The effect of implementing symptom feedback into psychiatric care at a non-profit clinic

Deirdre Rea

Follow this and additional works at: https://commons.lib.jmu.edu/dnp201019

Part of the Nursing Commons, and the Other Social and Behavioral Sciences Commons

Recommended Citation
https://commons.lib.jmu.edu/dnp201019/29

This Dissertation is brought to you for free and open access by the The Graduate School at JMU Scholarly Commons. It has been accepted for inclusion in Doctor of Nursing Practice (DNP) Final Clinical Projects by an authorized administrator of JMU Scholarly Commons. For more information, please contact dc_admin@jmu.edu.
The Effect of Implementing Symptom Feedback into Psychiatric Care at a Non-Profit Clinic

Deirdre O. Rea

A Clinical Research Project submitted to the Graduate Faculty of James Madison University

In Partial Fulfillment of the Requirements for the degree of Doctor of Nursing Practice

School of Nursing

December 2019

FACULTY COMMITTEE

Committee Chair: Jeannie Scruggs Garber
Committee Member: Bridgette Vest
# Table of Contents

Table of Contents .................................................................................................................. ii
List of Tables ......................................................................................................................... iv
List of Figures ......................................................................................................................... v
Abstract .................................................................................................................................... vi
Introduction ........................................................................................................................... 1
Background ............................................................................................................................ 2
  Literature Review .................................................................................................................. 2
    The Value of MBC ............................................................................................................. 4
    The Barriers to MBC ......................................................................................................... 5
    The Need for MBC ............................................................................................................ 7
Aim/Purpose ........................................................................................................................... 8
Objectives ............................................................................................................................. 8
Theoretical Framework ......................................................................................................... 9

Methods .................................................................................................................................. 10
  Project Study Design ......................................................................................................... 10
  Context ............................................................................................................................... 10
  Sample ............................................................................................................................... 12
  Quantitative Procedure ..................................................................................................... 12
  Measures ............................................................................................................................ 13
  Qualitative Procedure ........................................................................................................ 14
  Qualitative Questions ......................................................................................................... 15
  Analysis ............................................................................................................................. 16
  Project Timeline ................................................................................................................ 17
  Ethical Considerations ........................................................................................................ 18

Results .................................................................................................................................... 19
  Quantitative Results ........................................................................................................... 19
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Analysis of Interview Responses</td>
<td>27</td>
</tr>
<tr>
<td>Project Process Results</td>
<td>40</td>
</tr>
<tr>
<td>Discussion</td>
<td>42</td>
</tr>
<tr>
<td>Limitations</td>
<td>45</td>
</tr>
<tr>
<td>Implications for Practice</td>
<td>46</td>
</tr>
<tr>
<td>Conclusion</td>
<td>47</td>
</tr>
<tr>
<td>Appendices</td>
<td>49</td>
</tr>
<tr>
<td>Patient Health Questionnaire-9</td>
<td>49</td>
</tr>
<tr>
<td>Generalized Anxiety Disorder-7</td>
<td>50</td>
</tr>
<tr>
<td>Consent Form</td>
<td>51</td>
</tr>
<tr>
<td>References</td>
<td>54</td>
</tr>
</tbody>
</table>
List of Tables

Table 1  Paired samples $t$-test for PHQ-9 scores ..................................................20
Table 2  Paired samples $t$-test for GAD-7 scores .....................................................21
Table 3  Descriptive statistics on GAD-7 ANOVA measurements ..............................22
Table 4  Pairwise comparisons of TP1, TP2, and TP3 GAD-7 measurements ............22
Table 5  Mauchly’s Test of Sphericity on PHQ-9 data ..............................................23
Table 6  Greenhouse-Geisser correction for sphericity .............................................24
Table 7  Test of Between-Subjects Effects for gender on PHQ-9 data .......................24
Table 8  Estimated Marginal Means of gender over time .......................................25
Table 9  Pairwise comparison of PHQ-9 scores for female gender over time ..........25
Table 10 Means, standard deviations & frequency distribution of qualitative codes..39
List of Figures

Figure 1  Project Timeline .............................................................................................................16
Figure 2  Graphed means of male (1.0) and female (2.0) scores on PHQ-9...................26
Figure 3  Code map 1 of qualitative interview data...............................................................38
Figure 4  Code map 2 of qualitative interview data...............................................................38
Abstract

Background: Healthcare is moving toward a value-based system with reimbursement based on performance. Charitable organizations providing health services need to demonstrate positive outcomes for continued grant funding. Measurement-Based Care (MBC) is evidence-based, can improve patient outcomes and objectively document success. Studies show most psychiatric providers do not utilize MBC in their own practices citing lack of time, and a belief that their clinical judgment supersedes a measurement tool. The purpose of the study was to establish the use of patient-reported symptom measurement tools in a non-profit psychiatric clinic and determine if an office-based strategy to proactively and regularly report to providers their patient’s scores affected treatment outcomes and overall adoption of MBC.

Methods: The study entailed an explanatory mixed methods design with a pre-test/post-test quantitative measurement and a semi-structured qualitative interview with providers following data collection. Office staff facilitated completion and electronic medical record entry of the Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) patient self-report measurement tools for depression and anxiety on each patient at every visit. Trended scores were proactively reported to providers prior to the visit during months 3 through 6. Score comparisons were made prior to and after the reporting period. Qualitative questions explored usefulness of MBC and the effectiveness of proactive reporting.

Results: Dependent t-tests measured differences in the means at three measurement points. A repeated measures ANOVA tested the effects of client gender, provider discipline and treatment modality on scores. Qualitative data was recorded, transcribed,
and coded for thematic pattern identification. Results showed significant reduction on scores for both depression and anxiety over the full measurement period with statistically significant decreases in anxiety scores during the intervention period. A between-factors response was found for gender. Qualitative responses showed younger providers more likely to use MBC to guide treatment decisions. MBC was viewed as having utility as an adjunct. All recommended continued office facilitation but wanted control over choice of tool and to see scores in real time.

Conclusion: An office process that assists with routine collection of patient data, consistently reporting it to providers, can facilitate adoption of MBC to guide treatment decisions and produce evidence of positive outcomes. Successful change may be obtained with a team approach to the removal of barriers.

Key words: Measurement-Based Care, outcome monitoring, behavioral health, psychiatry
**Introduction**

The use of measurement-based care (MBC) as a mechanism to monitor clinical outcomes extends back to Florence Nightingale and is well established as an evidence-based practice (Chun and Bafford, 2014). In late 2016, the Joint Commission published new standards relating to the use of MBC in behavioral health as it is now considered best practice. The new standards mandate evidence of active use of the measurement results in informing care and driving treatment (Lavin, Berry & Williams, 2017). The standard went into effect January 1, 2018.

Incorporating evidence-based practice into care can be difficult and require creative and targeted change management approaches. This is the foundation of implementation science which looks to analyze and define what works, for whom and under what circumstances to promote the uptake of scientific knowledge into front line practice (Eccles & Mittman, 2006). Factors that impact success include the characteristics of the intervention and their complexity and adaptability, the cost, the stakeholders involved and the context where it is carried out -which can present its own set of barriers and facilitators (Global Alliance for Chronic Diseases [GACD], n.d.).

There are many indirect stakeholders affected by the success of the incorporation of MBC into care in any organization. But the most direct stakeholders include the patients completing the measurements and the providers seeing and acting on the results. Making sure these actually happen are the primary challenges.
Background

In 2001, the Institute of Medicine introduced the six, healthcare improvement aims that summoned the field to provide evidence of its effectiveness in managing population health (IOM, 2001). The Affordable Care Act offered payment incentives for the documentation of clinical success in a move away from care based on volume toward that of value (Kocher, 2010). Over the last 20 years, the literature has established that Measurement-Based Care (MBC) is an evidence-based practice that can demonstrate and significantly improve patient outcomes (Fortney, 2016; The Kennedy Forum, 2015). While many providers state that they agree, studies show that most do not utilize MBC in their own practices citing lack of time, and a belief that their clinical judgment supersedes a measurement tool (Jensen-Doss, 2018). Using Lippitt’s Nursing Theory of Change and Lewin’s Force-field analysis framework of driving and restraining forces (Mitchell, 2013), this study instituted and measured MBC use and scores both before and after an office-based intervention strategy to regularly disseminate to patients and expose providers to the sequential scores on the PHQ-9 and GAD-7 of their patients in the outpatient psychiatric practice of a non-profit, volunteer, charitable clinic.

Literature Review

Databases from MEDLINE, CINAHL, PsycINFO and Google Scholar were searched using the keywords Measurement-Based Care and Outcome Monitoring combined with the terms Psychiatry, Behavioral Health, Anxiety, and Depression in order to limit findings to mental health related articles. The search included peer reviewed articles written in English between the years 2000 and 2019. Exceptions to this were the articles on the psychometrics of the measurement tools substantiating their reliability and
validity. The wide span in years was used to capture the range of experiences and issues related to establishing measurement-based care in behavioral health.

