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Screening for Bipolar I Disorder and the Rapid Mood Screener: Results of a Nationwide Health Care Provider Survey

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ABSTRACT

Objective: Effective screening for bipolar I disorder can lead to enhanced assessment, improved diagnosis, and better patient outcomes. The Rapid Mood Screener (RMS), a new bipolar I disorder screening tool, was evaluated in a nationwide survey of health care providers (HCPs).

Methods: Eligible HCPs were asked to describe their opinions/current use of screening tools, assess the RMS, and evaluate the RMS versus the Mood Disorder Questionnaire (MDQ). Results were stratified by primary care and psychiatric specialty. Findings were reported using descriptive statistics; statistical significance was reported at the 95% confidence level.

Results: Among respondents (N = 200), 82% used a tool to screen for major depressive disorder (MDD), while 32% used a tool for bipolar disorder. Most HCPs were aware of the MDQ (85%), but only 29% reported current use. According to HCPs, the RMS was significantly better than the MDQ on all screening tool attributes (eg, sensitivity/specificity, brevity, practicality, easy scoring; $P < .05$ for all). Significantly more HCPs reported that they would use the RMS versus the MDQ (81% vs 19%, $P < .05$); 76% reported that they would screen new patients with depressive symptoms, and 68% indicated they would rescreen patients with a depression diagnosis. Most HCPs (84%) said the RMS would have a positive impact on their practice, with 46% saying they would screen more patients for bipolar disorder.

Discussion: In our survey, the RMS was favorably evaluated by HCPs. A large percentage of respondents preferred the RMS over the MDQ and indicated that it would likely have a positive impact on clinicians' screening behavior.

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Although mania is the hallmark symptom of bipolar I disorder, depression is the leading cause of associated morbidity, and most patients seek treatment during a depressive episode.[1] Routine screening for depression is recommended in primary care settings,[2] but this same standard of care is not as well established for patients whose depressive symptoms suggest bipolar disorder.[3,4] Not surprisingly, misdiagnosis of bipolar I disorder as major depressive disorder (MDD) is a common problem and a significant unmet medical need for individuals with this disorder. For example, 69% of individuals with bipolar disorder surveyed in one large study[5] reported being initially misdiagnosed, with unipolar depression cited as the most common misdiagnosis (60%). A recent meta-analysis[6] supported previous findings of diagnostic inaccuracy showing that over 3 in 20 patients with depression actually had unrecognized bipolar disorder. Timely diagnosis of bipolar disorder is a critical concern since delays are associated with worse outcomes[7,8] and the potential for inappropriate treatment with antidepressant monotherapy, which is associated with risk of mood destabilization or treatment-emergent mania.[9] Effective screening for bipolar disorder can lead to enhanced clinical assessment, which may help improve diagnostic accuracy and circumvent iatrogenic use of antidepressants.[10]

Since bipolar disorder is a diagnosis made over time and in consideration of prior mood episodes,[11] comprehensive clinical assessment comprises cross-sectional evaluation of depressive symptoms and inquiry into the history of manic (suggesting bipolar I disorder), hypomanic (suggesting bipolar II disorder), and mixed mood symptoms. While overlapping depressive symptoms in bipolar disorder and MDD and the lack of a clear-cut boundary separating bipolar I and bipolar II[12] complicate the clinical picture, screening tools have been proposed as a way to improve the detection of bipolar disorder.[11,13] Although several are available, their use in clinical practice settings is limited by barriers including short office visits, uncertainty about when to screen, and inadequate knowledge of bipolar disorder symptoms.[3,4] Currently, the 15-item Mood Disorder Questionnaire (MDQ),[14] which screens for a lifetime

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Clinical Points

- Effective screening can lead to enhanced assessment and improved identification of bipolar I disorder in clinical practice.
- The Rapid Mood Screener (RMS) is a self-administered screening tool that was developed to differentiate bipolar I disorder from major depressive disorder in patients with depressive symptoms.
- In a nationwide survey of health care providers, three-quarters of respondents reported that the RMS would have a positive impact on their practice, with almost half saying they would screen more patients for bipolar disorder.

history of manic or hypomanic episodes, is among the best known and most widely used screening tools for bipolar I or II disorder. For a positive screen, 7 of 13 MDQ manic symptom items must be endorsed, and on 2 additional items, patients must affirm that several of these symptoms have occurred during the same time period and caused at least moderate impairment.

The Rapid Mood Screener (RMS) is a newly introduced self-administered screening tool that was developed to differentiate bipolar I disorder from MDD in patients with depressive symptoms (full version available at https://doi.org/10.1080/03007995.2020.1860358).[15] Validated in an observational study of patients with bipolar I disorder, the pragmatic 6-item RMS not only screens for hallmark manic symptoms, but also evaluates depressive characteristics (eg, earlier age at depression onset, prior negative response to antidepressant treatment, multiple depressive episodes) that are more likely to indicate bipolar disorder than MDD.[16] When 4 or more RMS items were endorsed ("yes"), which is considered a positive screen for bipolar I disorder, sensitivity (the true positive rate) was 88% and specificity (the true negative rate) was 80%. The clearly worded items of the RMS can be completed in less than 2 minutes during or outside of a clinical visit (eg, online, via electronic medical record system, waiting room), making the RMS a patient-friendly screener that can be easily integrated into clinical practice to alert the clinician that more thorough diagnostic evaluation is warranted.

Even though routine screening for bipolar disorder is suggested to improve the accuracy and efficiency of diagnostic evaluation, published information pertaining to health care provider (HCP) experience and insight into bipolar disorder screening is scant. To better understand the current clinical practice landscape regarding screening tool use, we conducted a nationwide survey of primary care and psychiatric HCPs to evaluate MDD and bipolar disorder screening awareness and behavior, with specific attention paid to the acceptability of the MDQ and the RMS.

