Characteristics and Utilization Of MS Patients In a Commercially Insured US Population

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CONCLUSIONS

- The selected demographic and clinical characteristics of MS patients in the study are consistent with the literature.[1-3]
- Over half of MS patients were not treated with disease modifying therapies (DMTs) after diagnosis of MS, while use of other MS-related medications such as antibiotics, narcotics, and corticosteroids increased significantly from the pre-index to post-index period.
- Further research is warranted to look at factors associated with MS-related treatments and the economic burden of MS patients.

INTRODUCTION AND BACKGROUND

- Multiple Sclerosis (MS) is a debilitating disease that impacts the central nervous system (CNS).
- Although MS prevalence is relatively low, the disease burden can be sizeable in terms of resource utilization, and vary depending on clinical characteristics at the time of disease onset.

OBJECTIVES

To describe selected demographic, clinical characteristics, and resource use associated with MS patients enrolled in a managed care plan.

METHODS

Study Design and Patients

This was an observational, retrospective cohort study that utilized the HealthCore Integrated Research Database (HIRD^{SM}) medical, and pharmacy claims data for the time period from 01/01/2006 through 04/30/2012. Patients were followed until the end of their insurance eligibility or the end of the study period, whichever occurred first.

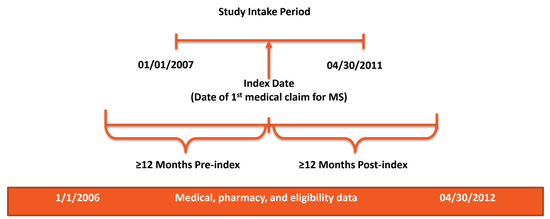
Inclusion criteria

- Patients must have at least 2 medical claims at least 30 days apart for MS (any ICD-9 codes 340.xx) in an office, skilled nursing facility (SNF), outpatient or emergency room (ER) setting, OR at least 1 medical claim for an inpatient stay with MS as the primary diagnosis during the intake period of 01/01/2007 through 04/30/2011. The date of the first medical claim for MS observed within the intake period was defined as the index date (index date was included in the post-index period).
- Patients must have ≥12 months pre- and post-index continuous medical and pharmacy eligibility.
- Patient must be at least 18 years of age on the index date.

Exclusion criteria

- Patients with ≥1 claim for MS or disease modifying therapies (DMTs) during entire pre-index period.

Figure 1. Study Design



Study Measures

- Demographic characteristics included age, gender, health plan types, geographic region, and physician specialty on index date, index year and length of post-index follow-up.
- Clinical characteristics included Deyo-Charlson Comorbidity Index (DCI), general comorbidities and MS-related comorbidities in the 12 month pre-index period.
- Use of MS-related medications excluding DMTs was measured in the 12 month pre- and entire post-index periods.
- Use of DMTs and all-cause healthcare resource utilization (inpatient, ER, office visit, and other outpatient services) were measured in the entire post-index period.

Analysis

Descriptive statistics including means (standard deviation [SD] and median) and relative frequencies for continuous and categorical data, respectively were reported. The Wilcoxon signed rank sum test was used to compare proportions of specific MS-related medication use in the pre- and post-index period. Other variables were not compared between the pre- and post-index period.

RESULTS

Demographics

- A total of 4,567 MS patients were identified. Patients had a mean age of 47 years, and 74.1% were female.
- The majority of patients (62.0%) were enrolled into preferred provider organization (PPO) plans.
- Patients had 33 months of post-index follow-up on average (SD=14.5).

Table 1. Demographic and Clinical Characteristics of MS Patients (N=4,567)

Variables	N/Mean	%/SD	Median
Number of Patients, n (%)	4,567	100	
Mean Age, SD, median	47	13.96	46
Gender, n (%)			
Male	1,181	25.86	
Female	3,386	74.14	
Geographic Region on Index Date, n (%)			
Northeast	1,028	22.51	
Midwest	1,766	38.67	
South	659	14.43	
West	1,114	24.39	
Insurance Plan Type on Index Date, n (%)			
Health maintenance organization (HMO)	658	14.41	
Preferred provider organization (PPO)	2,832	62.01	
Point of Service (POS)	171	3.74	
Other	906	19.84	
Physician Type on the Index Date, n (%)			
Non-neurologist	2,946	64.51	
Neurologist	1,621	35.49	
Index Year, n (%)			
2007	1,340	29.34	
2008	1,183	25.90	
2009	1,014	22.20	
2010	888	19.44	
2011	142	3.11	
Length of post-index follow-up (in months), mean (SD, median)	33	14.46	31

Pre-index Clinical Characteristics

- 16.0% of patients had presence of clinically isolated syndrome in the pre-index period.
- The mean DCI score was 0.70 (SD=1.5).
- The most prevalent pre-index general comorbidities were high blood pressure (28.2%), high cholesterol (12.2%), and arthritis (both rheumatoid and osteoarthritis) (11.9%).
- The most prevalent pre-index MS-related comorbidities included depression (15.8%), urinary tract infection (13.7%) and anxiety (9.1%).