The Institute of Medicine’s (IOM) release of *To Err is Human: Building a Safer Health System* (Kohn, 1999) brought to the fore the problems with patient safety and quality in healthcare in the United States. This was followed by *Crossing the Quality Chasm: A New Health System for the 21st Century* (Committee on Quality of Healthcare in America, 2001) which further illuminated the qualitative and quantitative divide between what was established as good healthcare and what people were actually receiving. The report laid the foundation for change with the identification of six aims for improvement. Healthcare should be safe with safety as a property of the healthcare system as a whole. It should be effective without overuse or underuse of best available treatments. It should be patient-centered with the patient playing an active role in their care. It should be timely with prompt attention paid to changes in condition. It should be efficient such that it reduces waste in time and cost in maximizing health. And it should be equitable for all populations regardless of race, creed, gender and culture. At its core, these aims directed a theoretical shift to care based on quality and value rather than volume but created a dilemma in determining progress toward that goal.

Porter, Larsson and Lee (2016) cite evidence from other fields suggesting that systematic outcome measurement can be used as a basis for determining performance and value improvement. To that end, the National Strategy for Quality Improvement in Healthcare, now the National Quality Strategy (NQS), was developed in 2011 with a collaboration of over 300 stakeholders in the healthcare arena. Led by the Agency for Healthcare Quality and Research (AHRQ) on behalf of the Department of Health and
Human Services (HHS), the strategy focuses on clinical quality measures used to reach the IOM’s six aims for improvement and the Institute for Healthcare Improvement’s Triple Aim of improving the experience of care, the health of the population and the per capita cost of care (Berwick, 2008). Within this group, the HHS Measurement Policy Council was created and met in 2012 to align the identified clinical measures across all of the HHS federal programs and to support private sector adoption of the core measures as a standard for healthcare (AHRQ, 2017). This, in combination with the passing of the 2009 Affordable Care Act, with its move toward reimbursement based on performance, made it imperative to be able to show positive outcomes (Kocher, 2010). The Council, along with the International Consortium for Health Outcomes Measurement (ICHOM), has since, using randomized, controlled trials (RCTs), established validated, evidence-based measures, including patient-reported measurement tools, for nine health conditions including depression (AHRQ, 2017; Porter, 2016).

The value of measurement-based care.

Fortney, et al. (2016), however, noted the discrepancy between the outcomes obtained from RCTs and those in routine care. The better outcomes from RCTs were directly tied to treatment protocols that included regular, systematic measurement of symptom acuity followed by evidence-based treatment adjustments to correct poor response – the foundational tenets of measurement-based care (MBC). Harding, Rush and Arbuckle (2011) define MBC as “enhanced precision and consistency in disease assessment, tracking, and treatment to achieve optimal outcomes” (p. 1137). Fortney, et al. (2016), further break it down to “the systematic administration of symptom rating scales and use of the results to drive clinical decision making at the level of the individual
patient” (p.1). Scales are not intended to substitute for clinical perception and judgment but rather to augment symptom assessment to improve the identification of those patients not responding to their current treatment regimen. The Kennedy Forum (2015) and Valenstein, et al. (2009) assert that the objective results validate the rationale for adjustments in treatment for both medication and psychotherapy-based interventions. However, a one-time screening for the presence of a disorder lacks effectiveness in monitoring treatment response. It is argued that screening must be done frequently for timely feedback and clinically actionable interventions to be initiated (Bickman, 2011; Gilbody, 2008; Hatfield, D., 2009; Priebe, 2002). Bickman (2011), Lambert, et al. (2003) and Reese, et al. (2009) recommend screening at each visit, using the patient-reported responses to increase patient involvement in care, monitor for deterioration in treatment-resistant patients and inform clinical decisions.

**The barriers to measurement-based care.**

Despite compelling evidence for the efficacy of measurement-based care and its importance in showing outcomes, data suggests it is rarely used in every day clinical settings (Jensen-Doss, 2018; Trivedi, 2007; Zubkoff, et al., 2012). The reasons for this are multiple including: the belief that clinical judgment and experience supersede the use, reliability and validity of a tool (Dowrick, 2009; Hatfield, 2009); the belief that the scales take too much time, especially with a lack of office resources (Kotte, et al., 2016; Meehan, 2006; Zimmerman, 2008); concerns over lack of training on the tools (Batty, et al., 2013; Scott, 2015; Zubkoff, 2012); concerns over patient perceptions of and willingness to complete the tools along with provider concern over the reduction of the
human element of care (Dowrick, 2009; Kotte, 2016); and skepticism over the political and economic motives for the use of the tools and their results (Meehan, 2006).

But other studies have refuted these objections. The reliability and validity of most tools were well studied and founded (Beard, 2016; Guo, 2017; Kroenke, 2001). Porter (2016) reports that Information Technology has responded with software solutions that can automate data collection through embedded tools in the EMR, thus streamlining the data gathering, aggregation and benchmarking of outcomes. At least two studies (Trivedi, 2006; Rush, 2006) found patient ratings on depression screenings were equivalent to clinician-rated screening results. Dowrick (2009) found that patients embraced the questionnaires viewing them as an indication that the providers were taking their problems seriously by requesting their feedback. The economic motives have largely been clarified as the shift toward reimbursement for value-based care and need for showing positive outcomes (Fortney, 2016). Duffy, et al., (2008) strongly assert that integration of MBC into routine practice is feasible “even in practices with limited resources” (p. 1148).

Recent studies have begun to explore ways to address clinician barriers to the use of MBC. Jenson-Doss (2018) found a strong link between attitudes and use. Attitudes varied based on age and years of experience with younger providers more open to the use of the measurement tools. Use was higher in settings with resources to support assessment or with organizational requirements to monitor progress for financial reporting. Additionally, the more providers used the symptom tracking tools, the more value they found in their clinical use. In an integrated primary care-mental health clinic, Zubkoff established that providers rarely accessed the results of patient-reported
measurements that were part of routine data collection with the clinic. But when provided current reports of their patient’s results, the clinician’s found the format very useful and highly recommended continuing the process. Zubkoff attested that, “Providers who had not been exposed to measurement-based care perceived it to be unhelpful, whereas the same providers found it highly valuable after brief exposure to it” (p. 92). No other intervention was used other than exposure to the patient’s self-reported measurements on the tools. This suggests the important role of a supportive environment in increasing adoption of new initiatives. Evaluating the logistics of the office and formatting the workflow to include routine collection and reporting of measurement responses can result in successful implementation of MBC strategies.

**The need for measurement-based care.**

In the United States, mental health disorders are the basis for 27% of all disabilities while only 6.8% of government healthcare spending is directed to psychiatric treatment (Vos, et al., 2012; Melek, et al., 2014). Mental health care is historically underfunded and may be related to the difficulty in demonstrating to payors the value of treatment. Without observable results, payors may perceive mental health treatment as having a poor return on investment compared with other medical services. Non-profit, 501c3, charitable organizations providing mental health services are not immune from this trend. Glennon, Hannibal and Meehan (2017) report how even charities are being held to higher accountability standards. Stiff competition for dwindling funds is driving the need to show positive outcomes for grant funders to justify continued financial support of an agency. Funders want the greatest return on their investment of donated dollars (Mitchell, 2016). Without this financial support, the long-term sustainability of
these agencies is threatened impacting the underserved population who are the beneficiaries of their services. It is in all these areas where measurement-based care can meet these needs. According to Scott (2015), regular use of MBC provides evaluative metrics for an organization to serve as an indicator for overall performance which can be compared against benchmarks and goals to substantiate a positive return on investment.

**Aim/Purpose**

The purpose of the study was to establish the use of patient-reported symptom measurement tools in a non-profit psychiatric clinic and determine if an office-based strategy to proactively and regularly report to providers their patient’s scores affected treatment outcomes as reflected in both score results over time and through a semi-structured interview on provider perceptions on the impact of the reports on treatment planning.

**Objectives**

1. To institute the regular practice of obtaining measurements of patient-reported symptom scores on the PHQ-9 and GAD-7 of all patients seen at the clinic for either medication management or psychotherapy and embed in the new EMR.
   Goal: 90% completion rate.

2. To measure and compare scores on the PHQ-9 and GAD-7 both prior to and following an office-based intervention to provide intentional, proactive reporting of patient scores to providers. Goal: 10% change toward positive.

