



# Evidence Brief: Use of Patient Reported Outcome Measures for Measurement Based Care in Mental Health Shared Decision-Making

November 2018

## Prepared for:

Department of Veterans Affairs  
Veterans Health Administration  
Quality Enhancement Research Initiative  
Health Services Research & Development Service  
Washington, DC 20420

## Prepared by:

Evidence-based Synthesis Program (ESP)  
Coordinating Center  
Portland VA Health Care System  
Portland, OR  
Mark Helfand, MD, MPH, MS, Director

## Investigators:

Kim Peterson, MS  
Johanna Anderson, MPH  
Donald Bourne, MPH



**VA**  
HEALTH  
CARE | Defining  
**EXCELLENCE**  
in the 21st Century

## PREFACE

The VA Evidence-based Synthesis Program (ESP) was established in 2007 to provide timely and accurate syntheses of targeted healthcare topics of particular importance to clinicians, managers, and policymakers as they work to improve the health and healthcare of Veterans. QUERI provides funding for four ESP Centers, and each Center has an active University affiliation. Center Directors are recognized leaders in the field of evidence synthesis with close ties to the AHRQ Evidence-based Practice Centers. The ESP is governed by a Steering Committee comprised of participants from VHA Policy, Program, and Operations Offices, VISN leadership, field-based investigators, and others as designated appropriate by QUERI/HSR&D.

The ESP Centers generate evidence syntheses on important clinical practice topics. These reports help:

- Develop clinical policies informed by evidence;
- Implement effective services to improve patient outcomes and to support VA clinical practice guidelines and performance measures; and
- Set the direction for future research to address gaps in clinical knowledge.

The ESP disseminates these reports throughout VA and in the published literature; some evidence syntheses have informed the clinical guidelines of large professional organizations.

The ESP Coordinating Center (ESP CC), located in Portland, Oregon, was created in 2009 to expand the capacity of QUERI/HSR&D and is charged with oversight of national ESP program operations, program development and evaluation, and dissemination efforts. The ESP CC establishes standard operating procedures for the production of evidence synthesis reports; facilitates a national topic nomination, prioritization, and selection process; manages the research portfolio of each Center; facilitates editorial review processes; ensures methodological consistency and quality of products; produces “rapid response evidence briefs” at the request of VHA senior leadership; collaborates with HSR&D Center for Information Dissemination and Education Resources (CIDER) to develop a national dissemination strategy for all ESP products; and interfaces with stakeholders to effectively engage the program.

Comments on this evidence report are welcome and can be sent to Nicole Floyd, ESP CC Program Manager, at [Nicole.Floyd@va.gov](mailto:Nicole.Floyd@va.gov).

**Recommended citation:** Peterson K, Anderson J, Bourne, D. Evidence Brief: Use of Patient Reported Outcome Measures for Measurement Based Care in Mental Health Shared Decision-Making. VA ESP Project #09-199; 2018.

This report is based on research conducted by the Evidence-based Synthesis Program (ESP) Coordinating Center located at the **Portland VA Health Care System, Portland, OR**, funded by the Department of Veterans Affairs, Veterans Health Administration, Office of Research and Development, Quality Enhancement Research Initiative. The findings and conclusions in this document are those of the author(s) who are responsible for its contents; the findings and conclusions do not necessarily represent the views of the Department of Veterans Affairs or the United States government. Therefore, no statement in this article should be construed as an official position of the Department of Veterans Affairs. No investigators have any affiliations or financial involvement (eg, employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties) that conflict with material presented in the report.

## TABLE OF CONTENTS

Executive Summary .....	1
Evidence Brief .....	4
Introduction.....	4
Purpose.....	4
Background.....	4
Scope.....	7
Key Questions.....	7
Eligibility Criteria.....	7
Methods.....	9
Results.....	10
Literature Flow.....	10
MBC Approaches and Applicability to VA.....	11
Methodological Quality .....	12
Strength of Evidence.....	12
Key Question 1: What is the Effectiveness of Measurement Based Care Delivery Practices in Mental Health Care? .....	12
Clinically Significant Improvement in Overall Distress.....	12
Suicide Behavior, Functioning, Quality of Life.....	13
Satisfaction with Care .....	14
No-shows, Drop-outs, Medication Adherence.....	14
Key Question 2: What are the Adverse Effects and Unintended Consequences of Using Measurement Based Care Delivery Practices in Mental Health Care?.....	18
Key Question 3: Do the Outcomes of Using Measurement Based Care Delivery Practices in Mental Health Care Vary By Patient Demographics or Mental Health Characteristics/Diagnoses? .....	18
Diagnostic Subgroups .....	18
Summary and Discussion.....	20
Limitations .....	20
Future Research Implications .....	21
Acknowledgments.....	25
Operational Partners.....	25
Peer Reviewers.....	25
References.....	26

## FIGURES AND TABLES

Executive Summary Table: Summary of Findings.....	2
Figure 1. Literature Flowchart .....	10
Figure 2. Selected Study Characteristics .....	11
Table 1. Characteristics of Studies with Feedback to Patient and Clinician and Discussion .....	15

## EXECUTIVE SUMMARY

### Key Messages

- This rapid review found no studies of the specific VA-recommended approach of using any of 4 recommended patient-reported outcome measures (PROMs) for implementing measurement based care (MBC) in the context of shared decision-making in mental health. However, we identified other promising approaches to use of PROMs for MBC in mental health.
- Inadequate measurement of MBC’s hypothesized mechanism of action (*eg*, detection of non-response and change in treatment plan) and MBC protocol fidelity are the greatest weaknesses of the evidence base.
- New research would be more meaningful if it evaluated the specific VA-recommended MBC approach, improved on identified methodological limitations, evaluated a wider range of clinically meaningful outcomes, and simultaneously compared MBC use under 2 or more implementation strategies that are feasible for a wider range of care settings.

Measurement based care (MBC) is a care delivery approach involving the regular use of standardized measures in routine mental health care to identify individuals not improving as expected and to prompt treatment changes. In the US Department of Veterans Affairs (VA), MBC is specifically defined as: (1) Collect = use of “reliable, validated, clinically appropriate measures at intake and at regular intervals”, (2) Share = “results from the measures are immediately shared and discussed with the Veteran and other providers involved in the Veteran’s Care”, and (3) Act = “Together, providers and Veterans use outcome measures to develop treatment plans, assess progress over time, and inform shared decisions about changes to the treatment plan over time”. As of January 2018, the Joint Commission requires MBC use in all mental health treatment programs accredited under behavioral health standards both within and outside of VA. As MBC delivery has varied widely and shown equally variable clinically meaningful effects across studies, guidance is needed on which specific delivery approaches may operate most effectively and why.

This rapid evidence synthesis builds on recent conflicting reviews by adding 14 new studies and focusing on the subset of approaches with the most clinically meaningful and highest-strength evidence and with the most relevance to the specific approach currently recommended by VA.