METHODS

A nationwide electronic survey of HCPs was conducted from June 1 to June 12, 2020, to evaluate current screening practices for bipolar disorder and MDD, familiarity with screening tools, current use of bipolar screeners, and attitudes about the RMS and MDQ (see Supplementary Appendix 1 for survey questions); participants were blinded to the sponsor of the survey (AbbVie). Potential participants were identified in databases of providers who participate in market research and invited by e-mail to complete the 10-minute survey.

The overall quota of interviews was 200; a representative sample of HCPs was stratified by specialty (primary care: primary care practitioners [PCPs], general nurse practitioners [NPs] and physician assistants/associates [PAs]; psychiatric: psychiatrists, psychiatric NPs and PAs) and screened for eligibility (Table 1). HCPs who met eligibility criteria were instructed to answer all questions in the context of their work in outpatient settings. All data were self-reported; responses were anonymous, with no identifiable information collected during the survey.

To assess screening tool use, HCPs were asked if they currently use a screening tool for depression or bipolar disorder (yes/no), and, if so, they entered the name(s) of the tool(s) they use. Experiences with the MDQ were specifically queried, and bipolar disorder screening tool attributes (eg, minimal number of items, sensitivity, specificity, easy scoring) were rated (1 [Not at all important] to 7 [Extremely important]).

The RMS was then introduced as a potential new screening tool for bipolar disorder, and participants were instructed to review it. The RMS was shown as a stand-alone element (Figure 1A), and HCPs were asked to rate how it compared to other bipolar disorder screening tools (1 [Much worse] to 7 [Much better]). On a scale of 1 (Extremely unlikely) to 7 (Extremely likely), HCPs were asked how likely they were to use the RMS to screen new patients with depressive symptoms or a depression diagnosis and to rescreen patients with a depression diagnosis. HCPs then rated how they thought that availability of the RMS would impact their

Table 1. Survey Respondents and Qualifications

Health Care Providers	Quota by Specialty (N = 200)
Primary care providers	100
General NPs/PAs	30
Psychiatrists	50
Psychiatric NPs/PAs	20
Eligibility criteria	
➢ Residency (if required) completed in the US	
➢ Practicing in specialty for less than 30 years	
➢ Spend at least 75% of time in clinical practice	
➢ At least 50% of clinical practice in private practice, outpatient treatment center, hospital or clinic, or community mental health center	
➢ Psychiatric specialty respondents must see at least 15 patients with MDD per month	
➢ Primary care respondents must see at least 10 patients with MDD per month	
➢ All providers must diagnose at least 1 patient with MDD or bipolar disorder per month	

Abbreviations: MDD = major depressive disorder, NP = nurse practitioner, PA = physician's assistant.

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practice, with response choices ranging from "I would begin screening for bipolar disorder" to "The RMS would not impact my practice."

After answering these RMS-specific questions, respondents were shown the RMS and the MDQ side-by-side on the screen with the position of each tool randomly determined; a table comparing the specifications of each tool was also presented (Figure 1B). HCPs were instructed to review the two screeners, after which they were asked which tool they were more likely to use. Finally, HCPs rated the RMS and the MDQ (presented sequentially in randomly ordered questions) according to how well screening tool attributes described each tool; the percentage of HCPs who rated an attribute as 6 (Describes very well) or 7 (Describes extremely well) was tallied per tool, and the percentages were compared.

Statistics

Findings were reported by descriptive statistics. PCP and psychiatric subgroup comparisons were made to determine whether there was a significant difference at a 95% confidence level; a minimum sample size of n = 20 was required to compare. Additional comparisons were made between the RMS and the MDQ; statistical significance was determined at the .05 level. Collected data were analyzed using IBM SPSS Data Collection Professional/Dimensions.

RESULTS

A total of 426 HCPs were screened for eligibility; 151 were excluded for not meeting inclusion qualifications, and 51 HCPs left the survey before completing it in full. Additionally, 19 surveys were not included because the sample size quota for the specialty had already been met, and 2 surveys were not included because the total number of participants for the survey had been reached. A total of 203 respondents completed the survey; 3 completed surveys were excluded from reporting for failing quality control checks (eg, contradictory answers). Per quota, 200 surveys were retained for analysis (primary care = 130 [PCPs = 100; NPs/PAs = 30]; psychiatric = 70 [psychiatrists = 50, psychiatric NPs/PAs = 20]).

Figure 1. (A) The Rapid Mood Screener (RMS) as Presented in the Survey and (B) Screening Tool Specifications for the RMS and Mood Disorder Questionnaire (MDQ)

A. The RMS[a] as Presented in the Survey

Rapid Mood Screener (RMS)

Patient Name:
Date:

The following questions ask about certain aspects of your current and past medical history.

Please select one response for each question.

	YES	NO
1. Have there been at least 6 different periods of time (at least 2 weeks) when you felt deeply depressed?	☐	☐
2. Did you have problems with depression before the age of 18?	☐	☐
3. Have you ever had to stop or change your antidepressant because it made you highly irritable or hyper?	☐	☐
4. Have you ever had a period of at least 1 week during which you were more talkative than normal with thoughts racing in your head?	☐	☐
5. Have you ever had a period of at least 1 week during which you felt any of the following: unusually happy; unusually outgoing; or unusually energetic?	☐	☐
6. Have you ever had a period of at least 1 week during which you needed much less sleep than usual?	☐	☐

Scoring:

In order to screen positive for possible bipolar disorder, the following criteria must be met:

- "YES" to 4 or more of the 6 items results.

B. Screening Tool Specifications: The RMS and the MDQ

	Rapid Mood Screener (RMS)	Mood Disorder Questionnaire (MDQ)
Screens for	Bipolar disorder	
Background	Developed and validated by cross-functional experts	
Elements	Manic symptoms and additional bipolar risk factors	Manic symptoms
Number of Items	6	15
Time to Complete	< 2 min	5 min
Scoring	Single step	Multi-step
Sensitivity[15] Proportion of patients who were identified as BPD-I who would screen positive for BPD-I	0.88	0.86
Specificity[15] Proportion of patients who were identified as MDD who would screen negative for BPD-I	0.80	0.78

[a]Adapted from McIntyre et al.[15] RMS Copyright © 2020 AbbVie. All rights reserved. AbbVie Medical. Reproduced in part with permission.