3. To determine the effect on providers of intentional, proactive reporting of their patient scores toward assessment and treatment decisions.
Theoretical Frameworks

Two frameworks were identified for this project. The first was Ronald Lippitt’s Theory of Change in Nursing which is an expanded version of Lewin’s (1951) three-step process involving seven steps that move in line with the nursing assessment process (Mitchell, 2013). It is predicated on bringing in an external change agent to put a change initiative in place (How to Apply, 2018). The first three phases fall under the nursing category of Assessment. The first phase is diagnosing the problem and developing a guideline for the proposed change. The second phase is assessing motivation and capacity for change and includes the driving and restraining forces from Lewin’s (1951) Force-field analysis. Phase three is assessing the change agent’s motivation and resources. Under Planning comes phase four with the identification of the change objective, the final draft of the plan and the timeline and phase five which focuses on choosing a role for the change agent. Change agents are active parts of the process, managing staff and supporting the initiative. Under Implementation is phase six where the change is maintained with emphasis on communication and feedback. Evaluation encompasses phase seven which involves terminating the helping relationship and the withdrawal of the change agent along with making the change permanent through policy development (Mitchell, 2013).

The second framework was the Institute for Healthcare Improvement’s Model for Improvement (Langley, 2009). The Model for Improvement includes making small-scale changes using Plan-Do-Study-Act (PDSA) cycles. Each step of the project was performed in a distinct cycle to coincide with the framework.
Methods

Project Study Design

The study was a quality improvement, implementation initiative with an exploratory, mixed methods design. It entailed a pre-test/post-test quantitative measurement along with a semi-structured qualitative descriptive interview with participants following the final data collection. The intervention involved (a) the implementation of the standardized use of the Patient Health Questionnaire-9 (PHQ-9) depression screening self-report tool and the Generalized Anxiety Disorder-7 (GAD-7) anxiety screening self-report tool for all clients at each office visit, (b) facilitation and management of this process by office staff, and (c) the proactive reporting of scores to providers.

Context

The setting was a Psychiatric Clinic (Clinic) run under a non-profit community agency in a small mid-Atlantic city. Volunteer psychiatric providers (Nurse Practitioners [NP], Medical Doctors [MD], Doctors of Osteopathy [DO], third year psychiatric medical residents, Clinical Psychologists [PhD], Physicians Assistants [PA], Social Workers [SW], Registered Nurses [RN], and other psychiatric professionals) offered intake assessments, medication management services, the medication, itself, and psychotherapy to clients in a circumscribed geographic area that included two small cities and three counties. Clients were required to be uninsured, have incomes below 200% of the federal poverty level and be ineligible for services from a state agency due to the absence of psychiatric hospitalizations within the prior two years. Clients received services onsite at
the agency. Providers offered services either face-to-face or by teleconference. With one provider exception, psychotherapy was provided weekly. Medication evaluation and management visits generally occurred monthly with a few clients either bi-monthly or quarterly. There were 53 active clients during the study period.

The organization maintained operations solely through the use of grant funding and private donations. Applications to grant funders had included the services offered and the number of clients served from the community but had never reported results or outcomes as these had never been measured. Additionally, there was no ‘graduation criteria’ in place to indicate that a client was stable and could be managed in a primary care setting. This resulted in some clients having remained at the Clinic for years, limiting the ability of the Clinic to reach a broader audience.

The decision to institute a new procedure for measurement-based care was made by the Board of Directors of the organization as part of their strategic plan. The study proposal was discussed and reviewed by the Executive Director (ED) and voted on by the Board of Directors granting permission to proceed (See Ethics). The clinic was moving from a paper-based charting system to an electronic medical record (EMR). The PI was responsible for instituting the use of the EMR and developing the measurement-based system. As a part of the project, the PI was named as the identified superuser for the EMR computer program and given full access to its contents.

All providers were given an in-person, individual training session by the PI on the use of the EMR for their clients. User ID’s and passwords were established. During training, each provider was shown the screening section of the EMR where the measurement tools were located and embedded and were informed that the Clinic would
begin using the PHQ-9 and GAD-7 as outcome measures to determine Clinic effectiveness. They were told that the scores would be available to see in the EMR.

Sample

The sample was a non-randomized convenience sample of psychiatric providers at the Clinic. Inclusion criteria for the study were that (a) participants be English speaking; (b) licensed, certified or in active training in psychiatric advanced practice, (c) actively seeing and following, as a provider, at least one client at the Clinic; and (d) have patient encounters with Clinic clients at least once per month. Exclusion criteria included (a) any Clinic volunteer staff who were not licensed or certified in psychiatric advanced practice, (b) only provided the intake assessment encounter, or (c) were active with clients less that a minimum of once per month. The psychiatric providers included in the study were: third year psychiatric medical residents in an assigned psychotherapy-only rotation (N=6, male (M)- 4, female (F)- 2); Licensed Psychotherapists (N=2, one Social Worker and one Clinical Psychologist; M- 0, F- 2); board certified psychiatric prescribers (N=6, one female Psychiatric-Mental Health Nurse Practitioner, one female Physician’s Assistant, 2 DO’s, 2 MD’s; M- 2; F- 4) and one hybrid female fourth year psychiatric resident who volunteered providing both psychotherapy and pharmacotherapy services. All residents (N=7) had less than 5 years of experience in the field of Psychiatry while all other participants (N= 8) had over 10 years in active practice in the psychiatric field.

Quantitative Procedure

Beginning in mid-November, 2018, (Cycle 1) all clients of the clinic were required to complete a self-reported PHQ-9 and GAD-7 questionnaire on check-in at
every visit. Paper questionnaires were distributed and collected by the office manager. The investigator collected the questionnaires on a weekly basis and entered the scores into the Screening section of each client’s electronic medical record. All scores were available and visible to providers in the EMR. Individual scores were also maintained by the investigator in Excel spreadsheets separated by provider and identified by the client’s medical record number (MRN). Baseline scores were established for each client by late December, 2018. The second measurement datapoint (Cycle 2) for evaluation of change was obtained at the end of the ‘Care as Usual’ time period by capturing the last scores for each patient prior to the start of the reporting intervention that began in mid-March, 2019.

Beginning on March 17, 2019 (Cycle 3), providers were sent an email from the PI with their clients’ trended PHQ-9 and GAD-7 scores with the explanation that, as part of the project, the PI would be sending these with updated information prior to each office visit. Scores included the total tallied score on each tool from each office visit from mid-November onwards for each client. Clients were identified by their MRN and emailed to each provider on the Sunday prior to the client’s visit. Scores were randomly reported either in Excel spreadsheet numbers, which included the dates of the office visits, or on a trended graph generated by the EMR. This process was continued weekly for each client and each provider from mid-March to Mid-June of 2019 when the final data measurement of PHQ-9 and GAD-7 scores was obtained.

Measures

The clinical measurement tools used were the Patient Health Questionnaire-9 (Appendix I) and the Generalized Anxiety Disorder-7 (Appendix II) screening tools approved for use by the Centers for Medicare and Medicaid Services as part of
meaningful use standards. The PHQ-9 is a brief, self-administered, nine question, psychometrically validated tool based on symptom criteria from the DSM-IV for Major Depressive Disorder (Kroenke, 2001, Spitzer, 1999). Each question asks about specific symptoms over the prior two weeks with answers on a 4-point scale rating from not at all to several of the days to more than half the days and finally to nearly every day. Scoring ranges from 0 to 3 points based on severity. The tool carries a sensitivity of 88%, a specificity of 88% and a Cronbach’s alpha of 0.89 for determining a diagnosis of Major Depression and measuring degree and changes in severity. Total tallied scores of 0-5, 5-9, 10-14, 15-19 and 20-27 were associated with none, mild, moderate, moderately severe and severe depression, respectively. A score reduction of 5 points indicates a response, a 50% reduction in score is remission and a score less than 5 is stabilization (Katzelnick, 2011).

The GAD-7 is a brief, self-administered seven question, psychometrically validated tool based on symptom criteria from the DSM-IV for Generalized Anxiety Disorder. The tool has a structure similar to the PHQ-9 with a 4-point rating scale with the same assessment distribution and an identical scoring system. The GAD-7 holds a sensitivity of 89% and a specificity of 82% with a Cronbach’s alpha of 0.79-0.91 (Spitzer, 2006, Terrill, 2015, Williams, 2014).

Qualitative Procedure

An informational email was sent to all clinic providers to explain the purpose of the study and requesting voluntary participation in a qualitative interview. Thirteen of the 15 providers were available and agreed to participate. Interviews took place following
completion of quantitative data gathering in a four-week period from mid-June 2019 through mid-July, 2019 (Cycle 4).

Participants were asked to sign a consent form to allow both participation and recording of the interviews with possible use of de-identified quotes (Appendix III). The PI met individually with each participant and conducted semi-structured interviews comprised of questions addressing attitudes, experiences and opinions on the use of measurement-based care, in general, and the study process, in specific.

**Qualitative Questions**

1. Did you review the scores in the EMR prior to receiving the reports?

2. How often and how did you use the information from the tools?

3. What are your views on the usefulness of the information?

4. Did you change your treatment plan in any way based on the scores? If so, how?

5. What are your views of the usefulness of MBC outside of this clinic?

6. Would you recommend continued use of MBC?

Questions were reviewed by three psychiatric professionals to obtain agreement on internal reliability.