Despite the large volume of new studies, identification of the most promising delivery approaches for VA remains difficult, because the methodological quality of the evidence remains low, no studies were in Veterans, no studies evaluated the specific approach currently recommended by VA, and effects on other important clinical outcomes, patient satisfaction with

### Background

The ESP Coordinating Center (ESP CC) is responding to a request from the Office of Mental Health and Suicide Prevention (OMHSP) for an evidence brief on measurement based care (MBC) practices in mental health care, specifically in the context of using standardized patient-reported outcome measures in shared decision-making with individual Veterans. Findings from this evidence brief will be used to inform guidance for MBC within the VHA.

### Methods

To identify studies, we searched MEDLINE®, Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, and other sources up to August 2018. We used prespecified criteria for study selection, data abstraction, and rating internal validity and strength of the evidence. See our PROSPERO protocol for our full methods.



care processes, and adverse effects or unintentional consequences remain unknown. The greatest weaknesses of this evidence are that 1) it lacks measurement of the hypothesized mechanism of action (eg, detection of non-response and change in treatment plan) and 2) it lacks information about MBC protocol fidelity.

The most promising MBC approach we identified was when MBC was used in a single Norwegian general outpatient psychiatric clinic in the course of an intense implementation strategy including extensive training provided by the PROMs tool creators, use of technology-assisted automated risk scoring, and strong management advocacy including moral and financial support for providers (48% vs 33%; OR 1.91; 95% CI 0.88 to 4.15; P = 0.1025; NNT = 7, Executive Summary Table). Key strengths of this study that increase our confidence that the mechanisms of effect could be specifically attributed to MBC are that it took extra measures to minimize confounding due to therapist variability and clients' pretreatment distress levels and better protected against lack of blinding by using an independent outcome assessment measure. However, its use of a not-yet-VA-recommended assessment tool and an intense implementation facilitation strategy raises concerns about the feasibility of its widespread use across VA nationally in different clinical settings with variable resources.

The effects of MBC on suicide behavior, functioning, and quality of life are largely unknown. In addition to clinical outcomes, although it has been suggested that MBC has the potential to improve patient satisfaction with care and treatment adherence, and to reduce no-shows and drop-outs, to date there is limited randomized controlled trial evidence to support these proposed benefits.

The potential benefits of MBC have been best shown in populations with anxiety and/or depressive disorders. MBC has also shown some promise in couples' therapy and in inpatient treatment of eating disorders, but not for outpatient treatment of eating disorders, the specific symptoms of schizophrenia, or for patients in severe psychiatric crisis seeking emergency help. We found no studies of MBC in PTSD, bipolar disorder, or for suicide prevention.

MBC is a complex, multicomponent, multidisciplinary, and nuanced care delivery process that can represent a major change to practice. However, it is inherently difficult to study because there are so many more sources of heterogeneity and confounding – system, provider, patient, MBC approach – than with a single intervention, such as with a new antidepressant. New research would be more meaningful if it adequately addressed a broader range of sources of confounding, demonstrated that MBC shortened time to identifying patients at risk of important below-expected progress, and improved the types of treatment plan changes made in the context of shared decision-making using a wider range of instruments (ie, VA-recommended instruments) and under implementation strategies that are feasible for a wider range of care settings.

### Executive Summary Table: Summary of Findings

Key Question 1: Effectiveness of Measurement Based Care Delivery Practices	
E	<p><i>Clinically Significant Improvement in Overall Distress</i></p> <p>54% of studies reported a clinically meaningful response with MBC. Best evidence from Brattland et al 2018 with 93% PCOMS administration fidelity.</p> <p><b>Evidence:</b> 13 RCTs<sup>1-13</sup></p>

---

**E** *Suicide Behavior, Functioning, and Quality of Life*  
 MBC improved quality of life in 1 of 3 studies. No studies reported on suicide behavior and functional outcomes.  
**Evidence:** 3 RCTs<sup>14-16</sup>

---

**E** *Satisfaction with Care*  
 Improvement in satisfaction in a study of patients with schizophrenia or related psychotic disorders and no change or decreased satisfaction in 2 studies of patients with primarily anxiety and/or depressive disorders.  
**Evidence:** 3 RCTs<sup>15-17</sup>

---

**≈** *No-shows, Drop-outs, Medication Adherence*  
 No change in attendance rates in 4 studies. No studies reported on no-shows or medication adherence.  
**Evidence:** 4 RCTs<sup>10,14,18,19</sup>

---

**Key Question 2: Adverse Effects and Unintended Consequences of Measurement Based Care**

**?** *Unknown*  
**Evidence:** None

---

**Key Question 3: Outcomes of Measurement Based Care Delivery Practices in Specific Populations**

---

**á** *Couples Therapy*  
 Improved rate of reliable or clinically significant change with MBC.  
**Evidence:** 2 RCTs<sup>2,9</sup>

---

**E** *Eating Disorders*  
 Increased rates of clinically significant improvement in inpatient care and improved dietary restriction behaviors in outpatient individual CBT, but no improvement in outpatient group psychotherapy.  
**Evidence:** 3 RCTs<sup>10,14,19</sup>

---

**E** *Schizophrenia*  
 Improvement in quality of life, patient satisfaction, and health and social needs, but not schizophrenia symptoms.  
**Evidence:** 1 RCT<sup>16</sup>

---

**â** *Severe Psychiatric Crisis*  
 Less improvement in outcomes patients receiving MBC.  
**Evidence:** 1 RCT<sup>20</sup>

---

Abbreviations: RCT=randomized controlled trial; MBC=measurement based care; CBT=cognitive behavioral therapy; PCOMS=Partners for Change Outcome Management System

# EVIDENCE BRIEF

## INTRODUCTION

### PURPOSE

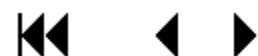
The ESP Coordinating Center (ESP CC) is responding to a request from the Office of Mental Health and Suicide Prevention (OMHSP) for an evidence brief on measurement based care (MBC) delivery practices in mental health care, specifically in the context of using standardized patient-reported outcome measures in shared decision-making with individual Veterans. The OMHSP will use findings from this evidence brief to inform guidance for MBC within the VHA.

