Introduction

• Multiple sclerosis (MS) is an acquired inflammatory and immune-mediated disorder of the central nervous system characterized by the development of plaques, demyelination, and degeneration of neural tissue. MS affects more than 2 million people worldwide, and an estimated 500,000 to 600,000 individuals in the United States.* MS usually affects young adults between the ages of 20–40 years, with a female-to-

Results

• Reports of MS patients with MS who were treated with 1 year of data beyond the individuals' video data. If there are three patients are more than 60%.

• Absence days and indirect costs were adjusted using regression modeling, for whom no significant differences were found.

Table 1. Demographic Comparisons

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Treatment</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>Avonex</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>1.03</td>
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<tr>
<td></td>
<td>Copaxone</td>
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<td></td>
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<tr>
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<td>Gender, %</td>
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<td>Exempt, %</td>
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<td></td>
<td>Betaseron</td>
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<td></td>
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<td>0.414</td>
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Table 2. Annual Lost Time for Employees With Multiple Sclerosis by Treatment

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Treatment</th>
<th>p-Value</th>
</tr>
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<tr>
<td>Sick leave</td>
<td>Avonex</td>
<td>0.087</td>
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<td>Betaseron</td>
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<td>Copaxone</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
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<tr>
<td>Workers’ compensation</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
<tr>
<td>Short-term disability</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
<tr>
<td>Long-term disability</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
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</table>

Table 3. Annual Indirect Costs for Employees With Multiple Sclerosis by Treatment

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Treatment</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription drug costs</td>
<td>Avonex</td>
<td>0.072</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
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<tr>
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<td>Rebif</td>
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<tr>
<td>Workers’ compensation</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
<tr>
<td>Short-term disability</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
<tr>
<td>Long-term disability</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
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<td>Rebif</td>
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</tbody>
</table>

Table 4. Contribution of Direct Medical, Prescription, and Indirect Costs by DMT

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Treatment</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescription drug costs</td>
<td>Avonex</td>
<td>0.072</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
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<tr>
<td></td>
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<tr>
<td>Workers’ compensation</td>
<td>Avonex</td>
<td>0.001</td>
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<td></td>
<td>Betaseron</td>
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<td>Copaxone</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
<tr>
<td>Short-term disability</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
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<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
<tr>
<td>Long-term disability</td>
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</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
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<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
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</table>

Table 5. Annual Lost Cost by Treatment

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Treatment</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost</td>
<td>Avonex</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Betaseron</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Copaxone</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Rebif</td>
<td>0.001</td>
</tr>
</tbody>
</table>

Limitations

• While this study adds to the body of evidence about work absence levels among employees treated for MS, the study has the same limitations characteristic of database studies using administrative claims (i.e., lack of severity classification, IM stage or type) and may not be representative of patients with MS who are not diagnosed, treated, or not able to maintain employment.

Conclusion

• Despite such limitations, the study attempted to control for age, gender, employment status, and severity (using Charlson comorbidity score) and therefore represent important additions to the literature.

References


N.L. Kleinman,1 R.A. Brook,2 K. Rajagopalan,3 and A.K. Melkonian1

1Human Capital Management Services (HCMS) Research Reference Database, Chaska, MN; 2The JSTAC Group, New Orleans, LA; 3Blegen Inc., Englewood, CO.

Funding for this study was provided by Biogen Idec, Inc.

PPR25

Absenceism (Lost Time) Among Employees With Multiple Sclerosis

Objective

1. Objectives: The objective of this study was to assess the patient demographics in the MS treated with DMTs for MS was in a real-world setting.

1. Methods: A retrospective analysis was performed on data (1/1/2001–6/30/2007) from the Human Capital Management Services (HCMS) Research Reference Database, consisting of approximately 550,000 employees representative of the US employed labor force. The present study included all patients with MS who were treated with DMTs, patients receiving IM IFN α-1a had more days of sick leave (7.18 vs 2.98 days, p < 0.05 vs Betaseron [SC IFN β-1b]); b 27.6a 46.2a,c between the other 3 DMTs (glatiramer acetate) and IM IFN α-1a. All other cost comparisons were not significant.