All interviews were audio-recorded using Temi recording/transcribing software on an iphone and lasted from 5 to 10 minutes in length. All participants were given a $5.00 Starbucks gift card for their participation following the end of the interview.
Analysis/Evaluation

Quantitative analysis was performed using the Statistical Package for the Social Sciences (SPSS Version 26). Dependent t-tests were performed with SPSS to look for differences in the means of the 3 comparisons – baseline (Timepoint [TP] 1) to mid-March (TP 2), TP 1 to mid-June (TP 3- final measurement) and TP 2 to TP 3 for both the PHQ-9 and GAD-7 data. A linear, repeated measures ANOVA was utilized to test the effect of client gender, (M,F), provider discipline (PMHNP, PA, DO, MD) and treatment modality (medication only, medication and psychotherapy) on scores over time. Pairwise comparisons were run for the effects of client gender, treatment modality and provider discipline within the repeated measures.

For the qualitative analysis, transcripts of the recordings were reviewed against the audio-files for clarity and correction by the PI and imported into HyperResearch qualitative software. All transcripts were given a numeric identifier for differentiation. The transcribed interviews were read and re-read with constant comparison of data points between transcripts and against the overall interview. Codes were then generated to describe the focus of the points or phrases. Three independent content experts, including the investigator, coded the interview transcripts separately until no further codes could be identified and saturation was determined to have been reached. Codes from the three coders were synthesized and added to HyperResearch. Reports were generated on the frequency and means of the codes and codes were placed in a Code Map according to themes and sub-themes.
## Project Timeline

<table>
<thead>
<tr>
<th>Dates</th>
<th>Planning</th>
<th>Pre-implementation</th>
<th>Implementation</th>
<th>Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>May, 2018</td>
<td>Meet with Exec. Director and Board of Non-Profit to obtain approval</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>June - September, 2018</td>
<td>Education sessions for the PI to become a super-user for the new EMR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>September, 2018</td>
<td>Training sessions with providers to teach the use of new EMR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>October 12, 2018</td>
<td>Go-live of new EMR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>November, 2018</td>
<td></td>
<td></td>
<td>Begin administering PHQ-9 and GAD-7 to clients</td>
<td></td>
</tr>
<tr>
<td>January, 2019</td>
<td></td>
<td></td>
<td>Submission and approval from IRB</td>
<td></td>
</tr>
<tr>
<td>January 31, 2019</td>
<td></td>
<td></td>
<td>1&lt;sup&gt;st&lt;/sup&gt; datapoint measurement gathered for baseline scores of PHQ-9 and GAD-7</td>
<td></td>
</tr>
<tr>
<td>March 16, 2019</td>
<td></td>
<td></td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; datapoint measurement of PHQ-9 and GAD-7 scores; Begin sending reports to providers</td>
<td></td>
</tr>
</tbody>
</table>
Ethics

Ethical considerations included that the PI was on the Board of Directors for the Non-Profit Organization. When proposing the study to the Board, the PI offered to step down from the Board for the duration of the work so that there would not be a conflict of interest or perceived pressure on the Board to agree to something with which they might privately have concerns. The Board conferred privately with the Executive Director (ED) and agreed that the work being proposed was in line with the strategic plan of the organization for the Clinic and they saw no conflict. An institutional agreement was already in place between the organization and JMU for use as a clinical site. There were no ethical concerns about the study, itself, and it posed no risks beyond normal life for either patients or providers. Costs incurred were covered by the PI and included time and the cost for the gift cards.

Non-profit clinics often have no access to an Institutional Review Board (IRB) so studies can rarely be conducted in these settings. As a student, the PI had access to the IRB at James Madison University to review any ethical concerns. The study, protocol
#19-0768, was approved by the James Madison University IRB in January, 2019. Participants signed consent forms indicating their understanding of the purpose of the study and agreeing to the recording and possible use of de-identified quotes prior to participating in the qualitative interviews (Appendix III).

For security, all paper copies of the questionnaires were shredded after entry into the EMR and Excel spreadsheet. The Excel spreadsheet data was kept on a password protected computer at the PI’s residence only used for academics. No information was placed in the Cloud. The data was deleted on completion of the project. For the qualitative portion of the study, all recordings were erased following transcription. Printed transcripts were maintained in a locked cabinet in a locked office for protection during the analysis and shredded on completion of the study.

**Results**

**Quantitative Results**

A total of 15 providers met the criteria for inclusion in the study. The sample included nine females (60%) and six males (40%). Thirteen (87%) were native English-speaking Americans and three (13%) were foreign-born with English as a second language. Six (40%) were third year medical residents in a Psychiatry residency program and were providing psychotherapy services as part of a residency training rotation. One (6%) was a 4th year resident volunteering to provide both psychotherapy and medication management services. Two (13%) were licensed psychotherapists (1 Licensed Clinical Social Worker and 1 Licensed Clinical Psychologist). Six (40%) were Board certified as psychiatric specialists and provided medication management services only (1 PMHNP-BC, 1 PA-SUP, 2 DO’s and 2 MD’s). All seven residents (46.7%) had less than five
years of experience in the field of Psychiatry. The remaining eight licensed/certified providers had a minimum of ten years in the field (53.3%). There were 44 active client cases during the study timeframe included in the t-test results.

Prior to analysis, descriptive statistics were run on the PHQ-9 and GAD-7 data to test for the assumption of normal distribution. Both sets of data satisfied the assumptions for normality. The PHQ-9 skew was .172 and kurtosis level was 3.065. The GAD-7 skew was -.874 and kurtosis level was .025. These are less than the maximum allowable values for a t-test of skew < 2.0 and kurtosis < 9.0 as established by Posten (1984) indicating that dependent samples t-tests were appropriate to conduct.

Paired two-tailed t-tests were used to compare the overall differences in the means between the three measured time points (timepoint (TP) 1 [baseline], TP 2 and TP 3 [final]) on both the PHQ-9 and GAD-7 scores for all clients seen by the providers. For the PHQ-9 scores there was a reduction in the means between each of the three time periods (TP-1 to TP-2, TP-2 to TP-3 and TP-1 to TP-3) but no significant difference found between TP-1 to TP-2 and TP-2 to TP-3. This suggests the intervention had no effect on the PHQ-9 depression scores. The data does, however, show a significant overall reduction in scores from TP-1 (M=1.043, SD= 4.796) to TP-3 (M=2.455, SD= 6.825); t (2.386), p< .022) indicating that the clinic’s providers were effective in reducing symptoms of depression over the course of the 7 months of data extraction (Table 1.).
Table 1.
Paired samples t-test for PHQ-9 scores

<table>
<thead>
<tr>
<th>Pair</th>
<th>Paired Differences</th>
<th>Paired Samples Test</th>
<th>95% Confidence Interval of the Difference</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Deviation</td>
<td>Std. Error Mean</td>
<td>t</td>
</tr>
<tr>
<td></td>
<td>1.04255</td>
<td>4.79564</td>
<td>.69952</td>
<td>.36550</td>
</tr>
<tr>
<td></td>
<td>2.45455</td>
<td>6.82490</td>
<td>1.02889</td>
<td>.37959</td>
</tr>
<tr>
<td></td>
<td>1.05128</td>
<td>7.24732</td>
<td>1.16050</td>
<td>-1.29803</td>
</tr>
</tbody>
</table>

Paired two-tailed t-tests were then performed on the GAD-7 scores for the same time periods. There was a more pronounced reduction in the score means between each of the three time period comparisons. While there was little significance between the TP-1 and TP-2 (M=1.208, SD= 5.347); t (1.566), p= .124) measurements, there was a significant difference in the means during the intervention period from TP-2 to TP-3 (M=1.949, SD= 5.844; t (2.082), p< .044) as well as from the overall TP-1 to TP-3 measurements (M=2.910, SD= 5.242; t (3.681), p< .001). The results indicate that the providers were effective in reducing anxiety symptoms during the entirety of the 7-month time frame and that the intervention had a positive effect.
A linear, mixed model, repeated measures ANOVA was then performed separately on both the PHQ-9 and GAD-7 scores using time as the Within-Subjects Factor and client gender (M, F), provider discipline (NP, PA, DO/MD) and treatment modality (medication management alone, both medication management and psychotherapy) as the Between Subjects Factors. The overall ‘N’ of active cases included in the ANOVA was reduced to 39 as SPSS excluded all cases with missing measurements.

For the GAD-7 data, descriptive statistics were run and data satisfied the assumptions for Box’s Test of Equality of Covariance Matrices (p=.907), Levene’s Test of Equality of Error Variances (p-values = .340 for TP1, .250 for TP2, .284 for TP3) and Mauchley’s Test of Sphericity (p=.869). No main effects were found in the Between Factors measurements, however, there was a significant difference in the main effect for

### Table 2.
Paired samples t-test for GAD-7 scores

<table>
<thead>
<tr>
<th>Pair</th>
<th>gad1 - gad2</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
<th>Mean</th>
<th>Std. Error</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gad1 - gad2</td>
<td>1.20833</td>
<td>5.34733</td>
<td>.77182</td>
<td>-34437</td>
<td>2.76104</td>
<td>.124</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>gad1 - gad3</td>
<td>2.90909</td>
<td>5.24213</td>
<td>.79028</td>
<td>1.31534</td>
<td>4.50284</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>gad2 - gad3</td>
<td>1.94872</td>
<td>5.84424</td>
<td>.93583</td>
<td>.05423</td>
<td>3.84320</td>
<td>.044</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
time displayed in the pairwise comparisons from TP1 to TP3 (F= 6.067, partial eta squared= .138; p < .003, CI .952-5.304) consistent with the t-test results.

