Reducing Provider Variance in the Timing and Screening for Transcranial Magnetic Stimulation in Patients with Treatment Resistant Depression

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Background to the Problem

- Depression is an epidemic affecting more than 300 million people and the leading cause of disability worldwide.
- Patients with treatment resistant depression (TRD) often have a history of multiple medication trials before novel treatment approaches are considered.
- Transcranial magnetic stimulation (TMS) is a promising treatment for TRD linked to cost savings, greater quality adjusted life years and overall success of treatment response.
- Many mental health providers have little exposure to or understanding of TMS.
- Inconsistent definitions for TRD and the existing TMS practice guidelines result in conflicting pathways of care.
- Early screening and shared, informed decision making promote positive health outcomes.

Purpose & Aims

**Purpose:** To reduce variability among clinicians in how they screen patients for TRD and TMS by implementing and evaluating a standardized process and screening tools.

**Aim 1:** Determine whether an educational session on TRD and TMS will increase knowledge of psychiatric providers.

**Aim 2:** Determine if the Maudsley Staging Method will increase the number of patients screened for TRD.

**Aim 3:** Determine if the Adapted TMS Appropriateness Scale will increase the number of patients being screened for TMS.

Methods

**Design:** Quasi-experimental pre-post QI project

**Setting:** Private psychiatric practice in New York City

**Sample:**
- 1 psychiatrist and 5 psychiatric nurse practitioners
- Patients age 18+ with a diagnosis of MDD, unspecified depressive disorder or TRD

**Intervention:**
- 1-hour educational session
- TRD and TMS Screening

**Data Collection:** Pre/post quiz, 12-week retrospective chart review

Results

**Knowledge Scores with Education:**
- 6 participants (100%) completed pre- and post- education quiz
- Pre-education: Median knowledge score = 4 (IQR: 3, 5)
- Post-education: Median knowledge score = 5 (IQR: 4, 5)
- No statistically significant difference between the knowledge scores before and after the educational session (p = 0.10)

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>N = 6</th>
</tr>
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<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>41.5 (8.62)</td>
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<tr>
<td>Sex, n (%)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>3 (50)</td>
</tr>
<tr>
<td>Female</td>
<td>3 (50)</td>
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<tr>
<td>Years of Employment, n (%)</td>
<td></td>
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<tr>
<td>&lt;5</td>
<td>1 (16.66)</td>
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<tr>
<td>5-10</td>
<td>4 (66.66)</td>
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<tr>
<td>&gt;10</td>
<td>1 (16.66)</td>
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**TRD Screening:**
- Pre-intervention: 16.9% of patients screened positive for TRD
- Post-intervention: 38% of patients screened positive for TRD
- There was a statistically significant increase (p = 0.047) in the number of patients who screened positive for TRD using the Maudsley Staging Method.

**TMS Screening:**
- Pre-intervention: 100% of patients with TRD screened positive for TMS
- Post-intervention: 94.7% of patients screened positive for TMS
- Post-intervention: 38% of patients screened positive for TMS

Figure 1. Project Participant Flowchart

Discussion

**Findings:**
- Providing education to psychiatric providers about TRD and TMS is clinically meaningful in expanding their knowledge of tools and interventions available for the enhancement of clinical care.
- The Maudsley Staging method supports clinicians in identifying patients with TRD.
- Despite the lack of statistical significance using the Adapted TMS Appropriateness Scale, all but one patient who screened positive for TMS was provided information about TMS as a potential treatment option.

**Strengths:**
- Prior research has not attempted to adapt a screening tool to support providers in identifying candidates for TMS.
- The findings support the existing literature identifying the Maudsley Staging Method as a valuable tool to identify TRD.

**Limitations:**
- Small sample size
- Redundancy in questions between both screening tools
- Lack of validated screening tool for TMS

**Recommendations:**
- Further work is needed to create standardized training and screening tools for psychiatric providers in the care of patients with TRD and in the use of TMS.

**Conclusion**

With education and improvements in screening for TRD, providers may be more inclined to discuss TMS as an alternative treatment option at the time of TRD diagnosis.