Table 2. Pre-Index Clinical Characteristics of MS Patients (N=4,567)

Variables	N/Mean	%/SD	Median
Number of Patients, n (%)	4,567	100	
Deyo-Charlson Comorbidity Index (DCI), mean (SD, median)	0.70	1.45	0.00
Clinically isolated syndrome (CIS), including optic neuritis, melitis, paraparesis, and diplopia	729	15.96	
Pre-index General Comorbidities, n (%)			
Alzheimer disease	29	0.63	
Arthritis, rheumatoid and osteoarthritis	545	11.93	
Chronic kidney disease	65	1.42	
Chronic liver disease	50	1.09	
Diabetes	424	9.28	
High blood pressure	1,288	28.20	
High cholesterol	555	12.15	
Parkinson's disease	35	0.77	
Stroke	249	5.45	
Unspecified acquired hypothyroidism	536	11.74	
Pre-index MS-Related Comorbidities, n (%)			
Anxiety	414	9.07	
Ataxia	235	5.15	
Chronic fatigue	102	2.23	
Depression	723	15.83	
Muscle weakness	328	7.18	
Neuropathic pain	27	0.59	
Pressure ulcers	38	0.83	
Spasticity	244	5.34	
Urinary tract infections	624	13.66	

Use of MS-related Medications (Excluding DMTs)

- The most prevalent pre-index non-DMT MS related medications were antibiotics (53.3%), narcotics (35.1%) and corticosteroids (30.5%).
- Use of antibiotics, narcotics, and corticosteroids increased to 73.4%, 55.4%, and 59.6%, respectively in the post-index period.
- No patients used ampyra in the pre-index period.

Table 3. Use of MS-related Medications (Excluding DMTs) in the Pre- and Post-index Periods (N=4,567)

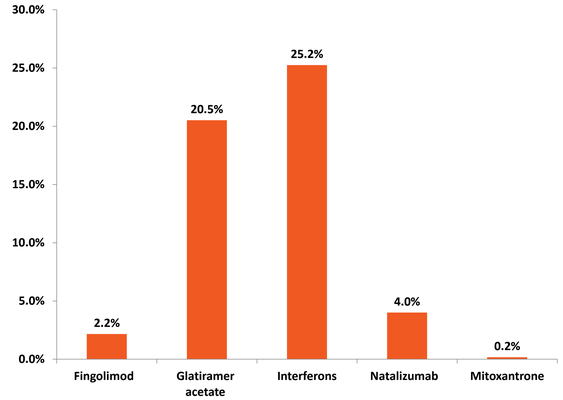
Variables	12 Months Pre-index Period		Entire Post-index Period		P-Value*
Number of Patients, n (%)	4,567	100	4,567	100	
Ampyra (Dalfampridine)	0	0.00	174	3.81	<0.0001
Anti-fatigue agents	92	2.01	629	13.77	<0.0001
Antibiotics	2,432	53.25	3,351	73.37	<0.0001
Anticonvulsants	840	18.39	1,633	35.76	<0.0001
Antidepressants	1,256	27.50	2,104	46.07	<0.0001
Antidiarrheals	57	1.25	137	3.00	<0.0001
Antipsychotics	188	4.12	382	8.36	<0.0001
Benzodiazepines	915	20.04	1,526	33.41	<0.0001
Corticosteroids	1,393	30.50	2,720	59.56	<0.0001
Hypnotics	506	11.08	970	21.24	<0.0001
Muscle Relaxants	740	16.20	1,509	33.04	<0.0001
Narcotics	1,602	35.08	2,529	55.38	<0.0001
Non-steroidal anti-inflammatory drugs (NSAIDs)	952	20.85	1,543	33.79	<0.0001
Stimulants	160	3.50	634	13.88	<0.0001

*P-value was calculated based on the Wilcoxon signed rank sum test to compare proportions of specific medication use in the pre- and post-index period.

Use of Disease Modifying Therapies (DMTs) in the Post-index Period

- During the post-index period, 40.8% of MS patients had ≥1 prescription for DMTs.
- Interferons and Glatiramer acetate (Copraxone) were the most commonly used DMTs in the post-index period (25.2% and 20.5% of MS patients, respectively).
- 2.2% of MS patients used the oral agent Fingolimod (Gilenya) in the post-index period.

Figure 2. Use of Disease Modifying Therapies (DMTs) in the Post-index Period (N=4,567)



All-cause Healthcare Resource Utilization in the Post-index Period

- Overall, 39.7%, 42.7%, 99.7%, 99.5%, and 93.2% had all-cause inpatient, ER, office visits, other outpatient services and pharmacy prescriptions, respectively in the post-index period.
- The mean length of hospital stay for patients with hospitalization was 4.3 days (SD=6.2).

References

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Disclosures

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