Table 3.
Descriptive Statistics on GAD-7 ANOVA measurements

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>gad1</td>
<td>11.6667</td>
<td>5.67698</td>
<td>39</td>
</tr>
<tr>
<td>gad2</td>
<td>10.4872</td>
<td>6.17240</td>
<td>39</td>
</tr>
<tr>
<td>gad3</td>
<td>8.5385</td>
<td>5.81670</td>
<td>39</td>
</tr>
</tbody>
</table>

Table 4.
Pairwise comparisons of TP-1, TP-2 and TP-3 GAD-7 measurements

| (I) | (J) | Mean Difference | Std. Error | Sig. | 95% Confidence Interval for Difference
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>1.179</td>
<td>.915</td>
<td>.616</td>
<td>-1.113 to 3.472</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3.128*</td>
<td>.869</td>
<td>.003</td>
<td>.952 to 5.304</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>-1.179</td>
<td>.915</td>
<td>.616</td>
<td>-3.472 to 1.113</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>1.949</td>
<td>.936</td>
<td>.132</td>
<td>-.395 to 4.293</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>-3.128*</td>
<td>.869</td>
<td>.003</td>
<td>-5.304 to -.952</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>-1.949</td>
<td>.936</td>
<td>.132</td>
<td>-4.293 to .395</td>
</tr>
</tbody>
</table>

Based on estimated marginal means

* The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.
The PHQ-9 data satisfied Box’s Test (p= .712) and Levene’s Test (p values = .198 for TP1, .377 for TP2 and .260 for TP3) but failed the assumption of Sphericity (p< .009). (Table 5).

Table 5.
Mauchley’s test for Sphericity on PHQ-9 data indicating failure of the assumption.

<table>
<thead>
<tr>
<th>Mauchly's Test of Sphericity*</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure: MEASURE_1</td>
<td></td>
</tr>
<tr>
<td>Within Subjects Effect</td>
<td>Mauchly's W</td>
</tr>
<tr>
<td>time</td>
<td>.773</td>
</tr>
</tbody>
</table>

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. Design: Intercept
Within Subjects Design: time

b. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

A Greenhouse-Geisser correction identified a value of p< .061 for time and p< .184 for the time*gender interaction (Table 6). This lack of significance indicates no within-subjects effects. Further testing found no within-subjects or main effects for discipline or modality. However, a Test of Between-Subjects found a significant effect between genders (F(4.425, partial eta squared=.109; p< .042) (Table 7) further evidenced in the Estimated Marginal Means of Gender*time (Table 8).
Table 6.
Greenhouse-Geisser correction for Sphericity.

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>time</td>
<td>128.554</td>
<td>2</td>
<td>64.277</td>
<td>3.119</td>
<td>.050</td>
</tr>
<tr>
<td></td>
<td>Greenhouse-Geisser</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Huynh-Feldt</td>
<td>128.554</td>
<td>1.647</td>
<td>78.068</td>
<td>3.119</td>
</tr>
<tr>
<td></td>
<td>Lower-bound</td>
<td>128.554</td>
<td>1.000</td>
<td>128.554</td>
<td>3.119</td>
</tr>
<tr>
<td>time * Gender</td>
<td>Sphericity Assumed</td>
<td>72.862</td>
<td>2</td>
<td>36.431</td>
<td>1.768</td>
</tr>
<tr>
<td></td>
<td>Greenhouse-Geisser</td>
<td>72.862</td>
<td>1.647</td>
<td>44.247</td>
<td>1.768</td>
</tr>
<tr>
<td></td>
<td>Huynh-Feldt</td>
<td>72.862</td>
<td>1.760</td>
<td>41.399</td>
<td>1.768</td>
</tr>
<tr>
<td></td>
<td>Lower-bound</td>
<td>72.862</td>
<td>1.000</td>
<td>72.862</td>
<td>1.768</td>
</tr>
<tr>
<td>Error(time)</td>
<td>Sphericity Assumed</td>
<td>1524.865</td>
<td>74</td>
<td>20.606</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Greenhouse-Geisser</td>
<td>1524.865</td>
<td>60.928</td>
<td>25.027</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Huynh-Feldt</td>
<td>1524.865</td>
<td>65.119</td>
<td>23.417</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lower-bound</td>
<td>1524.865</td>
<td>37.000</td>
<td>41.213</td>
<td></td>
</tr>
</tbody>
</table>

Table 7.
Test of Between-Subjects Effects on the PHQ-9 data showing significant effect between genders.

Tests of Between-Subjects Effects

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>16840.909</td>
<td>1</td>
<td>16840.909</td>
<td>214.696</td>
<td>.000</td>
<td>.856</td>
</tr>
<tr>
<td>Pt_Gen</td>
<td>347.085</td>
<td>1</td>
<td>347.085</td>
<td>4.425</td>
<td>.042</td>
<td>.109</td>
</tr>
<tr>
<td>Error</td>
<td>2823.871</td>
<td>36</td>
<td>78.441</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8.
Estimated Marginal Means of gender over time

<table>
<thead>
<tr>
<th>Measure: PHQ</th>
<th>Gender * time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>time</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

To further explore the difference, the dataset was split between genders. Using univariate repeated measures for gender, differences were found within the genders, as well. Female scores made a steady decline resulting in a statistically significant reduction (p < .041, CI .130 to 7.415) overall (Table 9) and had a steeper, although not significant, reduction within the intervention period. Male scores had a more rapid decline in the first time period but rebounded in the second time period to have a statistically insignificant result overall. (Figure 2.).

Table 9.
Pairwise comparison of PHQ-9 scores for Female Gender over the 3 time points.

<table>
<thead>
<tr>
<th>Measure: PHQ</th>
<th>Pairwise Comparisons</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(l)</em> time</td>
<td><em>(J)</em> time</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

† Based on estimated marginal means
* The mean difference is significant at the .05 level
b Adjustment for multiple comparisons: Bonferroni
Content Analysis of Interview Responses

Thirteen of the fifteen providers (87%) were available and willing to participate in qualitative interviews following the period of data gathering. Triangulation was managed with the use of three coders and the anonymity of the interviewees on the transcripts that were reviewed. The PI worked at maintaining an awareness of the intrusion of any preconceptions and maintained objective curiosity as to the results to address reflexivity. Four global themes emerged with 14 organizing themes comprised of 64 distinct codes with 338 references (Table 11. Frequency distribution). The themes focused on the (a)
barriers to the use of MBC, (b) MBC utilization and facilitators, (c) the measurement-based care concept, and (d) the operational process of the initiative, itself.

1. **Barriers to measurement-based care.**

1.1 **Burden.**

Providers expressed some concerns about the possible burden imposed by the process on patients and wanted to make sure patients were willing to complete the forms. Concerns were also expressed about the time burden on providers seeing clients for medication management encounters. This was identified as being a problem in extending the use of MBC in their roles outside the Clinic where tight scheduling often limited visits to 15 minutes with little time for review of results.

If I had someone that came in over the age of 60 or 65, I would usually do what’s called a MOCA, a Montreal Cognitive Assessment Tool, because that’s great utility for me to see where they are on a cognitive basis. I use those really often and you can’t do those in 2 minutes.

So I had [different MBC tools] in my desk and I would utilize that. The only problem was the number of people that they wanted me to see in an hour and that makes it hard to cover that type of material in a 15-minute visit.

“There is definitely a certain labor cost to having more forms to fill out.”
1.2 Choice of Appropriate Tool.

With the variety of measurement-based tools available in Psychiatry, some providers questioned the use of the PHQ-9 and the GAD-7.

“I know the PHQ-9 is the kind of standard but I don’t particularly like that tool. I think it’s great for use with primary care but I don’t think it’s good in Psychiatry.”

“Now when the government got involved in, initially, the meaningful use kind of stuff, the big tool was the PHQ-9 and I’m like, it’s not meaning a whole lot to me.”

Other issues raised were over the accuracy of a self-reported tool versus one that the provider completed based on clinical observation.

1.3 Patient Population and Diagnosis.

Some providers raised the issue of the risk of patient abuse of the tool and its scoring for secondary gain. In line with this were statements regarding the emotional lability of patients with personality disorders whose scores could vary widely within the span of one day bringing into question the reliability and validity of the score. The underlying message was that MBC might not be appropriate for all patients and diagnoses.
“I’d have to be more careful using it in those patients because I think you can get a false reading.”