### BACKGROUND

Some research suggests that symptom deterioration in patients with mental health conditions may not always be easy for clinicians to detect.<sup>21</sup> Systematic use of standardized patient-reported outcome measure (PROMs) instruments to augment clinical judgment in routine mental health care is increasing.<sup>22</sup> The practice of systematically administering PROMs to monitor progress and using their results to inform treatment decisions is typically referred to as Measurement Based Care (MBC).<sup>23,24</sup> “MBC is designed to optimize the efficiency, accuracy, and consistency of symptom assessment in order to maximize the likelihood that nonresponse to treatment is detected by the provider.”<sup>23</sup> Other proposed benefits of MBC include its potential to enhance the therapeutic relationship, improve treatment adherence, focus collaboration, create a more informed, engaged, and activated patient, facilitate communication between providers, and support quality improvement efforts.<sup>22</sup>

Some leading theories about how MBC might work include that the feedback influences the providers to improve care consistent with best practice guidelines (Feedback Intervention Theory), and improves performance when “novel information about performance, especially errors, is provided in a timely manner” (Contextual Feedback Theory), and that the process of feeding back the test results to the patients *itself* has a therapeutic effect (Feedback Intervention Theory).<sup>25,26</sup> The elements necessary to support these proposed mechanisms include: (1) use of a valid instrument that accurately distinguishes between people making expected progress from those that are not by comparing progress with norms or expected response, (2) the instrument has to provide targeted and actionable information about people who are progressing at a below-average pace that is accessible at the time of the clinical encounter, and (3) the provider has to adhere to the MBC model and have the ability and desire to readily initiate specific improvements in treatment that are consistent with best practice guidelines.<sup>23</sup>

Numerous validated symptom rating instruments exist that may be appropriate and useful for measuring mental health symptoms in MBC.<sup>23</sup> For depression symptoms, the 9-item Patient Health Questionnaire (PHQ-9) is commonly recommended as a brief and practical option.<sup>23</sup> For example, the VA MBC Initiative currently recommends the PHQ-9 along with 3 other measures selected by the Military and Veterans Mental Health Interagency Task Force – the Generalized Anxiety Disorder (GAD-7), PTSD Checklist (PCL-5), and Brief Addition Module (BAM) – as measures that address prevalent and high-impact psychological health conditions, are easily administered across settings, and are reliable and valid.<sup>27,28</sup> Other transdisciplinary instruments have been developed that are specifically designed for collecting and using patient feedback in





behavioral healthcare services. Two instruments commonly used in MBC studies which can also be used in the VA are the Partners for Change Outcomes Management System (PCOMS) and the Outcome Questionnaire (OQ-45). Evaluation of their performance characteristics found high internal consistency and adequate concurrent validity, both with each other and other measures, including the Symptom Checklist-90 and the Depression Anxiety Stress Scale.<sup>29-32</sup> The PCOMS assesses outcomes and process with 2 brief, transtheoretical, 4-item scoring scales (range 0 to 10 for each item, total score of 40 for each scale). The Outcome Rating Scale (ORS) focuses on treatment outcomes and is designed to be used at the beginning of each session, and the Session Rating Scale (SRS) focuses on therapeutic alliance and is designed to be used after each session.<sup>29,31</sup> Patients are asked to place a hash mark on four different 10-centimeter visual analog scales representing different areas of functioning and therapeutic alliance.<sup>33</sup> Based on these scales, a progress curve is manually or electronically charted with a dotted line representing expected trajectory of change. Patients can be classified as “Deteriorating: dropping 5 points”, “No Change: no reliable change after 3 sessions”, “Reliable Change: gain of 5 points”, and “Clinically Significant Change: gain of 5 points and passing the cut-off score of 25”, and corresponding recommendations to clinicians are provided based on patient classification.<sup>2</sup>

The OQ-45 is a 45-item global distress scale with 3 subscales (symptom distress, interpersonal relations, and social role) and was the first instrument designed to monitor patient functioning at each session.<sup>34,35</sup> This tool identifies patients who are not-on-track (NOT) and provides clinical support tools to measure the therapeutic alliance, readiness for client change, and social support level to assist in evaluating treatment progress.<sup>32</sup> Each of the 45 items is scored on a 5-point scale with a total score range from 0 to 180. Patients reaching an improvement of 14 points are considered to meet the cut-off of the Reliable Change Index and patients with an overall score of 63 or less are considered to be in normal range. Based on patient’s trajectory and change, feedback is presented in 4 color codes: White feedback: patient is in normal range, Green feedback: rate of change is adequate, Yellow feedback: rate of change is less than adequate, Red feedback: patient is not making expected level of progress.<sup>36</sup>

MBC has been used as one component in various complex multi-component care management and/or collaborative mental health care models, along with treatment planning according to a recommended algorithms, the addition of mental health specialist case managers to the treatment team, and patient education.<sup>37-39</sup> MBC use is also currently supported in a number of published guidelines. In 2011, the National Institute for Health and Care Excellence (NICE) issued a depression guideline that recommends considering using a validated measure to evaluate treatment, recording the results, and using them to adjust treatment.<sup>40</sup> In 2012, the Institute of Medicine (IOM) advised that the Department of Defense (DoD) and Department of Veterans Affairs (VA) move toward MBC for posttraumatic stress disorder (PTSD).<sup>41</sup> As part of their formal, national MBC in Mental Health Initiative, VA has implemented MBC nationally as a standard of care in mental health *specifically for use in the context of shared decision-making*. In VA, shared decision-making is an important element in their overall patient-centered approach to mental health. Thus, in the VA setting, MBC is specifically defined as: (1) Collect = use of “reliable, validated, clinically appropriate measures at intake and at regular intervals”, (2) Share = “results from the measures are immediately shared and discussed with the Veteran and other providers involved in the Veteran’s Care”, and (3) Act = “Together, providers and Veterans use outcome measures to develop treatment plans, assess progress over time, and inform shared decisions about changes to the treatment plan over time.”<sup>42</sup> As of January 1, 2018, the Joint

Commission requires all programs accredited under behavioral health standards within and outside of VA to start using MBC.<sup>43</sup>

However, implementing MBC can be challenging<sup>22,44</sup> because MBC systems are complex and can vary widely with respect to the measures used, format of measures (*ie*, paper and pencil vs electronic), frequency of administration, intensity level of feedback given (*ie*, none, to provider, patient, or both), format of feedback (*ie*, verbal, narrative printed materials, graphical printed materials), opportunities for discussion (*ie*, none, unstructured, or structured), and/or levels of inclusion in treatment decisions (*ie*, none, unstructured, or structured use of a formal clinical support tool).<sup>45</sup> Purposes of PROM use in mental health care can also vary from quality improvement, to use as a tool to facilitate communication among multidisciplinary teams, to a decision aid to promote patient-centered care.<sup>46</sup> A 2015 scoping study proposed a typology of 5 MBC categories based on level of intensity of feedback, from 1 = no feedback provided to the clinician or patient to 5 = PROM results reported back to the clinician and client, with a formal procedure in which a discussion of PROMs can affect subsequent treatment.<sup>47</sup>

Practical concerns about MBC have also been a challenge to its implementation. For example, surveys exploring attitudes about MBC found that front-line VA providers' perceptions of the clinical utility of MBC were generally positive, but may vary by provider type (*ie*, psychiatrist, nurses, social workers, psychologists)<sup>48</sup> and that public mental health service workers perceive a need for more training.<sup>49</sup> Additionally, in a 2015 survey of barriers to MBC implementation, providers indicated that reasons for not using measures included that they didn't have time, there was no way to keep track of scores, and they weren't easily accessible.<sup>24</sup> Providers also may dislike systematic PROM use to assess response for reasons such as worry they undermine professional autonomy or intrude in sensitive consultations or skepticism about motives.<sup>50,51</sup> Also, if viewed as evaluative, providers may interpret MBC as threatening and view it with fear and mistrust.<sup>44</sup>