HCP Sample Characteristics

The HCP sample was relatively well distributed by geographic region (West = 19%, Midwest = 26%, South = 29%, Northeast = 26%). The majority of HCPs saw outpatients with bipolar disorder in a private office setting (72%); other settings included outpatient treatment center/clinic (11%) and community mental health center (10%). The mean monthly adult patient load (standard deviation [SD]) for the total number of HCPs was 76 (60.6) patients with MDD (primary care = 58 [45.9]; psychiatric = 110 [69.2]) and 37 (40.6) patients with bipolar disorder (primary care = 20 [20.9]; psychiatric = 68 [48.9]). Psychiatric HCPs versus primary care HCPs reported making more monthly diagnoses of MDD (48 [33.9] vs 24 [23.3]) and bipolar disorder (33 [32.5] vs 9 [14.4]) ($P < .05$ for both).

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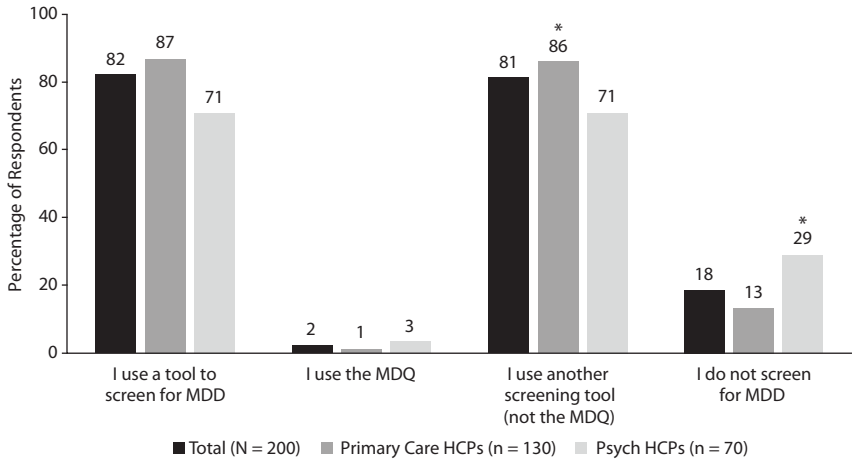
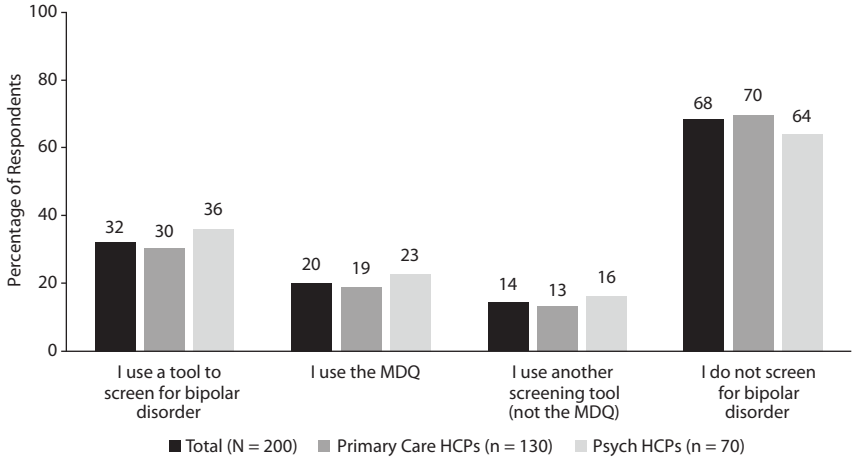
Figure 2. Current Use of Screening Tools and Valued Tool Attributes[a]

A. Screening for MDD



B. Screening for Bipolar Disorder



C. Most Valued Bipolar Disorder Screening Tool Attributes

	Total (N = 200)	Primary Care HCPs (n = 130)	Psych HCPs (n = 70)
Has good sensitivity	68%	63%	79%*
Includes questions that are easy to answer	66%	68%	61%
Has good specificity	65%	64%	67%
Provides screening results that I can confidently use to make decisions	64%	65%	61%
Is generally practical to use in day-to-day practice	62%	62%	60%
Has an easy and clear scoring system	59%	62%	54%
Helps me have more effective discussions with my patients about their symptoms	52%	55%	46%
Includes items that can distinguish bipolar patients using characteristics that are not manic symptoms	50%	50%	50%
Is easy for patients to administer without guidance from a health care professional	48%	50%	44%
Is short/includes a minimal number of questions	48%	52%	43%
Has been published in peer-reviewed medical journal(s)	40%	40%	40%
Is designed by a diverse group of health care professionals	34%	38%	27%
Is a tool currently or previously used by my peers in the medical community	28%	31%	23%

[a]Some HCPs used multiple screening tools (MDQ plus another tool).

MDD: HCPs most commonly mentioned the Patient Health Questionnaire (PHQ) as a tool used to screen for depression (any PHQ = 61% [primary care = 67%, psych = 50%], PHQ-2 = 16% [primary care = 25%, psych = 0], PHQ-9 = 55% [primary care = 60%, psych = 46%]); other tools (not the MDQ): Beck Depression Inventory = 10% (primary care = 8%, psych = 13%), Hamilton Depression Rating Scale = 5% (primary care = 1%, psych = 13%).

Bipolar disorder: Other than the MDQ, HCPs most commonly mentioned the Young Mania Rating Scale (YMRS) as a tool used to screen for bipolar disorder (4%, primary care = 0%, psych = 10%); other tools (not the MDQ): any PHQ = 2% (primary care = 2%, psych = 0%), PHQ-2 = 1% (psych = 0%), PHQ-9 = 2% (primary care = 2%, psych = 0%), Beck Depression Inventory= less than 1% (primary care = 0%, psych = 1%), Hamilton Depression Rating Scale = less than 1% (primary care = 0%, psych = 1%).