1.4 Concern for Use/Depersonalizing Care.

Some cautioned that too much emphasis on MBC ran the risk of ‘treating to the score’ rather than treating the patient. Some felt that the score didn’t change the interventions and that they didn’t require a tool to tell them what the patient was already stating.

“I’m an old therapist so there’s times when I trust my gut better.”

“Like I said, if they were miserable, they would have told me.”

2. The value of measurement-based care.

2.1 Baseline measurements and markers.

Many providers found the scores were particularly helpful in the beginning of treatment. Establishing a baseline measurement gave them a starting point from which to work and helped develop an understanding of a person that they did not know.

“With this newer guy, he was a little harder to read and so that helped me kind of cue in.”
I think the most utility I’ve ever had with utilizing questionnaires and those types of tools has been upon the initial eval of a patient because I can see where they are from the beginning.

This is something we need to utilize in certain aspects. Especially if you’re having a lot of problems with getting patients to really talk with you. Sometimes they’re more willing to sit down with a piece of paper than they are to do some face to face at times. It’s hard for them to verbalize exactly what they are experiencing.

The scores were a way to keep track of symptoms and offer an alert for sudden changes.

I was surprised at how depressed and anxious my patients were because they didn’t tell me that. Obviously, when they were given a structured questionnaire that was self-reported there was a difference between… I’m surprised. Yeah.

“It’s quantifying. Saying the anxiety is trending up or down or the depression is trending up or down.”

“I looked at the scores and noticed if there was a pattern.”

“It’s a good standard marker for your interventions and is helpful to show outcomes.”
2.2 *Guides treatment.*

The scores were used as a barometer of treatment efficacy and an indicator of progress. Some providers found it helped focus treatment, using the individual tool questions rather than the global score, as a point for discussion. Others found the lack of change in score results as justification for more aggressive or off-label treatment interventions.

“I have changed the modality I use based on the patient’s scores.”

So if I see the score was a little bit higher than the previous score, I kind of like ask the patient what happened the week prior? What changed? How come? So it caused me to zero in on what is happening to increase the score now.

For the folks who tended to have more persistently high scores, I was more ready to go toward more adjunctive treatments. Things that may not have been first line or even officially FDA approved but had some evidence in the scientific literature. Having that number in my hand gave me more confidence to try something a bit more experimental.

2.3 *Use as an adjunct.*

Most described MBC’s value as that of an adjunct to their clinical judgment. It served as an extra datapoint against which to measure their perceptions – looking for
congruence between the scores and what they were seeing and experiencing with the client. One resident reported that the validation of their perceptions by the scores increased their clinical confidence. A number believed that MBC was more useful with pharmacotherapy rather than psychotherapy.

“It’s super useful as a tool. They say medicine is an art and a science. You need a carpenter and a hammer.”

“There’s some limitations just like anything else that’s a tool. Like anything, if used appropriately, it’s very useful.”

“It’s another piece of data that you use in conjunction with your clinical judgment.”

So I already had an idea of how she was doing but the PHQ-9 and GAD-7 gave another measurement that was validating the kind of measurement I had. And it was interesting that sometimes they were not necessarily the same. It gave more information in kind of looking at the whole thing from a different perspective, which I think was nice.

With regards to psychotherapy, I didn’t really find myself relying too much on the scores to change what I was talking about because really it was kind of what they brought up here in the moment in the session that tended to be the focus.
In other clinics, I use these scales myself all the time. Especially when I am doing medication management and people come in and they’re like, yeah, I’m better, but then their scores are worse so the medication didn’t change anything. In measurement-based practice, I have found it to be much easier and I feel better about it in general.

2.4 Patient-Centered Care.

Statements emerged from providers about their patient’s responses to the measurements. Some felt they were receiving better care because their provider wanted to measure their symptoms. Others felt reviewing the change in scores with patients encouraged patient self-reflection and the identification of progress that they may not have realized.

In outpatient, you’re seeing the patient every two or three months and they may not exactly remember how they were a few months ago. This can be sort of a reminder, saying, hey, you were reporting this many depressive symptoms. You were this bad when you started and now look where you’ve come to.

I specifically told them I get that information [from the patient-completed questionnaire] so it gave it a purpose. They were actually interested in it. I think it made them feel like they were getting better care.
3.0 The need for measurement-based care.

3.1 Evidence-based.

In general, the providers recognized that MBC was evidence-based and the literature strongly supports its use. Many already used MBC in their outpatient practices outside the Clinic. One provider, who primarily does in-patient work in his main role, said it was not used much in the in-patient setting but he would like to begin incorporating its use in that area. All were careful to caution scrutiny on the reliability and validity of the chosen tools but felt that MBC was now a standard of care.

“I’ve had experience working in more than one place and one company didn’t use tools at all. That was kind of disheartening for me.”

“For something such as a tried and true standardized form like the GAD-7, I would find any clinic suspect that didn’t employ that in some way.”

“For something as ubiquitous as the GAD-7, I think it’s invaluable. I wouldn’t want to do something that had no evidence behind it.”

3.1 Utility.

All providers expressed that MBC had utility in treatment. Whether using the global score to measure progress or the individual tool questions to jump start
exploration and develop behavioral activation interventions to address that one item, all recommended continued use of MBC.

Typically, it’s easier for me to look at the questions and see how they respond…. And what specifically they are having difficulties with regardless of the treatment. We can address those in particular rather than the global type of thing.

“I looked at the trajectory and how the score changed.”

“There is definite utility.”

4.0 Operational process of the project.

4.1 Office-based mechanism.

None of the providers looked at the scores in the EMR prior to having reports sent.

Providers felt that having the office staff assist in facilitating the completion of the tools was a time saver as it didn’t encroach on the clinical time and contributed to a good patient response rate. However, the delay in score reporting was seen as problematic.

At other clinics, I use these scales myself all the time. But I just imagine as soon as they got to the waiting room there was some on the wall and they knew that, okay, just take it and fill it. That saves a lot of time.
I wanted to share that whenever my patient was filling it in, I was usually having a glance at it before you sent it to us. Especially for medication management, it makes a huge difference whether you see it then versus two days later.

4.2 EMR Use.

The understanding of the new EMR was problematic, as well. If providers had difficulty accessing the program, they often wouldn’t use it during the session. Some had trouble finding the screening section where the scores were located. Additionally, patient identification on the reports that were sent was a problem as providers were unaware of the MRN’s of their patients.

“I didn’t know which ones they were because I was seeing 2 people and there were no names. I wasn’t sure which one it was for.”

“I glanced very briefly at the scores and found myself trying to match up the numbers with which patient it might refer to.”

I tried to look back in my emails for the scores to see if there was a change. I wasn’t sure where to find the scores in the EMR. You probably told me and I don’t remember because I’m only there once a month.
4.3 Choice of Tools.

Providers would have liked the option to use other tools. There were a number available in the EMR for use but, as with the category above, many were unaware that others existed or that they had the option to use them. Some also felt a provider-completed tool would be more accurate.

“I’ve always used either the HAM-D or a Beck [Depression Rating Scale], specifically for depression because it gave a little more detail.”

“I just worry about the subjectivity of it.”

4.4 Outcome Reporting.

Trended scores were randomly sent to providers in an Excel spreadsheet with dates of service and the global score on each tool for each date or in a line graph form generated by the EMR that covered the totality of treatment dates rather than by individual date. Providers varied in their preferences of reporting. Three (23%) preferred the Excel spreadsheet and the numbers, three (23%) had no preference and seven (54%) preferred the graph.

“The graph form is more useful. There’s a better visualization of it.”
Figure 3. Code map 1 of qualitative interview data

Figure 4. Code map 2 of qualitative interview data
Table 10. Means, standard deviations and frequency distribution of codes within the qualitative data.