Recent literature reviews on MBC's general effectiveness have been mixed. For example, a 2015 review that grouped studies into 5 categories based on feedback intensity level (1 = no feedback to 5 = feedback to clinician and client, with a formal procedure in which a discussion of PROMs can affect subsequent treatment) and qualitatively evaluated results for each category found that "PROM feedback appears to be more effective when integrated in a formalized and structured manner" (category 5).<sup>45</sup> However, as that review was for scoping purposes only and did not include any critical appraisal of how well studies controlled for potential biases, the validity of its conclusions about MBC's effects on patient outcomes are unclear. In contrast, a 2016 good-quality Cochrane review that did consider risk of bias but lumped all the studies together regardless of MBC approach found that MBC has not been conclusively shown to improve mean symptom scores over no MBC after 1-6 months (standardized mean difference -0.07, 95% CI -0.16 to 0.01, N=3696).<sup>52</sup> Finally, the most recent 2018 review specifically of using the OQ-45 or PCOMS in psychotherapy found that "two-thirds of studies found that routine outcome monitoring-assisted psychotherapy was superior to treatment-as-usual", but it also did not consider variation in the risk of bias of the primary studies.<sup>53</sup> MBC's impact on patient outcomes and its exact mechanism(s) have been difficult to study. Identification of key components have been difficult to identify among mixed findings because of multiple potential sources of heterogeneity and confounding, including wide diversity in approaches used across studies, patient factors (*eg*, illness severity and duration, comorbidities, previous experience with MBC), provider factors (*eg*, attitudes, training, experience, management approach, accreditation,

adherence to MBC), and treatment type (eg, psychotherapy, pharmacotherapy, education, further testing).

As previous reviews have had mixed findings and none have provided sufficient guidance specifically about MBC as used in shared decision-making, the approach endorsed by VA, to advance previous work we conducted a rapid evidence review to evaluate the effectiveness and harms of MBC in mental health shared decision-making.

## SCOPE

This evidence brief will address the following key questions and inclusion criteria:

### Key Questions

Key Question 1: What is the effectiveness of measurement based care delivery practices in mental health care?

Key Question 2: What are the adverse effects and unintended consequences of using measurement based care delivery practices in mental health care?

Key Question 3: Do the effectiveness and/or adverse effects of using measurement based care delivery practices in mental health care vary by patient demographics (gender, race, *etc*) or mental health characteristics/diagnoses (psychoses, addiction, PTSD, suicide risk, *etc*)?

### Eligibility Criteria

The ESP included studies that met the following criteria:

- **P**opulation: Adults receiving mental health treatment
- **I**ntervention: Measurement based care as used in treatment monitoring (not screening), specifically including collection of standardized patient reported outcome measures, sharing of results with the patient AND provider, AND shared decision-making (including treatment planning). We did not include studies that used MBC as just one of many “extras” within a broader bundled intervention model because they do not allow evaluation of the individual contribution of the MBC component outside of the bundled model.
- **C**omparator: Any comparator that does not include measurement based care
- **O**utcomes:
  - Clinically relevant improvement in mental health symptom scores, suicide (attempts, ideation), functioning, health-related quality of life, patient satisfaction, care processes (no-show rates, drop-out from care, medication adherence, *etc*)
  - Adverse effects/unintended consequences (number and type of psychotropic drug side-effects)
- **T**iming: Any

- Setting: Any
- Study design: Any, but may prioritize to accommodate timeline using a best-evidence approach

## METHODS

To identify articles relevant to the key questions, our research librarian searched Medline, PsycINFO, CENTRAL, and Google Scholar from 1/1/2015 through 11/16/2018, using terms for psychotherapy, feedback, and patient-reported outcomes (see Supplemental Materials for complete search strategies). We relied on the 2016 Cochrane review by Kendrick et al for identification of studies published through 2014.<sup>52</sup> Additional citations were identified from hand-searching reference lists and consultation with content experts. We limited the search to published and indexed articles involving human subjects available in the English language. Study selection was based on the eligibility criteria described above. Titles and abstracts were reviewed by one investigator and checked by another (sequential review). Full-text articles were sequentially reviewed by 2 investigators. All disagreements were resolved by consensus.

We rated the internal validity of studies only for the subset of studies that used MBC approaches most relevant to the specific approach currently recommended by the VA that at least included collecting and sharing of feedback with patients. To rate the internal validity, we used a subset of items from the Cochrane's Risk of Bias Tool,<sup>54</sup> that focused on randomization adequacy, balance of baseline characteristics, control for confounding variables, and adequacy of fidelity to the MBC protocol. We abstracted data from all included studies and results for each included outcome. All data abstraction and internal validity ratings were first completed by one reviewer and then checked by another. All disagreements were resolved by consensus.

We informally graded the strength of the evidence based on the AHRQ Methods Guide for Comparative Effectiveness Reviews, by considering risk of bias (includes study design and aggregate quality), consistency, directness, and precision of the evidence.<sup>55</sup> Ratings typically range from high to insufficient, reflecting our confidence that the evidence reflects the true effect. For this review, we applied the following general algorithm: evidence comprised primarily of RCTs with high risk of bias received ratings of 'insufficient'; evidence consisting of a single fair- to good-quality RCT received a rating of 'low strength'; and evidence consisting of multiple, consistent, precise, fair- to-good quality RCTs received a rating of 'moderate strength' or 'high strength'. We found no 'high-strength' evidence, but this generally would have been comprised of multiple, good-quality, precise RCTs.

