Current Marijuana Usage By MS Status and Disability in the NARCOMS Registry

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Disease Management, Mechanisms, and Treatment

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Disclosures

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- Dr. Tyry and Ms. McNeal have nothing to disclose.
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- Dr. Marrie: University of Manitoba, Winnipeg, MB, Canada
- Dr. Fox: Mellen Center for Multiple Sclerosis Treatment and Research, Cleveland Clinic, Cleveland, OH
Recent research suggests that cannabinoids can help alleviate some symptoms of multiple sclerosis (MS).

Individual state and US laws are changing regarding marijuana and medical marijuana.

In April 2014, AAN issued “Findings on Use of Medical Marijuana in Treatment of Certain Brain Diseases,” including MS.

Evidence indicating “use of specific oral and oromucosal forms of cannabis to improve some symptoms in patients with MS” — symptoms such as tremor and spasticity.

In December 2014, the US government ended restrictions on the use of medical marijuana in those states where it had been legal before May 2014.

26 states and the District of Columbia with laws allowing, at a minimum, medical marijuana usage.

Medical marijuana legal for medical use only, with prescription
No Jail Personal Use: no jail time for possession under a certain weight, varies by state

Medical & Legal Similar to Alcohol
Medical & No Jail Personal Use
No Jail Personal Use
Not Legal
In August 2014, all active NARCOMS participants were invited to complete a one-time, anonymous survey. Marijuana referred to smoking, ingesting, or other controlled substance derived from marijuana or synthetic marijuana.

Goals of survey:
- Characterize marijuana usage: past and current behaviors and attitudes on usage and legality
- Determine if participants have spoken to their doctor about marijuana
- Characterize MS disease status & current disability according to marijuana usage

Survey Response
- 5665 respondents
- 46.2% of invitees
- 49.5% live where marijuana is legal in some form
  - 1.1% outside of the US
- 84% reported not currently using marijuana:
  - 34% Never
  - 41% Past use Prior to MS (No MS Use)
  - 10% Past use for MS
- 16% Current use for MS:
  - median days of use in past 30 days: 20 (IQR: 5-30)
Disposition by Current MS Group

<table>
<thead>
<tr>
<th>Disposition</th>
<th>RRMS-Active Relapse &lt;2 Years (RRMS-A)</th>
<th>RRMS-Stable Relapse 2+ Years (RRMS-S)</th>
<th>Progressive Relapses in Past (P-Rel)</th>
<th>Progressive No Relapses (PPMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% in August 2014</td>
<td>26.5%</td>
<td>42.8%</td>
<td>20.9%</td>
<td>9.8%</td>
</tr>
</tbody>
</table>

- Age at Dx, Aug 2014: 36, 54; 35, 57; 35, 59; 44, 62
- % Female: 81.8%; 82.5%; 71.6%; 64.2%

Current Disability

Patient Determined Disease Steps (PDDS)

- Bedridden – 8
- Wheelchair/Scooter – 7
- Bilateral Support – 6
- Late Cane – 5
- Early Cane – 4
- Gait Disability – 3
- Moderate Disability – 2
- Mild Disability – 1
- Normal – 0

<table>
<thead>
<tr>
<th>MS Type</th>
<th>RRMS-A N</th>
<th>RRMS-S N</th>
<th>P-Rel N</th>
<th>PPMS N</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>1473</td>
<td>2373</td>
<td>1159</td>
<td>540</td>
</tr>
</tbody>
</table>
Current Spasticity

<table>
<thead>
<tr>
<th>MS Type</th>
<th>RRMS-A</th>
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<td>N</td>
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</table>

Overall median

Use by MS Type

<table>
<thead>
<tr>
<th>Use Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Marijuana Use</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>N</td>
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<td>---</td>
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Spasticity Performance Scales, Copyright Registration Number / Date: TXu000743629 / 1996-04-04; assigned to DeltaQuest Foundation, Inc., effective October 1, 2005. U.S. Copyright law governs terms of use.
Likelihood of Use by Current MS Type

Odds Ratio ± 95% CI for likelihood of Current Use vs Not Current Use

- RRMS-Stable less likely to be current user than other types of MS
- Progressive with history of relapse more likely than RRMS-Active

Adjusted for:
- Current age
- Gender
- Current PDDS

Likelihood of Use by Current PDDS

Odds Ratio ± 95% CI for likelihood of Current Use vs Not Current Use

All levels (except bedridden) more likely to be current users than normal PDDS

Adjusted for:
- Current age
- Gender
- Current MS Type
Likelihood of Use for Current PDDS

**Odds Ratio ± 95% CI for likelihood of Current Use vs Not Current Use**

Adjusted for:
- Current age
- Gender
- Current MS Type

- Bilateral Support (6) less likely to be current users compared to late cane, early cane, and moderate disability
- Cane use, moderate and gait disability more likely to be current users compared to mild disability

Likelihood of Use for Current Spasticity

**Odds Ratio ± 95% CI for likelihood of Current Use vs Not Current Use**

Adjusted for:
- Current age
- Gender
- Current MS Type

All levels more likely to be current users than normal

All p<0.0001

6 vs 5 6 vs 4 6 vs 3 6 vs 2 5 vs 1 4 vs 1 3 vs 1 2 vs 1

6 vs 5 6 vs 4 6 vs 3 6 vs 2 5 vs 1 4 vs 1 3 vs 1 2 vs 1

p=0.0026 0.0125 0.1029 0.0125 0.0014 0.0011 0.0455 0.0031

p<0.0001
### Likelihood of Use for Current Spasticity

**Odds Ratio ± 95% CI for likelihood of Current Use vs Not Current Use**

- Adjusted for:
  - Current age
  - Gender
  - Current MS Type

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Odds Ratio</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 vs 1</td>
<td>4 vs 1</td>
<td>4 vs 1</td>
</tr>
<tr>
<td>p=0.0007</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>3 vs 1</td>
<td>2 vs 1</td>
<td>4 vs 2</td>
</tr>
<tr>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>0.0011</td>
</tr>
<tr>
<td>4 vs 2</td>
<td>3 vs 2</td>
<td></td>
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<tr>
<td>0.0295</td>
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</tr>
</tbody>
</table>

- Higher levels more likely to be current users compared to minimal spasticity
- Severe and moderate more likely to be current users compared to mild spasticity

### Summary

- **5600+ responses indicate those living with MS are willing to answer questions about the topic**
  - Limitation: cross-sectional, anonymous
- **>50% have used marijuana**
- **16% current users**
- **Likelihood of use lower for:**
  - RRMS-Stable 2+ years
  - Lower PDDS disability levels
  - Lower Spasticity levels