<table>
<thead>
<tr>
<th>Code</th>
<th>Total</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Bar Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>adjunct</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>0.643</td>
<td>0.842</td>
<td></td>
</tr>
<tr>
<td>an alert to catch provider attention</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>awareness of scores pre intervention</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0.143</td>
<td>0.163</td>
<td></td>
</tr>
<tr>
<td>barometer of treatment efficacy</td>
<td>16</td>
<td>0</td>
<td>6</td>
<td>1.143</td>
<td>1.657</td>
<td></td>
</tr>
<tr>
<td>Baseline measurement and marker</td>
<td>11</td>
<td>0</td>
<td>4</td>
<td>0.796</td>
<td>1.188</td>
<td></td>
</tr>
<tr>
<td>burden</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>burden - patient</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.286</td>
<td>0.726</td>
<td></td>
</tr>
<tr>
<td>burden - time constraint</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0.357</td>
<td>0.745</td>
<td></td>
</tr>
<tr>
<td>choice of appropriate tool</td>
<td>8</td>
<td>0</td>
<td>5</td>
<td>0.571</td>
<td>1.342</td>
<td></td>
</tr>
<tr>
<td>concept of better care</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0.214</td>
<td>0.579</td>
<td></td>
</tr>
<tr>
<td>concern for use of MRC</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>congruence with pr report/presentation</td>
<td>13</td>
<td>0</td>
<td>2</td>
<td>0.929</td>
<td>0.828</td>
<td></td>
</tr>
<tr>
<td>difficulty reading patients</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0.429</td>
<td>0.514</td>
<td></td>
</tr>
<tr>
<td>doesn’t replace clinical judgment</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>0.714</td>
<td>0.994</td>
<td></td>
</tr>
<tr>
<td>EMR use</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0.214</td>
<td>0.579</td>
<td></td>
</tr>
<tr>
<td>evidence based</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>0.5</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>Excel preference</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0.143</td>
<td>0.363</td>
<td></td>
</tr>
<tr>
<td>extra information/datapoint</td>
<td>15</td>
<td>0</td>
<td>3</td>
<td>1.071</td>
<td>1.141</td>
<td></td>
</tr>
<tr>
<td>false reading</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0.214</td>
<td>0.426</td>
<td></td>
</tr>
<tr>
<td>finding scores</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>focused treatment</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0.357</td>
<td>0.633</td>
<td></td>
</tr>
<tr>
<td>good patient response rate</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>graph preference</td>
<td>7</td>
<td>0</td>
<td>1</td>
<td>0.5</td>
<td>0.519</td>
<td></td>
</tr>
<tr>
<td>Guiding treatment</td>
<td>14</td>
<td>0</td>
<td>4</td>
<td>1</td>
<td>1.24</td>
<td></td>
</tr>
<tr>
<td>increased provider confidence</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>0.214</td>
<td>0.428</td>
<td></td>
</tr>
<tr>
<td>independent MBC</td>
<td>10</td>
<td>0</td>
<td>3</td>
<td>0.714</td>
<td>0.914</td>
<td></td>
</tr>
<tr>
<td>indicator of sudden/recent change</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.286</td>
<td>0.611</td>
<td></td>
</tr>
<tr>
<td>jump starts the therapeutic conversation</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0.357</td>
<td>0.633</td>
<td></td>
</tr>
<tr>
<td>justification for more aggressive treatment</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.286</td>
<td>0.611</td>
<td></td>
</tr>
<tr>
<td>keeps track of sx</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0.143</td>
<td>0.363</td>
<td></td>
</tr>
<tr>
<td>MBC important to the process</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>measure of provider impression</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>more effective with pharmacotherapy than psychotherapy</td>
<td>5</td>
<td>0</td>
<td>2</td>
<td>0.357</td>
<td>0.633</td>
<td></td>
</tr>
<tr>
<td>new patients</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>No effect on treatment</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0.071</td>
<td>0.267</td>
<td></td>
</tr>
<tr>
<td>not for every patient or diagnosis</td>
<td>4</td>
<td>0</td>
<td>2</td>
<td>0.286</td>
<td>0.611</td>
<td></td>
</tr>
</tbody>
</table>

**Project Process Results**

Following the phases of Lippitt’s theoretical framework, the problem was diagnosed in May of 2018 and a guideline for the intended change developed shortly thereafter once approval was received from the Board of Directors. There was substantial support and motivation for change on the part of the Executive Director. Driving forces included the need to determine the Clinic’s effectiveness for grant submissions by the Chief Development Officer. Restraining forces focused around the integration of the new
electronic health record. There was resistance from the first Clinic manager at the time for anything computer-related and she would occasionally forget to give clients the questionnaires. Some of the providers had never used an EMR and struggled with its use requiring more than one education session by the PI for training. Every provider had difficulty remembering user-id’s and passwords and needed the PI, as superuser, to re-set their accounts so they could gain access to the program. The PI was actively involved in the entire process as the primary change agent serving as computer superuser, educator, troubleshooter for office functions, and data manager.

Instituting the use of the EMR in October allowed most of the initial problems to be corrected by January of 2019. This was assisted by the hire of a new office manager in late December, 2018 who was comfortable with the EMR and set up an organized process for distributing the questionnaires. Data missing from the early months created some difficulties with the ANOVA as SPSS would only include cases where all three timepoints had numbers. All cycles went according to plan with minor corrections made to address the issues using the PDSA framework. By March of 2019, the questionnaire procedure had become systematized by both the clients and office manager resulting in a 100% completion rate. In May of 2019, the PI began to turn over some of the superuser functions to the office manager as part of the termination process of the helping relationship in Lippitt’s phase 7. Additionally, using feedback from the qualitative interviews, the plan was made to change the process after completion of the project whereby clients brought their completed questionnaires into their session to be reviewed and signed off by the provider. The forms were returned to the office manager at check
out and the office manager would add the scores into the EMR. The results of the project with a statistical report on the scores and Clinic effectiveness was provided to the Board of Directors at the September, 2019 Board meeting.

Discussion

Measurement-based care has been recognized as evidence-based practice and an important aspect of care in current day healthcare and reimbursement. The primary problem, and one of the aims of this project, has been in accomplishing successful and consistent use of this practice. Few studies have focused on implementation strategies and tailoring the implementation to the context and setting. This project allowed for this from the start with (a) approval from a Non-Profit Board of Directors, (b) operationalization of a new EMR, (c) the embedding of measurement tools, (d) the establishment of an office-based process to engage clients and ensure completion and return of scores, and (d) a mechanism to bring those scores into the awareness of the provider. Working with theoretical frameworks in a cyclic fashion kept the project on track with the element of time contributing to the processes becoming a routine aspect of daily workflow.

The success of the project in meeting its goal and first objective (100% patient response rate) was largely due to the support of the Board and the engagement of the second office manager in generating patient acceptance of the process. As Jensen-Doss, et al. (2018) found, organizational factors such as the provision of resources and the drive to meet funder requirements are key determinants in the adoption of MBC by providers in these types of settings where they might not use MBC elsewhere.
The second objective was to compare client score changes over time to ascertain positive movement toward stabilization. For both depression and anxiety, the providers were successful—regardless of modality or discipline—in reducing distressing symptoms over the 7-month course of the project. These outcomes were important metrics for the Clinic’s effectiveness reporting. Of note in the PHQ-9, when separated, females started with higher score than males, indicating more symptom acuity. They were slower to respond but made a steady decline to a statistically significant end score. They also had a somewhat steeper decline during the intervention period where scores were proactively reported to providers. While the steeper trajectory was not significant here, a larger ‘N’ might have impacted this result. Males, on the other hand, responded rapidly with symptom reduction but rebounded later in their care to near baseline levels. The significant result on the aggregated PHQ-9 scores were apparently driven primarily by the female clients. This unexpected finding warrants further investigation to understand what drives differences in treatment response based on gender.

The intervention had a particularly strong effect on the symptoms of anxiety. One possibility for this is that depression and anxiety symptoms are frequently interwoven. Many patients attribute the symptom cluster to depression and don’t separate the symptoms as distinct disorders. Once the providers saw the scores and realized that anxiety was a separate component of the client’s presentation, they could more actively address it. Overall, awareness of the scores had an impact on treatment.

An exploration of provider attitudes found many consistencies with the current literature but differences of opinion between the providers existed, as well. A circular paradigm seemed to be at play. Some didn’t trust the results of the patient-scored tool
because it was “too subjective” on the patient’s part. Others felt they didn’t need a tool at all, trusting and preferring the subjective responses of what the patient would tell them. Others found that patients were unable to tell them and needed the tool to identify their concerns, coming full circle to where they would need to trust those subjective responses. Most did find value and utility in MBC although the value varied with the type of client and the tool. Finding the right fit was important as was maintaining control over the choice of tool.

Measurement-based care has been in the literature with increasing frequency over the last decade and, following the recommendation of Harding, Rush and Arbuckle (2011), is now included in residency trainings as an evidence-based practice. Possibly for this reason, the residents were more open to the use of these tools and were more likely to utilize the scores to guide treatment decisions than their older counterparts. Most did feel, however, that MBC was best used in outpatient settings with pharmacotherapy where they had a longer timeframe to work with a client and watch for specific changes such as in sleep or appetite. All agreed that lack of time was the predominant detractor to the use of MBC, even when they really wanted to use it, so an office resource to assist in obtaining the scores made a great difference. They were unanimous in their recommendation to continue the process as long as they could see the scores at the time the patient completed the questionnaires.

Given the limitations identified by the providers related to variation in tools, patient response, and context, all agreed that the tools were just that—tools and an adjunct assisting the skilled ‘carpenter’ in the work. While they are no replacement for experience, knowledge and expertise, they can make the work faster, easier and more
precise – and thus, more efficient leading to cost effectiveness. In this era of managing population health, and the emphasis on meeting the 6 aims of the IOM (2001), MBC can make a strong contribution to the process.