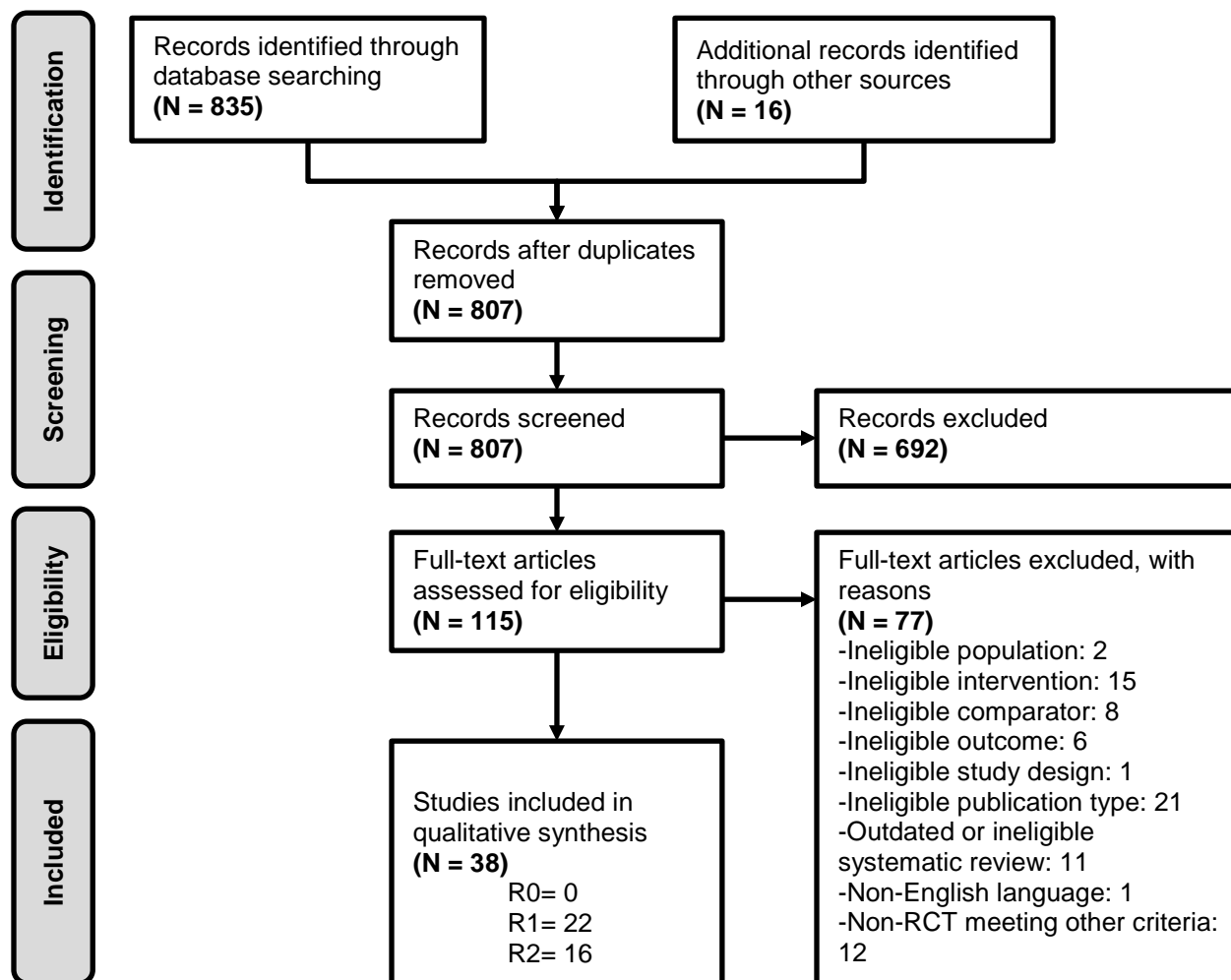
Where studies were appropriately homogenous, we synthesized outcome data quantitatively using Microsoft® Excel® for Windows (2016) to estimate pooled effects. Where meta-analysis was not suitable due to limited data or heterogeneity, we synthesized the evidence qualitatively.

The complete description of our full methods can be found on the PROSPERO international prospective register of systematic reviews (<http://www.crd.york.ac.uk/PROSPERO/>; registration number CRD42018107202). A draft version of this report was reviewed by peer reviewers as well as clinical leadership. Their comments and our responses are presented in the Supplemental Materials.

## RESULTS

### LITERATURE FLOW

Figure 1. Literature Flowchart



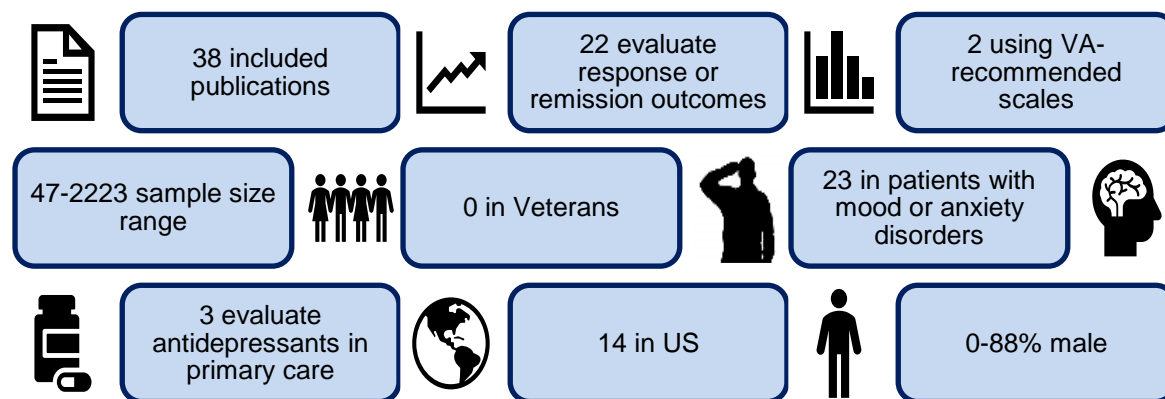
R0 = Explicitly describes all 3 components of the specific VA-recommended MBC approach with shared decision-making (collect, share, and act with shared decision-making)  
 R1 = Collection of PROMs data + standard procedure or guidance to share/discuss feedback with patients and/or act, but not clearly with shared decision-making  
 R2 = Collection of PROMs with no standard procedure or guidance for sharing/discussing feedback with patients or acting with or without shared decision-making

### LITERATURE OVERVIEW

Searches resulted in 807 unique and potentially relevant articles. We included 38 studies.<sup>1-20,34,56-72</sup> No studies described use of explicit shared decision-making (see Figure 1 for specific criteria). Twenty-two studies were categorized as R1.<sup>1-20,63,68</sup> Sixteen studies were categorized as R2.<sup>34,56-62,64-67,69-72</sup> For our synthesis, we focused on studies with at least a standard procedure for sharing

and discussing feedback with patients (R1). For a list of ongoing and excluded studies, see Supplemental Materials. Figure 2 provides details about key study characteristics.

**Figure 2. Selected Study Characteristics**



### MBC Approaches and Applicability to MBC in Shared Decision-making

In general, findings from MBC studies are most applicable to populations with anxiety and/or depressive disorders as implemented into general outpatient treatment settings. Additionally, some studies focused on more specific populations including eating disorders,<sup>10,14,19</sup> relationship issues,<sup>2,9</sup> schizophrenia,<sup>16</sup> and severe psychiatric crisis.<sup>20</sup> Although the number of MBC RCTs is increasing, the available evidence likely has unclear applicability to the specific practice of using any of the 4 VA-recommended tools for MBC in the context of shared decision-making in primary care mental health integrated care management models such as are primarily used in VA. This is because we found no studies that used an MBC approach as specifically defined by VA (*ie*, collect, share, and act with shared decision-making) in a care management setting, only one study in a military/Veteran population,<sup>69</sup> and only 2 studies that used any of the VA-recommended MBC tools (PHQ9 and GAD7).<sup>13,15</sup> Studies collected PROMS data, but typically either (1) combined that with guidance on how to share feedback with clients and made suggestions on how to act, which may or may not have included shared decision-making, or (2) did not provide explicit guidance on if/how to share and act on feedback. For example, in the RCT with the potential to be the most relevant to Veterans in terms of population characteristics – the only study in a military population, many of whom were returning Veterans from Iraq and Afghanistan – applicability is still limited because the MBC approach involved only giving PROMs results to therapists with no sharing with participants and no attempt to monitor therapist behavior regarding PROMs use for informing treatment planning.<sup>69</sup> Similarly, although a 2015 RCT by Guo et al<sup>63</sup> is frequently cited as providing strong evidence of MBC’s benefits, its findings also likely have limited applicability to MBC in shared decision-making because it was unclear whether MBC ratings were shared with the patients and clinicians made treatment decisions strictly based on an explicit and fixed dosing schedule of either paroxetine or mirtazapine, which did not appear to incorporate patient preference.<sup>63</sup>