2. Results: Absence days and indirect costs were adjusted using regression modeling, for whom no significant differences were found.

3. Conclusion: While this study adds to the body of evidence about work absence levels among employees treated for MS, the study has the same limitations characteristic of database studies using administrative claims (i.e., lack of severity classification, IM stage or type) and may not be representative of patients with MS who are not diagnosed, treated, or not able to maintain employment.


5. Acknowledgments: The authors thank Biogen Idec, Inc, for its generous support of this study. Presented at the 20th Annual Meeting of the Academy of Managed Care Pharmacy; San Francisco, CA.
**Methods**

**Objective**

Introduction

Healthcare was provided through managed care plans contracted by respective patients with MS (ICD-9 code of 340.XX). Portability and Accountability Act guidelines.

Employer payroll and disability insurance records were analyzed for work absences consisting of approximately 550,000 employees representative of the US employed civilian labor force (2004).

A retrospective analysis was performed on data (1/1/2001–6/30/2007) from the records of 785 patients with MS were extracted with 1 year of data beyond the disease. MS usually affects young adults between the ages of 20–40 years, with a female-to-male risk ratio between 1.5 and 3.6. Studies have reported that patients with MS frequently modify their employment due to the disease.

Modifying therapies (IMN, immunomodulation) for MS are to reduce the frequency and severity of relapses, delay disability, and postpone the onset of the progressive phase of the disease. Available DMS include the following:

- Interferon
  - Intranasal (IN) IFN-β-1a (Amerile)
  - IFN-β-1b (Betaseron)
- Subcutaneous (SC) IFN-β-1a (Rebif)
- Glatiramer acetate (Copaxone)
- Natalizumab (Tysabri)

While efficacy data on the DMTs exist, limited objective data are available on the –1b (Betaseron®)

β-1b (Betaseron®)

β-1a (Avonex®)

β-1a (Rebif®)

β-1a (Copaxone®)

β-1a

β-1a

β-1a

β-1a

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Absenceism (Lost Time) Among Employees With Multiple Sclerosis

N.L. Kleinman,1 R.A. Brook,2 K. Rajagopalan3 and A.K. Melkonian1

1Human Capital Management Services (HCMS) Group, Chiefsy, WI, USA; 2The JSTRA Group, Newtown, KI, USA; 3Biogen Idec, Inc., Cambridge, MA, USA

Introduction

- Multiple sclerosis (MS) is an acquired inflammatory and demyelinating disorder of the central nervous system. 
- Several treatments for MS (e.g., glatiramer acetate, interferons) have been approved for the treatment of MS and have shown promise in reducing the rate of disability progression and maintaining physical function.
- However, the long-term effects of these treatments on prevalent physical and financial costs are not well understood.

Methods

- A retrospective analysis was conducted on data from 1/1/2000 to 12/31/2007 from the Human Capital Management Services (HCMS) Group Research Database, consisting of approximately 550,000 employees representing more than 50 US-based international companies.
- The analysis included 1,080 employees with a diagnosis of MS who received treatment with a DMT.

Objectives

- The objective of this study was to assess the objective differences in lost time (absence and indirect costs) among employees treated with DMTs for MS in a real-world setting.

Results

- Records of 785 patients with MS were extracted with 1 year of data beyond the patient's index date. Of these patients, 311 received a DMT (Figure 1).
- Absence days and indirect costs were adjusted using regression modeling, to compare the absences (lost time) for the patients' annual lost time.

Table 2. Annual Lost Time for Employees With Multiple Sclerosis by Treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Days of Sick Leave</th>
<th>Days of STD</th>
<th>Days of LTD</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avonex</td>
<td>7.18</td>
<td>1.84</td>
<td>7.77</td>
<td>&lt;0.05</td>
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<tr>
<td>Betaseron</td>
<td>2.98</td>
<td>0.00</td>
<td>12.54</td>
<td></td>
</tr>
<tr>
<td>Copaxone Subcutan</td>
<td>13.97</td>
<td>0.00</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Rebif</td>
<td>7.33</td>
<td>6.79</td>
<td>10.00</td>
<td></td>
</tr>
</tbody>
</table>

- Patients receiving glatiramer acetate had more days of sick leave (7.18 vs 2.98 days, P = 0.0101) and STD (6.79 vs 1.84 days, P = 0.0101) compared with those receiving IM IFN β-1a.
- No eligible natalizumab patients were found in the data based on the study timeframe and 1-year follow-up inclusion criteria.