*Indicates statistical significance at the 95% confidence interval for psychiatric HCPs versus primary care HCPs. Percentages may not sum to 100 due to rounding.

Abbreviations: HCP = health care provider, MDD = major depressive disorder, MDQ = Mood Disorder Questionnaire, psych = psychiatric.

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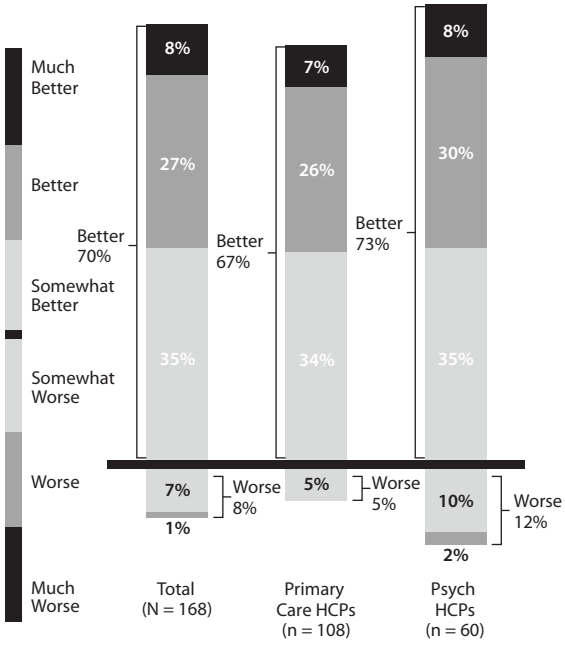
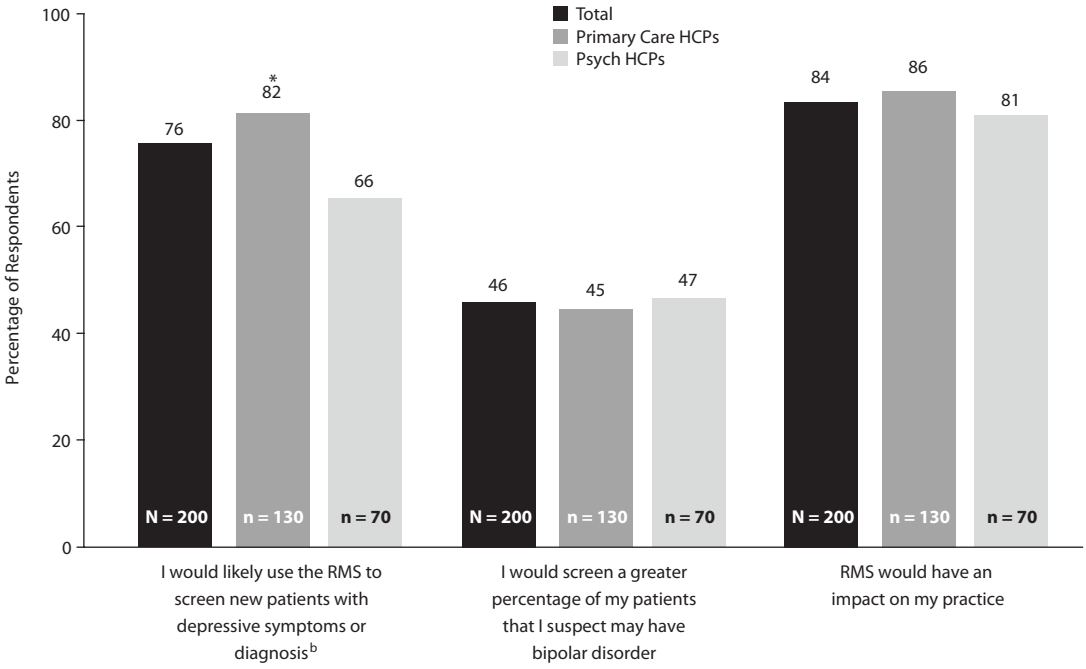
Figure 3. Opinions of the RMS and Likelihood of Using It

A. How Does the RMS Compare to Other Tool(s) You've Heard of or Seen for Bipolar Disorder?[a]



B. Impact of the RMS on HCP Screening Practices



[a]Based on number of HCPs who had enough knowledge of bipolar screening tools to rate the RMS. "About the same" response (total = 23%) not shown in the figure.
[b]The RMS was not developed or validated to determine whether it would be appropriate to use in new patients with depressive symptoms.
*Indicates statistical significance at the 95% confidence interval for primary care HCPs versus psychiatric HCPs.
Abbreviations: HCP = health care provider, psych = psychiatric, RMS = Rapid Mood Screener.