## Methodological Quality

The methodological quality of the MBC literature remains low, making it difficult to attribute treatment effects to specific mechanisms of MBC. Low methodological quality is primarily due to (1) the lack of adequate information about the actual use of MBC or the quality of its implementation, (2) lack of information about potential for confounding due to between-group heterogeneity in provider characteristics (*ie*, experience, competence, treatment models, case mix, training, and attitudes toward MBC), patient illness severity and duration, comorbidities, previous experience with MBC, intensity of psychotherapy (*ie*, frequency and duration) and concomitant treatments (*ie*, pharmacotherapy, education, further testing), and (3) lack of use of an independent instrument to corroborate progress in the feedback group that was based on the feedback instrument alone. Only 5 RCTs reported on MBC fidelity.<sup>3,6,18,20,68</sup> Among those, they generally only reported on administering the PROMs (*ie*, administered every session in 93% of patients,<sup>3</sup> or 67% of therapists reported applying PCOMS adequately in > 70% of sessions<sup>20</sup>) and did not provide information about if and how they used the PROMs in treatment decisions. To control for provider variability, 3 studies randomized by provider<sup>8,16,68</sup> but typically little information was provided about patient characteristics and even less was provided about treatment type and/or intensity. Finally, as blinding the patients and therapists to whether or not they are in the feedback group in MBC studies is not feasible, there exists an inherently increased risk of more favorable outcomes in the feedback group due to expectations alone and the potential for more attention in general. Additionally, the feedback group is at risk of further favoring because patients may be extra motivated to improve when informed of scores indicating lower improvement than perceived as expected. Therefore, to better protect against this bias, use of another independent outcome measure to corroborate progress should be used as assessed by a blinded outcome assessor and without discussion by the therapist or client. However, only a single study used blinded outcome assessors<sup>19</sup> and one study assessed outcomes using an independent instrument.<sup>3</sup>

## Strength of Evidence

Our confidence in the strength of the findings on MBC's effects is generally low because studies did not directly assess MBC as defined by the VA, they had serious methodological weaknesses as discussed above, and most MBC approaches were evaluated by single-study evidence bases (unknown consistency in direction and/or magnitude of effect).

## KEY QUESTION 1: What is the effectiveness of measurement based care delivery practices in mental health care?

### Clinically Significant Improvement in Overall Distress

MBC's effects are mixed across studies that evaluated approaches that included collect and share components and encouraged but did not monitor acting on results (Table 1). For example, among the 14 studies that reported rates of patients with a clinically meaningful response, 57% of MBC approaches resulted in statistically significantly improved outcomes.<sup>1-3,8-10,12,63</sup> However, determining what MBC conditions are most effective was difficult due to heterogeneity across studies in multiple patient, provider, setting, and implementation approach factors.

Among the studies demonstrating clinically important improvements, 2 studies stand out as providing the strongest support for MBC.<sup>3,63</sup> First is a 2018 RCT of 170 mostly women with



mood and anxiety disorders seen in a hospital-based outpatient psychiatric clinic in Norway.<sup>3</sup> In this RCT, under ideal implementation circumstances, MBC resulted in a small but significant improvement in outcomes over treatment as usual ( $d = 0.26$ ), with improvements increasing over time. The advantage remained even after adjustments for therapist variability and clients' pretreatment distress levels. What makes this possibly the best evidence we have are the following important strengths of this RCT: (1) high PCOMS measure administration fidelity was documented (93%), (2) an independent measure of symptom and function was used to assess outcome, (3) therapists were regularly trained and supervised (*ie*, obligatory 1-day face-to-face training twice a year given by developers of PCOMS system and training and supervision sessions once each month), (4) patients' diagnoses were reliable based on use of a valid and standardized tool (M.I.N.I International Neuropsychiatric Interview), and (5) some potential confounding was minimized through adjustment for therapist variability and clients' pretreatment distress levels. However, the strength of these findings is still limited by important methodological weaknesses common to this body of evidence. Weaknesses include not adequately minimizing other sources of potential bias including variation between groups in specific types or dose of psychotherapy, medical treatment, or treatment outside the clinic, if/how PCOMS results were discussed, if/how subsequent treatment changes were made, and the lack of blinding of outcome assessors. Additionally, this RCT involved use of a highly intensive implementation strategy that included highly trained experts who received extensive training provided by PCOMS creators and extensive implementation support that included minimization of provider paperwork burden through use of technology-assisted automated risk scoring and management that advocated PCOMS and provided moral and financial support. It is unclear whether implementation of the intensive implementation strategy used in this RCT would be feasible in more typical clinical settings with fewer implementation resources.

Second is the 2015 RCT by Guo et al,<sup>63</sup> which is frequently cited as providing strong evidence of MBC's benefits. This RCT of 120 outpatients with moderate to severe major depressive disorder treated with a fixed dosing schedule of paroxetine or mirtazapine at a university-affiliated teaching hospital in China found that after 24 weeks, MBC with the Quick Inventory of Depressive Symptomatology-Self-Report (QIDS-SR) led to significantly greater rates of remission than usual care (Chinese version of the 17-item Hamilton Depression Rating Scale [HAM-D] score  $\leq 7$ , 73.8% vs 28.8%,  $P < 0.0001$ ). The greatest strengths of this study are that it is the best example we identified of a design that better isolates MBC's effects through explicit documentation of the stepped-care treatment algorithm used, which included specific medication choices. It also took measures to minimize performance and measurement biases through using blind raters to assess outcome and ensured high fidelity to MBC protocol via external compliance monitoring. However, its findings likely have limited applicability to the specific approach of using MBC in shared decision-making because it was unclear whether MBC ratings were shared with the patients, and clinicians made treatment decisions strictly based on an explicit and fixed dosing schedule of either paroxetine or mirtazapine, which did not appear to incorporate patient preference.

### **Suicide Behavior, Functioning, Quality of Life**

The effects of MBC on suicide behavior, functioning, and quality of life are largely unknown. We did not identify any studies that reported on suicide behavior and real-life functional outcomes (*eg*, days missed from work). MBC significantly improved quality of life in only one<sup>16</sup> of 3 studies that assessed quality of life outcomes using various instruments (*eg*, MANSA=

Manchester Short Assessment of Quality of Life,<sup>16</sup> EQ-5D-5L= EuroQol Quality of Life Scale,<sup>15</sup> and WHO-5 score = WHO-Five Well-Being Index).<sup>14</sup> However, serious methodological weaknesses – primarily lack of MBC fidelity assessment – preclude reaching any conclusions based on this evidence. Also, as the findings of improved quality of life came from a population with a primary diagnosis of schizophrenia or related psychotic disorder, they have unclear applicability to patients with more commonly diagnosed mental health conditions, such as mood and anxiety disorders.

