF MULTIPLE SCLEROSIS IN COLOMBIA

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OBJECTIVES: Two previous local epidemiological studies describe Colombia as low risk area for multiple sclerosis (MS), however new information systems, which allow for a more accurate approximation, are currently available. This research aims to estimate the national prevalence of MS in our country, as well as by regions, and to analyze national drug costs. **METHODS:** We obtained data from the Individual Registry of Health Care Provision (RIPS), with the diagnosis code G35x for multiple sclerosis, taking the confirmed new and repeated diagnoses between 2009 and 2013; information divided by gender, age group and geographical location. Population data from the National Administrative Department of Statistics (DANE) was used as the denominator. For the analysis of medications, we use the database SISMED 2014 searching for all drugs available in Colombia: interferon beta 1A, interferon beta 1B, glatiramer acetate, natalizumab, mitoxantrone and fingolimod, for sales volume and prices. **RESULTS:** According to the RIPS, 3,462 patients with diagnosis of MS contacted the health system in Colombia during the period 2009-2013. The national prevalence for the period was 7.52 / 100,000, with the highest figure in Bogota (16.25) with 1213 patients, followed by Quindío (13.03) and Risaralda (11.18), in Central Colombia. The largest proportion of patients were in the 50 to 54 years age group, and 70% were women. Additionally, in 2014 Colombia spent COP $ 86 billion pesos (43 million US dollars) for MS drugs, around US$12,500 per patient/year. **CONCLUSIONS:** Contrary to previous estimations, Colombia is an intermediate risk area for MS, a disease that implies a high direct cost for the health system. The information in the new database might have limitations as underdiagnosis and misdiagnosis. Although, for MS these are presumably lower, due to the requirement of an accurate diagnosis for access to expensive drugs.

PND66

A RETROSPECTIVE STUDY OF UNITED STATES HEALTH CARE UTILIZATION AND COSTS FOR PATIENTS WITH MULTIPLE SCLEROSIS TREATED WITH DISEASE-MODIFYING THERAPY

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OBJECTIVES: Examine multiple sclerosis (MS) healthcare and costs before and after DMT initiation or switching. **METHODS:** Data came from the Truven Health Analytics MarketScan® Database containing claims for >180 million US patients. Patients with ≥1 DMT claim (teriflunomide, interferon [IFN] B-1a, IFN B-1b, glatiramer acetate, fingolimod, dimethyl fumarate [DMF], and natalizumab) from October 1, 2012, to January 1, 2014, were included (N=12,932). The first DMT claim date was the index date with oral therapies first assigned. Patients had to be enrolled in an insurance plan 12 months before and after the index date. Patients who switched DMT post index date were excluded. Outcome variables included the probability of an inpatient admission, the number of outpatient claims per patient, and associated costs before and after DMT use. **RESULTS:** Twelve months before the index date, 363 patients (3%) had no DMT claim (naive) and the remainder (n=12,569; 97%) had ≥1 claim (experienced). For experienced oral patients, teriflunomide was associated with a 45% reduction in the probability of an inpatient admission (P=0.028). Fingolimod and DMF led to reductions in outpatient claims of 7% (P<0.001) and 10% (P<0.001), respectively. Fingolimod, DMF, and teriflunomide reduced outpatient costs by 12% (P<0.001), 20% (P<0.001), and 6% (P=0.202), respectively. Only teriflunomide reduced inpatient costs (24%, P=0.615). Results for oral naive patients were mixed because of small samples. DMF statistically significantly decreased outpatient costs, but teriflunomide and fingolimod decreased both inpatient and outpatient costs. For injectable comparators, only naive natalizumab, and experienced glatiramer acetate and IFN B-1a patients had statistically significantly reduced outpatient costs post index date. **CONCLUSIONS:** For therapies not explicitly noted, there were no reductions in outcome variables or the reduction was not statistically significant. However, oral drugs were largely associated with a greater reduction in claims than was observed for injectable drugs.

PND67

TRENDS IN DESIGN, CONDUCT, AND OUTCOMES MEASURES FOR PATIENT REGISTRIES FOR MULTIPLE SCLEROSIS

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OBJECTIVES: Multiple sclerosis (MS) is a chronic progressive neurological disease and the majority of patients will experience some degree of impaired mobility. The objective of this study was to review the trends in design of patient registries for Multiple sclerosis. **METHODS:** Systematic review was conducted to identify new and on-going pivotal registries for Multiple sclerosis. The inclusion criteria were the indication of Multiple sclerosis, registry status and study completion date of 2010 or after. The data field extracted were study title, intervention, sponsor, age subgroups, planned enrollment, study type, study design, completion date and outcome measures. **RESULTS:** Overall, 15 clinical studies with total planned enrollment of 113,604 patients were identified. The median enrollment for the studies was 500 patients. For pregnancy related studies, time frame was 1 year or less, while for others it ranged from 5-15 years (longest duration study is an academic registry called Global Demyelinating Disease Registry). Six of the fifteen studies were for pregnancy related outcomes. Primary outcome measures included: Adverse events, Disease progression over time of follow up, Time to resolution of lymphopenia, Negative birth outcomes, including spontaneous abortions and birth defects, Multiple Sclerosis Impact Scale version 1 (MSIS-29v1), Prevalence of PBA (using CNS-LS). Only a few registries provided information regarding secondary outcomes. The outcomes included: Contributing factors to change in MS disease status, Pregnancy outcomes and Neurodegenerative Diseases. Twelve out of 15 registries were sponsored by the industry (5 by Biogen, 2 by EMD Serono), and 3 studies were sponsored by academia. **CONCLUSIONS:** Current MS registries seems to be focussed largely on safety outcomes, there is a need for measurement of more long term effectiveness and patient reported outcomes evidence.

PND68

PREDICTORS AND PREVALENCE OF SLEEP DISTURBANCE AND HYPNOTIC USE IN PERSONS WITH CANCER

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