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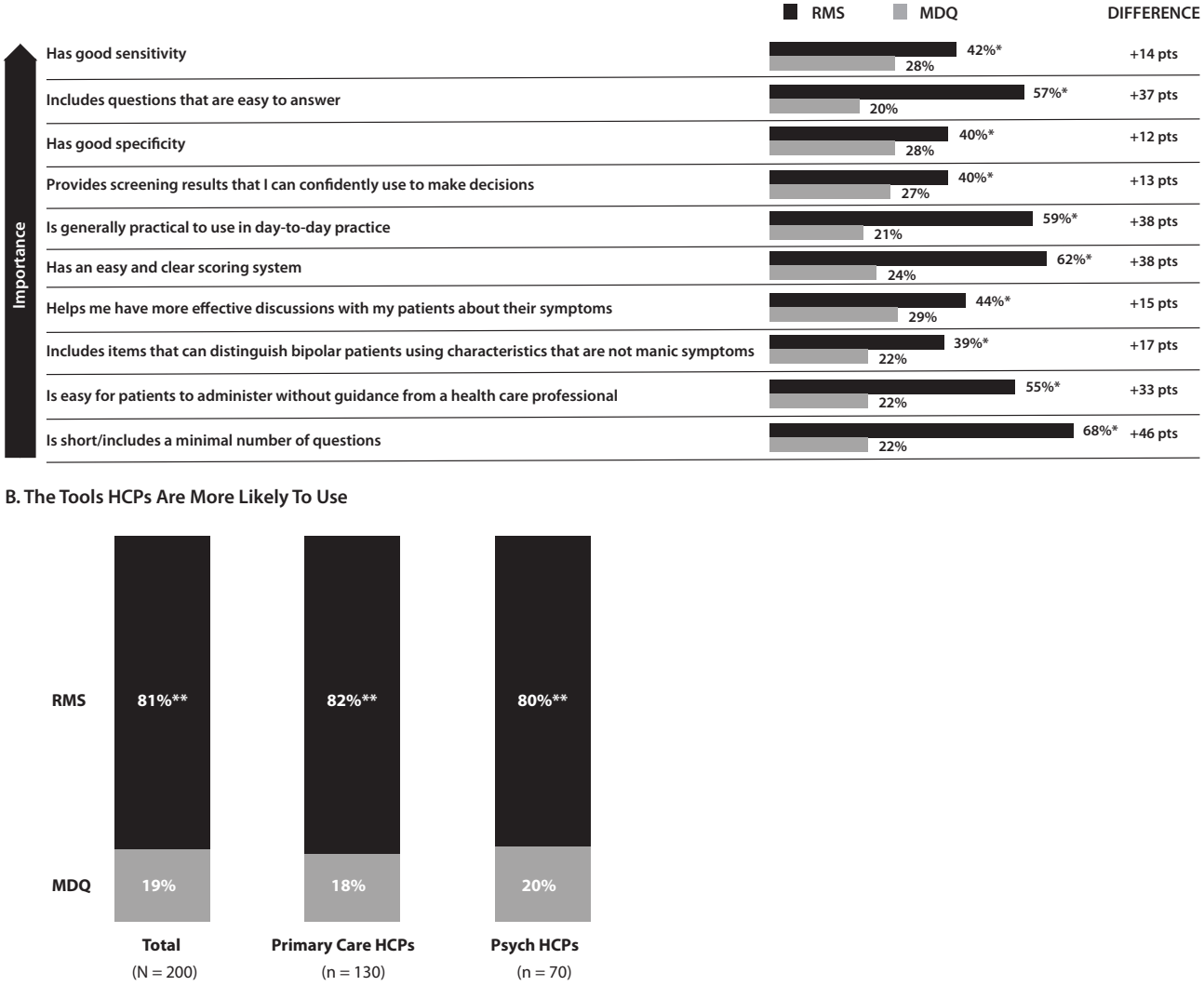
Figure 4. HCP Preference: The RMS Versus the MDQ



*Indicates statistical significance at the 95% confidence interval in favor of the RMS versus the MDQ. Percentages based on number of total HCPs (N = 200) who gave a tool a rating of 6 (Describes very well) or 7 (Describes extremely well).
**Indicates statistical significance at the 95% confidence interval in favor of the RMS versus the MDQ.
Abbreviations: HCP = health care provider, MDQ = Mood Disorder Questionnaire, psych = psychiatric, RMS = Rapid Mood Screener.

Perspectives on Screening for MDD and Bipolar Disorder

A total of 82% of HCPs reported that they currently use a tool to screen for MDD, with significantly more primary care HCPs (87%) than psychiatric HCPs (71%) screening ($P = .008$). When asked to fill in the name of the tool(s) that they used to screen for MDD, 81% indicated that they use a tool other than the MDQ (Figure 2A). The Patient Health Questionnaire (PHQ)[17] was the most common other tool mentioned (61%), with 55% of HCPs specifically indicating that they use the PHQ-9 and 16% indicating the PHQ-2. In comparison, only 32% of HCPs (primary care = 30%, psychiatric = 36%) reported using a tool to screen for bipolar disorder, with respondents most commonly mentioning the MDQ as the tool that they used (20%) (Figure 2B).

When asked about the MDQ specifically, 85% of HCPs reported that they were aware of the tool, 54% said they had used it, and 29% reported current use (primary care = 28%, psychiatric = 30%). There was an open attitude about future bipolar screening tool use among the 136 HCPs who currently do not screen, with 60% saying that they would definitely or likely consider using a bipolar screener in the future. When HCPs rated the attributes that they valued in a bipolar disorder screening tool, sensitivity, easy-to-answer questions, specificity, providing decision-making confidence, being practical to use, and easy scoring were among the attributes that HCPs valued the most; significantly more psychiatric HCPs than primary care HCPs valued good sensitivity ($P = .026$) (Figure 2C).

Perceptions of the RMS

A total of 168 HCPs had enough knowledge of bipolar disorder screening tools to rate the RMS. Over two-thirds of these HCPs thought that the RMS was at least somewhat

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better than other tools, while 23% thought it was about the same (Figure 3A); "I am not familiar enough with other screener tools for bipolar disorder to make a comparison" was an option for respondents who did not indicate current MDQ usage in a previous question. Most HCPs (84%) indicated that the RMS would have a positive impact on their practice, resulting in likely screening of new patients with depressive symptoms or a depression diagnosis and more screening of patients suspected of having bipolar I disorder (Figure 3B). Further, a total of 68% of HCPs (primary care = 74%, psychiatric = 57% [$P = .017$]) indicated that they were likely to use the RMS to rescreen current patients with a depression diagnosis, further suggesting a role for the RMS in clinical practice.

The RMS Versus the MDQ

In sequentially presented, randomly ordered questions, HCPs rated the attributes of the RMS and MDQ. A significantly higher percentage of HCPs said that the screening tool qualities they valued better described the RMS than the MDQ across all attributes ($P < .05$) (Figure 4A). Particularly large differences in favor of the RMS were observed for brevity (46-point differential), practicality (38 points), easy scoring (38 points), and easy-to-answer questions (37 points). If both the RMS and MDQ were available, the majority of both primary care and psychiatric HCPs indicated that they would use the RMS to screen for bipolar disorder (Figure 4B). Pragmatic features were most often cited as compelling reasons to adopt the RMS in practice, with ability to complete the tool in less than 2 minutes (72% of HCPs), small number of questions (66%), easy scoring (66%), and easily understood questions (60%) among the most relevant qualities noted for the RMS. Most HCPs (74%) envisioned the RMS used in a paper format, 62% thought it would be filled out by the patient alone before an office visit, and 48% thought that the RMS would be included in a patient's electronic health record.