### **Satisfaction with Care**

Evidence on satisfaction with care is very limited.<sup>15-17</sup> Among patients with schizophrenia or related psychotic disorders, MBC significantly improved treatment satisfaction after 12 months as measured using the Client Satisfaction Questionnaire (CSQ) (adjusted mean 25.99 points vs 25.15, adjusted mean difference 0.92, 95% CI 0.22 to 1.56).<sup>16</sup> However, in patients with more commonly diagnosed mental health conditions, MBC either did not change satisfaction with care<sup>17</sup> or actually decreased patient satisfaction.<sup>15</sup>

### **No-shows, Drop-outs, Medication Adherence**

There is little evidence to suggest that MBC improves care processes. No RCT reported medication use and/or adherence outcomes or no-show rates. Among 4 RCTs that reported attendance outcomes, all consistently found that MBC did not improve rates of attendance.<sup>10,14,18,19</sup>

**Table 1. Characteristics of Studies with Feedback to Patient and Clinician and Discussion**

Author Year Sample Size Country	Population characteristics	General treatment type	Setting	Outcome assessment & feedback tool	Clinically significant change in outcome? <sup>b</sup>	Significant improvement in distress/ function?	Fidelity or adherence to intervention
Amble 2014 <sup>1</sup> <sup>a</sup> N=259 Norway	Mixed mood and anxiety disorders	Mental health outpatient and inpatient treatment	Outpatient and inpatient psychiatric clinics	OQ-45	Yes 22.9% FB vs 13.9% TAU	NA	NR
Anker 2009 <sup>2</sup> N=410 Norway	Relationship issues	Couples therapy	Outpatient community family counseling clinic	PCOMS ORS/SRS	Yes 66.7% FB vs 39.1% TAU (P=0.01)	NA	NR
Brattland 2018 <sup>3</sup> N=170 Norway	Mixed mood and anxiety disorders	Mental health outpatient treatment	Hospital-based mental health outpatient clinic	PCOMS BASIS-32	Yes 58.2% FB vs 36.2% TAU	NA	Yes, administered as intended for all but 6 cases
Davidson 2017 <sup>14</sup> N=159 Denmark	Eating disorders	Group and individual therapy	Outpatient psychotherapy center	PCOMS ORS/SRS	NR	No	NR
De Jong 2014 <sup>4</sup> <sup>a</sup> N=604 Netherlands	Mixed mood and anxiety disorders	Mental health outpatient treatment	Mental health care institutions or private practices	OQ-45	No 43% FBTP vs 38% FBT vs 37% TAU	Mixed	NR
Delgadillo 2018 <sup>13</sup> N=2,223 England	Depression	CBT and depression counseling	8 National Health Service primary care sites	PHQ-9 GAD-7	No OR 1.2 (95% CI 0.85 to 1.17)	Mixed	NR
Guo 2015 <sup>63</sup> N=120 China	Depression	Mental health outpatient treatment and antidepressant medication (paroxetine or mirtazapine)	Outpatient, university affiliated teaching hospital	HAM-D QIDS-SR	Yes 73.8% FB vs 28.8% TAU	NA	Yes 99.8% FB vs 99.7% TAU
Hawkins 2004 <sup>5</sup> <sup>a</sup> N=201 USA	Mixed mood and anxiety disorders	Mental health outpatient treatment	Outpatient, hospital- based psychotherapy clinic	OQ-45	No 23% FBTP vs 10% FBT vs 10% TAU	Yes	NR

Kellybrew-Miller 2017 <sup>6</sup> N=162 USA	Mixed mood, anxiety, and substance disorders	Mental health outpatient treatment	Outpatient community mental health centers	PCOMS ORS/SRS	No 33% FB vs 25% TAU (P>0.05)	Yes	Yes, 67.2% of integrity checklists completed
Kendrick 2017 <sup>15</sup> N=47 England	Depression	Mental health outpatient treatment	General practice clinics	PHQ-9 PYCHLOPS DTAS  BDI-II primary outcome	NR	Mixed	NR
McClintock 2017 <sup>18</sup> N=79 USA	Depression	Mental health outpatient treatment	University health center	CFF	NR	No	Yes, therapist rating of “frequently discuss feedback” mean 4.67 (scale 1-5)
Murphy 2012 <sup>7 a</sup> N=110 Ireland	Mixed mood and anxiety disorders	Mental health outpatient treatment	University counselling service	PCOMS ORS	No 61.0% FB vs 47.1% TAU (P>0.05)	No	NR
Priebe 2007 <sup>16</sup> N=507 6 European countries	Schizophrenia or related disorder	Mental health outpatient treatment	Multidisciplinary comprehensive care programs for people with severe and enduring mental illness	DIALOG	NR	Mixed	NR
Puschner 2007 <sup>68</sup> N=294 Germany	Mixed mood and anxiety disorders	Psychiatric inpatient treatment	University hospital psychiatric inpatient unit	EB-45 (German version of OQ-45)	NR	No	Yes, 80% completion rate
Reese 2010 <sup>9 a</sup> N=92 USA	Couples seeking therapy	Couples therapy	Graduate training clinic for marriage and family therapy	PCOMS ORS/SRS	Yes 48.1% FB vs 26.3% TAU (P=0.02)	NA	NR
Reese 2009 <sup>8 a</sup> N=148 USA	University students and marriage and family therapy counseling clients	Marriage and family therapy and psychological therapy	University counseling center and graduate marriage and family therapy clinic	PCOMS ORS/SRS	Yes Study 1: 80% FB vs 54.2% TAU (P<0.05)	NA	NR

					Study 2: 66.7% FB vs 41.4% TAU (P<0.05)		
Rise 2016 <sup>17</sup> N=75 Norway	NR	Mental health outpatient treatment	Outpatient unit in mental health hospital	PCOMS ORS/SRS	NR	No	NR
Schmidt 2006 <sup>19</sup> N=61 UK	Eating disorders	CBT	Eating disorder specialist unit	TREAT-EAT, SEED, HADS	NR	Mixed	NR
Simon 2012 <sup>11 a</sup> N=370 USA	Mixed mood and anxiety disorders	Individual psychotherapy	Hospital-based outpatient psychotherapy clinic	OQ-45 and ASC	No 45.11% FB vs 6.1% TAU (P=0.1)	Yes	NR
Simon 2013 <sup>10</sup> N=141 USA	Eating disorders	Individual and group psychotherapy	Inpatient eating disorder clinic	QO-45 and ASC	Yes 52.95% FB vs 28.6% TAU (P=0.01)	NA	NR
Slone 2015 <sup>12</sup> N=84 USA	NR	Group therapy	University counseling center	PCOMS ORS/SRS	Yes 41.9% FB vs 29.3% TAU (P=0.05)	NA	NR
van Oenen 2016 <sup>20</sup> N=287 Netherlands	Severe psychiatric crisis	Various: behavioral, pharmacotherapy, psycho-education, outreach	Emergency outpatient crisis clinic	PCOMS ORS/SRS	NR	No	Yes, 67% of therapists reported adequate PROMs in > 70% of sessions