Table 3. Annual Indirect Costs for Employees With Multiple Sclerosis by Treatment

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Cost Category</th>
<th>Cost ($1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avonex</td>
<td>Total</td>
<td>16.59</td>
</tr>
<tr>
<td>Betaseron</td>
<td>Total</td>
<td>17.46</td>
</tr>
<tr>
<td>Copaxone Subcutan</td>
<td>Total</td>
<td>13.97</td>
</tr>
<tr>
<td>Rebif</td>
<td>Total</td>
<td>20.00</td>
</tr>
</tbody>
</table>

- Overall, these results suggest that among employees treated for MS with DMTs, patients receiving IM IFN β-1a had significantly lower sick leave costs and STD costs compared with those receiving glatiramer acetate.

Table 4. Contribution of Direct Medical, Prescription, and Indirect Costs by DMT

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Direct Medical Costs</th>
<th>Prescription Costs</th>
<th>Indirect Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avonex</td>
<td>45%</td>
<td>18%</td>
<td>37%</td>
</tr>
<tr>
<td>Betaseron</td>
<td>50%</td>
<td>22%</td>
<td>28%</td>
</tr>
<tr>
<td>Copaxone Subcutan</td>
<td>65%</td>
<td>6%</td>
<td>30%</td>
</tr>
<tr>
<td>Rebif</td>
<td>60%</td>
<td>15%</td>
<td>25%</td>
</tr>
</tbody>
</table>

- Furthermore, the study cases in some of the cohorts suggest that results should be interpreted with caution.

Conclusions

- Overall, these results suggest that among employees treated for MS with DMTs, patients receiving IM IFN β-1a had significantly lower sick leave costs and STD costs compared with the other 3 DMTs.
- Furthermore, the small sample sizes in some of the cohorts suggest that results should be interpreted with caution.
- Despite these limitations, the study attempted to control for age, gender, employment status, and severity (using Charlson comorbidity score) and that represents an important addition to the literature.

limitations

- While this study adds to the body of evidence about work absence levels among employees treated for MS, the study has some limitations, characteristic of database studies using administrative claims (i.e., lack of severity classifications, ICD stage or type) and may not be representative of patients with MS who are not diagnosed, not treated, or not able to maintain employment.

References

Introduction

- Multiple sclerosis (MS) is an acquired inflammatory and immune-mediated disorder of the central nervous system characterized by inflammation, demyelination, and degeneration of neural tissue. MS affects more than 2 million people worldwide, and affects among African Americans and the United States.

- Many studies have reported that people with MS have difficulty maintaining employment due to the disease.

- Disease-modifying therapies (DMTs, immunomodulators) for MS aim to reduce the inflammatory and immune-mediated injury that underlie the clinical course of the disease.

Methods

- A retrospective analysis was performed on data (1/1/2004-12/31/2004) from the Human Capital Management Services (HCMS) Resources Reference Database, consisting of approximately 550,000 employees representative of the US employed civilian labor force (2004).

- Employees with available prescription claims were assigned to therapy cohorts and followed for 1 year after their initial prescription (index date).

Objective

- The objective of this study was to assess the objective differences in lost time (absence) for patients' annual lost time.

Results

- Records of 762 patients with MS were extracted with 1 year of data beyond the patient’s index date. This represents a nearly complete phase of the disease.

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- Analysis of the annual indirect costs for cohorts of patients with MS (Table 3) found that these patients incurred significantly higher indirect costs than DMT cohorts with those receiving DMTs.

- On a percentage basis, the IM IFNβ-1a cohort had the smallest percentage of indirect costs for all cohorts, while the percentage of indirect costs for the glatiramer acetate and SC IFNβ-1a cohorts were 3.2 and 2.9 times higher, respectively (Table 3).

- Furthermore, the results of this study are in line with the cohort’s results that should be interpreted with caution.

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