DISCUSSION

In a nationwide survey of primary care and psychiatric HCPs, 84% of HCPs said that the RMS would have a positive impact on their practice, with significantly more HCPs indicating that they were more likely to use the RMS than the MDQ (81% vs 19%; $P < .05$). Three of 4 respondents said they were likely to use the RMS to screen new patients with depressive symptoms, and almost 70% indicated that they would rescreen patients with an existing depression diagnosis. The RMS was strongly preferred to other bipolar disorder screening tools, including the widely recognized but underutilized MDQ. Across specialties, over two-thirds of respondents reported that the RMS was at least somewhat better than other bipolar disorder screening tools, suggesting that this new bipolar I disorder screening tool would be useful in clinical practice settings.

Barriers to accessing psychiatric services (eg, lack of providers, distance to providers, appointment wait times, insurance coverage)[18,19] mean that clinical encounters for depression frequently occur in primary care, and many patients with bipolar disorder are treated exclusively in this setting.[20] Although misdiagnosis of bipolar disorder in primary care has been identified as a serious issue,[5,6,21] diagnostic challenges may exist for psychiatric practitioners as well. In one study,[19] for example, primary care physicians misdiagnosed or failed to detect bipolar disorder in 78% of patients who screened positive for bipolar I or II disorder, but psychiatrists also missed the diagnosis in over half (53%) of patients. While the MDQ is the most widely known screening tool for bipolar disorder, responses to our survey indicated that current usage was low for psychiatric (30%) and primary care (28%) HCPs alike, suggesting that the availability of the RMS could improve screening and identification of bipolar disorder across clinical practice settings. Most primary care and psychiatric HCPs reported that if the RMS and MDQ were both available, they would be more likely to use the RMS, which was preferred across all screener tool attributes that are important to HCPs (eg, brevity, easy-to-answer questions, sensitivity, specificity, easy scoring).

Self-reported bipolar disorder screening tools other than the MDQ are available, but like the MDQ, they may rely on screening for manic symptoms only or be too long or complicated to be easily administered within the timeframe of a typical office visit. For example, the 32-item Mania/Hypomanic Checklist (HCL-32)[22] and the 48-item Hypomanic Personality Scale[23] include only hypomania or mania items. While the 161-item Mood Spectrum Self-Report (MOODS-SR)[24] and the General Behavior Inventory (GBI)[25–27] (52–73 items) both include manic and depressive symptoms, their usefulness in clinical practice is likely restricted by excessive length. The Bipolar Spectrum Diagnostic Scale (BSDS),[28] which also includes manic and depressive symptoms, has a 2-part format that consists of 19 sentences that are rated and scored as individual items and as a complete story. Also of note is the 10-minute, patient-completed MoodCheck,[29,30] which is a comprehensive tool that consists of the BSDS and additional questions about family history of mood disorders and elements of the Bipolarity Index. The Bipolarity Index[31] is a clinician-rated diagnostic measure that rates 5 dimensions of bipolarity (hypomania/mania, age at onset of first mood symptoms, illness course/features, response to antidepressants/mood stabilizers, and family history of mood/substance use problems) on a spectrum, with a score ≥ 50 indicating a high probability of bipolar disorder. Finally, the 27-item Mood Swings Questionnaire (MSQ),[32] which was designed to improve the recognition of bipolar II disorder in depressed patients, has 3 initial screening questions that must be answered "yes" before the remaining questions are answered (a "no" answer is presumptive of unipolar depression) and while it is available, it may not necessarily be intuitive for use in the clinic. Even though these and other screening tools exist to screen for illness across the bipolar spectrum, the low percentage of HCPs who reported bipolar screening

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suggests that the RMS will be a valuable addition to the bipolar I disorder screening tool armamentarium.

Beyond our survey results indicating a marked preference for the RMS over the MDQ, head-to-head comparison of sensitivity and specificity can be made based on results from the RMS validation study since both screeners were administered in the same bipolar I analysis population.[15] Of note, when an RMS screen was positive for bipolar I disorder (4 or more "yes" responses), sensitivity was 88% and specificity was 80%, while a positive MDQ screen yielded sensitivity of 86% and specificity of 78%. Additionally, since practicality was highly valued by HCPs in our survey, it is important that the RMS has less than half the number of items that the MDQ has, it screens for both bipolar I depression features and manic symptoms, uses a simpler scoring algorithm, and is estimated to take 2 minutes to complete versus the commonly cited 5-minute completion time for the MDQ.[33–35] However, while the differences between the RMS and MDQ are interesting and potentially important, conclusions about the advantage of one screening tool over another would necessitate further research in a real-world setting.

Of note, the RMS has not been validated in patients with bipolar II disorder, a common illness type, so participants with this disorder were not included in our survey and outcomes cannot be generalized to this group of patients. As in the case of positive RMS screening, complete diagnostic evaluation for bipolar disorder is also warranted in cases in which screening yields a subthreshold positive RMS result or if there are other clinical suspicions. For example, if bipolar II is suspected, screening with the MDQ or another tool that screens for bipolar II may be prudent since the RMS has been validated only in patients with bipolar I. Interestingly, MDQ sensitivity was shown to be considerably higher for identifying bipolar I disorder (66.3%) than for identifying bipolar II disorder (38.6%),[36] suggesting that identifying bipolar II may be especially challenging.