**Limitations**

There were strengths and limitations within the project. A strength was that the Clinic was small with a consistent and dedicated group of providers willing to participate in this project. In addition, because of the small size, there was only one office staff person to educate on the new workflow. This allowed a degree of control over the initiation of the processes that might not exist with a larger office setting. With the addition of more office assistants, and with any staff turnover, there would need to be ongoing training with the risk of gaps in consistency.

While the strength was its small size, it was also its greatest disadvantage as it impacts the generalizability of the findings. The major limitation to the study was the small sample size. Some of the results appeared to show a trend that, with a larger ‘N,’ might have proven significant. Some clients who began in treatment were lost to attrition while new clients were added. This resulted in a compressed time period for measurements to have been taken, thus potentially influencing the data analysis. A year-long time frame would have yielded stronger results. The time lag between the client completing the questionnaire and the provider receiving the score was problematic for those providers and patients who only came to the Clinic once per month or less. The provider was seeing scores that were a month old, inaccurately reflecting the patient’s current status. The maintenance workflow is designed to correct this issue such that providers see the scores immediately and can act on current data.
For the qualitative portion of the study, it would have been preferable to wait until the quantitative results had been analyzed before generating the semi-structured questions. Questions could have been added to explore the findings related to anxiety and gender but would have required a resubmission to the IRB, taking additional time. The residents, having completed their rotation, would have moved on and been unavailable for interviews so the decision was made to remain with the original approved questions.

**Implications for Practice**

The use of the research and PDSA models where outcomes of a work process are regularly analyzed for response and adjusted accordingly based on those results is an important practice in determining efficacy. MBC assists with that by offering objective points for comparison measurement. The results showed the use of the measurement tools worked to engage the patient in a review of their own care and, as some of the providers found, afforded a very different view from how the providers thought they were progressing ultimately leading to changes in treatment and positive patient outcomes. The key was in the active use of it by clinicians.

When attempting to embed MBC into treatment, a team collaboration can work the best with the team comprised of providers, office staff and patients engaged in their own care. Providers can and should choose their tools of choice based on the clients that they see. Office staff can manage the distribution and collection of tools, making it part of the routine check-in/check-out process, and later document scores in the EMR. Clients are educated to come prepared to be self-reflective in answering questions on their mood and its effects on their functional status and abilities.
If the active use of MBC is made difficult by time constraints, integration of its most timebound aspects into waiting room time and office staff workflow can facilitate its application. Even in the absence of an office assistant, as one provider noted, having the questionnaires in a wall bracket for patients to complete on arrival would work. The plan to have clients bring the questionnaire in to their clinician for review and sign-off ensures awareness of scores in real time, making them more actionable, and the process more likely to be sustained. Scores can then be placed in the EMR for report management and trending.

The study project is worth replicating for several reasons. Use with a larger sample and over a longer period of time might make the significance of the intervention more pronounced – especially with depression in females where the intervention had a trending effect. A broader grouping and number of disciplines might show how differences in their respective academic trainings on the use of MBC affects its continued implementation. This can inform academic areas as to its inclusion in curricula. MBC can also be used to further explore the gender difference in treatment response found in the data analysis.

**Conclusion**

This project was an initiative to institute MBC in a Clinic where it had not previously existed, remove barriers to use and, ultimately, to encourage and facilitate full adoption of its application into the practice. Measurement based care can assist with treatment and provide outcome data but only if it is actually viewed and used to drive changes in care. This study showed that providers don’t actively seek out this information in the chart but being exposed to the scores affected their behavior and approaches to
treatment. Working in cycles with adjustments made along the way to overcome barriers was effective in incorporating the process into the normal, accepted workflow of the Clinic and decreased resistance to the change. The combination of quantitative measures showing a significant reduction in patient anxiety symptoms once providers were made aware of scores, and the qualitative data showing some of the highest frequency of comments related to the use of MBC as a barometer of treatment efficacy and its value in guiding treatment, make MBC worth continuing even in psychiatric practices not governed by the Joint Commission standards.

The success of the implementation of MBC in this Clinic shows that even small, non-profits can incorporate MBC into their practices with a minor adjustment in their workflows and a collaborative, team approach. Ultimately, the Clinic will benefit from a quantification of clinical outcomes for incorporation into grant requests or insurance submissions. Providers will see the objective outcomes resulting from their work. And changes in treatment course, based on symptom feedback, will benefit patient care and their overall clinical success- all meeting the goals of the IOM.
# Appendix I

## PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

<table>
<thead>
<tr>
<th>NAME:</th>
<th>DATE:</th>
</tr>
</thead>
</table>

Over the last 2 weeks, how often have you been bothered by any of the following problems?  
*(use "✓" to indicate your answer)*

<table>
<thead>
<tr>
<th>Test</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Little interest or pleasure in doing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Feeling down, depressed, or hopeless</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Trouble falling or staying asleep, or sleeping too much</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Feeling tired or having little energy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Poor appetite or overeating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Trouble concentrating on things, such as reading the newspaper or watching television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Moving or speaking so slowly that other people could have noticed. Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Thoughts that you would be better off dead, or of hurting yourself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Add columns: [ ] [ ] [ ] [ ]

*(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card.)*

TOTAL: [ ] [ ] [ ]

10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

   - Not difficult at all [ ]
   - Somewhat difficult [ ]
   - Very difficult [ ]
   - Extremely difficult [ ]

Copyright © 1999 Pfizer Inc. All rights reserved. Reproduced with permission. PRIME-MD® is a trademark of Pfizer Inc. A2683B 10-04-2005
**Appendix II**

### GAD-7

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>Several days</th>
<th>More than half the days</th>
<th>Nearly every day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over the last 2 weeks, how often have you been bothered by the following problems?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Feeling nervous, anxious or on edge</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Not being able to stop or control worrying</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Worrying too much about different things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Trouble relaxing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Being so restless that it is hard to sit still</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Becoming easily annoyed or irritable</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Feeling afraid as if something awful might happen</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Total Score = Add Columns

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

- Not difficult at all
- Somewhat difficult
- Very difficult
- Extremely difficult
Appendix III

Consent to Participate in Research

Identification of Investigators & Purpose of Study
You are being asked to participate in a research study conducted by Deirdre Rea, MSN, RN from James Madison University. The purpose of this study is to implement evidence-based care into clinical practice at Mental Health America of the Roanoke Valley (MHARV) and explore factors associated with the use of measurement based care by providers. This study will contribute to the researcher’s completion of her Doctor of Nursing Practice final project.

Research Procedures
Should you decide to participate in this research study, you will be asked to sign this consent form once all your questions have been answered to your satisfaction. This study consists of an interview that will be administered to individual participants at MHARV. You will be asked to provide answers to a series of questions related to your thoughts and perceptions regarding measurement-based care. The interview will be recorded for accurate understanding of your statements.

Time Required
Participation in this study will require approximately 20-30 minutes of your time.

Risks
The investigator does not perceive more than minimal risks from your involvement in this study (that is, no risks beyond the risks associated with everyday life).

Benefits
Potential benefits from participation in this study include an understanding of any barriers to the use of measurement-based care by providers and whether frequent use affects adoption of the practice.

Confidentiality
The results of this research may be presented at poster/podium presentations. The results of this project will be coded in such a way that the respondent’s identity will not be attached to the final form of this study. The researcher retains the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents with their answers including audio recordings will be destroyed.
Conflicts of Interest

The researcher is a member of the Board of Directors of Mental Health America of the Roanoke Valley but is engaging in this study only as a student of James Madison University. The Board of Directors of MHARV met in private session to discuss the study and make a determination on any concerns for conflict of interest on the part of the researcher. The study was found to be in line with the goals of the clinic and the Strategic Plan of the agency so no conflict of interest was found and permission was granted.

Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.

Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion or you would like to receive a copy of the final aggregate results of this study, please contact:

Researcher’s Name: Deirdre Rea
Department: Nursing
James Madison University
Email Address: reado@dukes.jmu.edu
Telephone: (540) 355-6478...

Advisor’s Name: Jeannie Garber, DNP
Department: Nursing
James Madison University
Email Address: garbe2js@jmu.edu

Questions About Your Rights as a Research Subject

Dr. Taimi Castle
Chair, Institutional Review Board
James Madison University
(540) 568-5929
castletl@jmu.edu
**Giving of Consent**

I have read this consent form and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have been given satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18 years of age.

☐ I give consent to be *audio* recorded during my interview. ________ (initials)

____________________________________
Name of Participant (Printed)

____________________________________    ______________
Name of Participant (Signed)               Date

____________________________________    ______________
Name of Researcher (Signed)                Date
References


https://doi.org/10.1007/s10488-016-0763-0


Trivedi, M., Rush, A., Ibrahim, H., (2004). The Inventory of Depressive Symptomatology, clinician rating (IDS-C) and the Quick Inventory of Depressive Symptomatology, clinician rating (QIDS-C) and Self Report (QIDS-SR) in public sector patients with mood disorders: A psychometric evaluation. *Psychological Medicine, 34,* 73-82.


