Real-World Patient-Level Costs of Administering Infusion Disease-Modifying Drugs: A US Retrospective Claims Database Analysis

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SUMMARY

• In addition to the cost of the medications, initiation of DMDs in patients with MS may incur administration and monitoring costs, including laboratory tests, procedures, and visits.

• The objective of this study was to identify and evaluate real-world costs associated with administering DMD infusion therapies for MS (including alemtuzumab, ocrelizumab, and natalizumab) using medical billing codes occurring on the same day as a DMD infusion.

• Administrative claims data were obtained for 3236 patients treated with infusion DMDs in the IQVIA™ RWD Adjudicated Claims–US database.

• Mean total non-DMD costs per infusion day for all medical codes billed on the infusion day were $1308 for alemtuzumab, $902 for ocrelizumab, and $597 for natalizumab.

• The most costly category per infusion day was administration, followed by co-administration, MS-related, potentially MS-related, and unrelated costs.
DISCLOSURES & ACKNOWLEDGMENTS

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BACKGROUND INFORMATION

• In addition to the cost of the medications, initiation of DMDs in patients with MS may incur administration and monitoring costs that include laboratory tests, procedures, and visits\(^1\)

• There is limited research regarding the overall costs of administering infusion DMDs in patients with MS

OBJECTIVES

To identify real-world costs associated with administering DMD infusion therapies for MS (alemtuzumab, ocrelizumab, and natalizumab) by evaluating medical billing codes occurring on the same day as a DMD infusion

To evaluate real-world costs of administering MS infusion DMDs per infusion day

Abbreviations: CPT, Current Procedural Terminology; DMD, disease-modifying drug; HCPCS, Healthcare Common Procedure Coding System; MS, multiple sclerosis; NDC, national drug code

Reference: 1. Lage MJ, Wu Y. Poster presented at AAN 2017; 22-28 April, Boston, Massachusetts, USA.
METHODS

• Patients from the IQVIA™ RWD Adjudicated Claims–US database with a diagnosis of MS (ICD-9-CM/ICD-10-CM: 340.xx/G35) and ≥1 HCPCS billed medical claims for an infusion DMD (alemtuzumab, ocrelizumab, or natalizumab) from 1/1/2017–9/30/2018 were identified

• Inclusion criteria were age 18–65 years and ≥12 months pre-index eligibility (index=first infusion claim)

• Patients with infusion DMDs during <12-month pre-index, a DMD that was billed as NDC claim, or DMD costs or administration costs potentially out-of-range were excluded from analyses

• Costs based on medical codes (i.e., HCPCS, CPT, and Revenue) billed on the same date as a HCPCS-coded infusion DMD claim were included and were categorized as administration, co-administration (e.g., pre-treatment steroid, antihistamine, pregnancy test, lab tests), MS-related, potentially MS-related, and not MS-related

• Mean cost per patient for all claims billed on the same date (i.e. infusion day) as the DMD were calculated for presentation
METHODS

Figure 1. Patient selection

- 9243 patients with any NDC or HCPS billed pharmacy or medical claim for alemtuzumab, ocrelizumab, or natalizumab from 1/1/2017 through 9/30/2018
  - 35 without a diagnosis of MS
- 9208 patients with a diagnosis of MS any time in the data from 1/1/2017 through 9/30/2018
  - 396 with NDC billed claims
- 8812 patients with only HCPCS billed claims for alemtuzumab, ocrelizumab, or natalizumab from 1/1/2017 through 9/30/2018 (i.e., patients with any NDC billed claims are excluded)
  - 2723 without ≥12 months eligibility
- 6485 patients with at least 12 months of pre-index eligibility (index date=first infusion claim date)
  - 205 not age ≥18 and <65 at index
- 6280 patients age ≥18 and <65 at index
  - 2609 have claim for index DMD 365 days pre-index
- 3671 patients with no claims for the index DMD in the 365 days pre-index
  - 435 drug costs <$5000 or administration <$100 post-index
- 3236 patients with costs ≥$5000 for drug or ≥$100 for administration in the post index period

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RESULTS

• **3236 patients treated with infusion DMDs were included** in the study (alemtuzumab: 292 [9.0%]; ocrelizumab: 2207 [68.2%]; natalizumab: 737 [22.8%])

• **Mean total non-DMD costs per infusion day** for all medical codes billed on infusion day were $1308 for alemtuzumab, $902 for ocrelizumab, and $597 for natalizumab
  
  – **Costs for administration** per infusion day were $1178 for alemtuzumab, $808 for ocrelizumab, and $468 for natalizumab
  
  – The next most costly categories per infusion day were **co-administration** (alemtuzumab $93, ocrelizumab $63, natalizumab $54), **MS-related** (alemtuzumab $6, ocrelizumab $20, natalizumab $27), **potentially MS-related** (alemtuzumab $19, ocrelizumab $5, natalizumab $20), and **unrelated** (alemtuzumab $13, ocrelizumab $6, natalizumab $26)

• Costs billed on days other than the days of infusion administration were not included due to uncertainty regarding their relevance; therefore, cost estimates may be conservative
RESULTS

Figure 2. Cost per infusion day by cost category

<table>
<thead>
<tr>
<th>Drug</th>
<th>Cost per Patient with Infusion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alemtuzumab</td>
<td>$1178</td>
<td>$1308</td>
</tr>
<tr>
<td>Ocrelizumab</td>
<td>$808</td>
<td>$902</td>
</tr>
<tr>
<td>Natalizumab</td>
<td>$468</td>
<td>$597</td>
</tr>
</tbody>
</table>

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RESULTS

Figure 3. Cost components of overall cost per infusion day

- Administration: 88%
- Not MS-related: 1%
- MS-related: 2%
- Potentially MS-related: 1%
- Co-administration: 8%
- Not coded: 0%

Note: alemtuzumab is administered for 5 days in Year 1 and 3 days in Year 2, ocrelizumab is administered every 6 months, and natalizumab is administered every 28 days.
CONCLUSIONS

Non-DMD costs per infusion day were:
- $1308 for alemtuzumab
- $902 for ocrelizumab
- $597 for natalizumab

Real-world costs of administering DMD infusions among patients with MS should be considered in economic analyses

There are challenges in setting rules for specificity and sensitivity (e.g., time frame, code category) for capturing appropriate costs