In our nationwide survey, HCPs were introduced to the RMS, a pragmatic new screening tool designed to differentiate bipolar disorder from MDD in patients with depressive symptoms. This brief self-administered tool, which screens for manic symptoms and bipolar I disorder characteristics in less than 2 minutes, was enthusiastically received by survey respondents, with an overwhelming majority reporting that they would be likely to use it. Across specialties, most HCPs believed that the RMS would have a positive impact on their practices, leading to more screening for bipolar I disorder. Screening with the RMS could help clinicians recognize patients who would benefit from a comprehensive diagnostic evaluation, which could in turn lead to more timely and accurate diagnosis of bipolar I disorder and improved patient outcomes. In the future, not only may the use of tools such as the RMS be helpful in traditional clinical practice, but these tools may also suit big data analyses,[37] enabling the application of artificial intelligence algorithms to improve clinicians' diagnostic accuracy and further refinements of classifications toward precision psychiatry. Again, the full version of the RMS and a guide for HCPs is freely available for download at https://doi.org/10.1080/03007995.2020.1860358.

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Supplementary material follows this article.

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THE PRIMARY CARE COMPANION
FOR CNS DISORDERS

Supplementary Material

Article Title: Screening for Bipolar I Disorder and the Rapid Mood Screener: Results of a Nationwide Health Care Provider Survey

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List of Supplementary Material for the article

1. **Appendix 1** Bipolar Screener Research Questionnaire

Disclaimer

This Supplementary Material has been provided by the author(s) as an enhancement to the published article. It has been approved by peer review; however, it has undergone neither editing nor formatting by in-house editorial staff. The material is presented in the manner supplied by the author.

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Supplementary Appendix 1. Bipolar Screener Research Questionnaire

MAIN SURVEY (~7 minutes)

SECTION A: Practice Use of Screener Tools

A1. **Use of Depression Screening Tool in Practice**

Do you currently use any screener tools for **depression** in your practice?

- Yes
- No

A2. **Depression Screening Tools Usage Unaided** (Show if selected Yes at A1)

Which screener tool(s) do you use in your practice for **depression**?

_____

_____

A3. **Use of Bipolar Screening Tool in Practice**

Do you currently use any screener tools for **bipolar disorder** in your practice?

- Yes
- No

A4. **Openness to Screening Tools** (Show only if selected "No" in A4)

How likely would you be to consider using a screening tool for **bipolar disorder** in the future?

- Definitely would
- Probably would
- Might or might not
- Probably would not
- Definitely would not

A5. **Bipolar Screening Tools Usage Unaided** (Show if selected Yes at A4)

Which screener tool(s) do you use in your practice for **bipolar disorder**?

_____

_____

A6. **MDQ Usage for Bipolar**

Thinking specifically about screening for **bipolar disorder** in your practice, which of the following best describes your use of the Mood disorder Questionnaire (**MDQ)** screening tool?

- I haven't heard of it being used for bipolar disorder
- I have never used this, but have heard of it being used for bipolar disorder
- I have used this in the past for bipolar disorder, but not anymore
- I currently use this to screen for bipolar disorder

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A7. **Other Tools Usage for Bipolar**
Besides the MDQ, what other screener tools are you aware of that are used to screen for **bipolar disorder**?

Open End

_____

- I am not aware of any other bipolar screening tools

A8. **MDQ Usefulness Rating** (Show if did NOT select "haven't heard of it" at A7)

Thinking about yourself and your practice, how useful would you say the **MDQ** is for screening for **bipolar disorder**?

- 1 – Not at all useful
- 2 – Not very useful
- 3 – Not useful
- 4 – Neutral
- 5 – Useful
- 6 – Very useful
- 7 – Extremely useful
- I am not familiar enough with the MDQ to answer this (Show for "I have never used this, but have heard of it being used for bipolar disorder" or "I have used this in the past for bipolar disorder, but not anymore")

A9a. What percentage of your patients with depressive symptoms or a depression diagnosis do you screen for **bipolar disorder** using the **MDQ tool**?
(Show if "currently use" MDQ to screen for bipolar at A6)
____ % of patients with depression

A9b. How often do you screen your patients with depressive symptoms or a depression diagnosis for **bipolar disorder** using the **MDQ tool**?
(Show if entered 1%+ at A9a)

- At nearly every visit
- At least every 2-3 visits or a few times a year
- Once a year
- Less often than once a year

A10. **Tool Attributes**
Now thinking specifically of a tool designed to screen for bipolar disorder, how important are each of the following attributes?

Columns:

- 1 – Not at all important
- 2 – Not very important
- 3 – Not important
- 4 – Neutral
- 5 – Important
- 6 – Very important
- 7 – Extremely important

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Rows:

- Is short / includes a minimal number of questions
- Includes questions that are easy to interpret
- Has an easy and clear scoring system
- Has good sensitivity (i.e., patients who screen positive have bipolar disorder)
- Has good specificity (i.e., patients who screen negative do not have bipolar disorder)
- Includes items that can distinguish bipolar patients using characteristics that are not manic symptoms
- Has been published in peer-reviewed medical journal(s)
- Is easy for patients to administer without guidance from a healthcare professional
- Is designed by a diverse group of health care professionals (including primary care and psychiatric communities)
- Is generally practical to use in day-to-day practice
- Provides screening results that I can confidently use to make decisions
- Is a tool currently or previously used by my peers in the medical community
- Helps me have more effective discussions with my patients about their symptoms

SECTION B: Stimuli Reactions

DT Stimuli Intro Now we are going to show you a potential new screening tool for bipolar disorder. Please take your time reviewing the tool.

NOTE: Stimuli has been sent through separately.

B1. **Reaction to RMS**

The tool you just reviewed is called the Rapid Mood Screener or RMS for short. How does the RMS **compare to other tool(s)** you've heard of or seen for **bipolar disorder**?

- 1 - Much worse
- 2 - Worse
- 3 - Somewhat worse
- 4 - About the same
- 5 - Somewhat better
- 6 - Better
- 7 - Much better
- I am not familiar enough with other screener tools for bipolar disorder to make a comparison (Show if respondent did NOT select code [ICurrentlyUse] at A6_MDQUsage)

B2. **Likelihood to try RMS**

How likely are you to ask your **new patients** with **depressive symptoms or a depression diagnosis** to complete the RMS when it's made available?

- 1 – Extremely unlikely
- 2 – Very unlikely
- 3 – Unlikely
- 4 – Neutral
- 5 - Likely
- 6 – Very likely
- 7 –Extremely likely

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B3. **Screening MDD Patients**

How likely are you to **rescreen your existing patients with a depression diagnosis** with the RMS tool when it's made available?

- 1 – Extremely unlikely
- 2 – Very unlikely
- 3 – Unlikely
- 4 – Neutral
- 5 - Likely
- 6 – Very likely
- 7 –Extremely likely

B4. What percentage of your patients with depressive symptoms or a depression diagnosis would you screen for **bipolar disorder** using the **RMS tool** when it's made available?

(Show if selected "Neutral" to "Extremely Likely" at B3)

____ % of patients with depression

B5. How often would you screen your patients with depressive symptoms or a depression diagnosis for **bipolar disorder** using the **RMS** tool?

(Show if entered 1%+ at A10a)

- At nearly every visit
- At least every 2-3 visits or a few times a year
- Once a year
- Less often than once a year

B6. **Impact of RMS**

How, if at all, would the RMS impact your current practice, when made available?

- I would begin screening patients for bipolar disorder (Only show this answer option to those who say No in A3)
- I would screen a greater percentage of my patients that I suspect may have bipolar disorder
- I would rescreen patients for bipolar disorder more often
- Other (Please specify)
- The RMS will not impact my practice (Exclusive, Fixed)

B7. **Possible Administration Methods** (Do not show to those who select "Extremely unlikely" or Very Unlikely" in B2 AND B3)

Which of the following methods of administration would the RMS be appropriate for? Please select all that apply.

- In a practice, administered by a clinician
- In a practice, self-administered by the patient with a clinician present
- In a practice, by the patient alone before the visit (i.e. in the waiting room)
- Outside of an office visit, self-administered by a patient
- Other (Please specify)

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B8. **RMS Format** (Do not show to those who select "Extremely unlikely" or Very Unlikely" in B2 AND B3)
If administered in your practice, what format of the RMS would you use if made available? Please select all that apply

- Paper copy
- Web link
- App
- Electronic Health Record system
- Found via search engine
- Magnet
- Wall poster
- Pocket card
- Other (Please specify)

DT Stimuli Add On Now, we're going to show you a comparison of the RMS versus the MDQ for the screening of bipolar disorder. Please take your time reviewing the two screeners.

B9. **Use of RMS vs MDQ in Practice**
If both of these tools were available, which one would you be more likely to use to screen for bipolar disorder in your practice?

- RMS
- MDQ

B10. **Patient Use of Screener**
In your opinion, which tool do you believe patients would be more likely to fill out on their own outside of a clinical visit?
Select one response.

- RMS
- MDQ

NOTE: The order of questions B11 and B12 will be randomized.

B11. **Perceptions of RMS**

On a scale of 1 to 7, with 1 = "does not describe at all" and 7 = "describes extremely well" how would you rate the **RMS** on the following attributes?
Columns:

- 1– Does not describe at all
- 2 – Describes very poorly
- 3 – Describes poorly
- 4 – Describes somewhat
- 5 – Describes well
- 6 – Describes very well
- 7 – Describes extremely well

Rows:

- Is short / includes a minimal number of questions
- Includes questions that are easy to answer
- Has an easy and clear scoring system
- Has good sensitivity (i.e., patients who screen positive have bipolar disorder)
- Has good specificity (i.e., patients who screen negative do not have bipolar disorder)

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- Includes items that can distinguish bipolar patients using characteristics that are not manic symptoms
- Is easy for patients to administer without guidance from a healthcare professional
- Is generally practical to use in day-to-day practice
- Provides screening results that I can confidently use to make decisions
- Can help me have more effective discussions with my patients about their symptoms

B12. **Perceptions of MDQ**

On a scale of 1 to 7, with 1 = "does not describe at all" and 7= "describes extremely well" how would you rate the **MDQ** on the following attributes?

Columns:

- 1– Does not describe at all
- 2 – Describes very poorly
- 3 – Describes poorly
- 4 – Describes somewhat
- 5 – Describes well
- 6 – Describes very well
- 7 – Describes extremely well

Rows:

- Is short / includes a minimal number of questions
- Includes questions that are easy to answer
- Has an easy and clear scoring system
- Has good sensitivity (i.e., patients who screen positive have bipolar disorder)
- Has good specificity (i.e., patients who screen negative do not have bipolar disorder)
- Includes items that can distinguish bipolar patients using characteristics that are not manic symptoms
- Is easy for patients to administer without guidance from a healthcare professional
- Is generally practical to use in day-to-day practice
- Provides screening results that I can confidently use to make decisions
- Can help me have more effective discussions with my patients about their symptoms

B13. **Relevance for adoption in practice**

How compelling are each of the following statements about the RMS in making you more likely to adopt the RMS to screen for bipolar disorder in your practice?

Columns:

- 1 – Not at all compelling
- 2 – Not very compelling
- 3 – Not compelling
- 4 – Neutral
- 5 – Compelling
- 6 – Very compelling
- 7 – Extremely compelling

Rows:

- The RMS will help reduce the misdiagnosis of patients with bipolar I disorder (BP-I)
- The RMS is a pragmatic approach to address the need for timely and accurate evaluation of bipolar disorder
- The RMS takes less than 2 minutes to complete
- The RMS does not focus solely on manic symptoms

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- The RMS questions are easy for a patient to understand
- Scoring the RMS is quick and easy
- The RMS is short (6-items in the tool)
- The RMS results in a positive screening with 88% sensitivity and 80% specificity for BP-I

B14. **Preferences on source of awareness**

Which of the following sources would you prefer for learning about the new the RMS tool?
Select all that apply.

- Medical journals
- Education web sites (WebMD or similar)
- Conferences
- Key Opinion Leaders
- Pharmaceutical medical science liaisons
- Pharmaceutical sales representatives
- CME
- Mental health advocacy groups
- Publications
- Email
- Physical mail (i.e. brochure)
- Promotional lunch programs
- Peers in the medical community
- Other (Please Specify)

Thank you very much for your time and responses.

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