<sup>a</sup>Included in Kendrick 2016 systematic review; <sup>b</sup>Clinically significant change, recovery, or response as defined by feedback tool

Abbreviations: ASC=Assessment for Signal Cases, BDI-II= Beck Depression Inventory 2nd edition, CBT=Cognitive Behavioral Therapy, DIALOG= computer-mediated intervention structuring patient-clinician dialogue, DTAS= Distress Thermometer Analogue Scale, FB=feedback, FBTP=feedback to patient and therapist, FBT=feedback to therapist, HADS=Hospital Anxiety and Depression Scale, HAM-D= Hamilton Depression Rating Scale, LOS=length of stay, NR=not reported, OQ-45=Outcome Questionnaire 45, PCOMS=Partners for Change Outcome Management System, PHQ-9=Patient Health Questionnaire 9, PSYCHLOPS= psychological outcomes profile, PROMs=patient-reported outcome measures, QIDS-SR= Quick Inventory of Depressive Symptomatology–Self-Report, SEED=Short Evaluation of Eating Disorders, TAU=treatment as usual, TREAT-EAT=TREAT-EAT Outcome Monitoring Questionnaire

## **KEY QUESTION 2: What are the adverse effects and unintended consequences of using measurement based care delivery practices in mental health care?**

We found no studies that evaluated adverse effects or unintended consequences of using MBC.

## **KEY QUESTION 3: Do the outcomes of using measurement based care delivery practices in mental health care vary by patient demographics or mental health characteristics/diagnoses?**

Evidence is insufficient to determine whether the effectiveness and/or adverse effects of using measurement based care delivery practices in mental health care vary by patient demographics (gender, race, *etc*), mental health characteristics/diagnoses (psychoses, addiction, PTSD, suicide risk, *etc*), or MBC approaches. This is because studies generally did not formally evaluate effects in subgroups and qualitatively isolating effects in any particular characteristic is not possible due to the extensive heterogeneity on all other characteristics. Below we report findings from studies that evaluated some less-common specific populations or used VA-recommended assessment instruments (PHQ-9, GAD-7, PCL-5, and BAM).

### **Diagnostic Subgroups**

Although the majority of studies involved the most common mental health disorders in adults of anxiety and depression, a few studies focused on MBC in treatment for relationship issues,<sup>2,9</sup> eating disorders,<sup>10,14,19</sup> schizophrenia,<sup>16</sup> and severe psychiatric crisis.<sup>20</sup> Among these, MBC showed the most promise for consistently improving outcomes in couples therapy.<sup>2,9</sup>

For couples therapy either in an outpatient community family counseling clinic in Norway (N=410)<sup>2</sup> or at a graduate training clinic in the US (N=92),<sup>9</sup> 2 RCTs provided consistent evidence that MBC increases the rate of the composite outcome of patients with either a “reliable change” or a “clinically significant change” (Table 1), as well as rates of couples with clinically significant change as assessed by the ORS (38.5% vs 10.7%, ESP-calculated OR 5.77, 95% CI 2.73 to 12.20, P < 0.0001, NNT=3).<sup>2,9</sup>

For eating disorders, MBC showed potential benefit when used to supplement inpatient treatment<sup>10</sup> or a guided outpatient individual cognitive behavioral self-help program,<sup>19</sup> but not in the context of outpatient group psychotherapy (Table 1).<sup>14</sup> Evidence was strongest in the inpatient setting<sup>10</sup> as use of the OQ system in 141 females with eating disorders in inpatient care significantly increased rates of clinically significant improvement (52.95% vs 28.6%). In the study of using MBC to supplement a guided outpatient individual cognitive behavioral self-help program in the UK, MBC significantly improved dietary restriction behaviors, but not bingeing, vomiting, or exercise behaviors.<sup>19</sup> However, we cannot attribute any of these improvements directly to MBC, as fidelity to its intended use was not assessed and an independent instrument was not used to assess outcome.

For schizophrenia, as described above, MBC in patients with schizophrenia or related psychotic disorders may improve some patient outcomes – quality of life, client satisfaction with care, health and social needs (CANSAS - Camberwell Assessment of Need Short Appraisal Schedule)

– but not the negative, positive, or overall specific symptoms of schizophrenia as measured by the Positive and Negative Syndrome Scale (PANSS).<sup>16</sup>

There is low-strength evidence that MBC does not benefit patients in severe psychiatric crisis seeking emergency psychiatric help (Table 1).<sup>20</sup> When PCOMS was administered adequately in a majority of sessions in an outpatient emergency center in Amsterdam over 3 months, patients receiving MBC actually improved less than those receiving treatment as usual.<sup>20</sup> Study authors hypothesized that this may be because people have a reduced ability to reflect during crisis, that the high severity of symptoms interfere with the intended effects of feedback, and that the high intensity of treatment as usual did not leave a lot of room for improvement. We do have some confidence that the findings can be attributed to MBC as there was verification that 67% of therapists reported adequate use of PCOMS in at least 70% of sessions.

We did not identify any studies that focused on demographic subgroups such as women, race/ethnicity, age, and/or period of service or diagnostic subgroups such as high risk for suicide or PTSD.

### Use of VA-recommended Scales

We only identified 2 RCTs that used an MBC approach including any of the VA-recommended instruments (Table 1).<sup>13,15</sup> Both had mixed findings across outcomes. Between them, the best evidence was provided by the 2018 RCT by Delgadillo et al,<sup>13</sup> which was far larger than the 2017 RCT by Kendrick et al<sup>15</sup> (N=2,233 vs N=47) and all other available RCTs. In the Delgadillo 2018 RCT, 2,233 patients with depression who were undergoing a stepped-care approach to CBT and depression counseling as part of the Improving Access to Psychological Therapies (IAPT) program at 8 National Health Service primary care sites in England were administered the PHQ-9 and GAD-7 to record weekly patient progress using an electronic clinical record system. The electronic system included comparison of progress to expected treatment response curves for comparable patient groups and automatic generation of risk signals to alert therapists of patients who were not responding as expected. While this MBC approach did not significantly improve the odds of reliable improvement in the full sample (68% vs 60%, OR 1.21, 95% CI 0.85 to 1.71) or the not-on-track subsample (61% vs 52%, OR 1.32, 95% CI 0.93 to 1.89) (both adjusted for therapist effects), it did reduce odds of reliable deterioration (OR 0.68, 95% CI 0.48 to 0.94, ESP-calculated inverse of control vs feedback group reported in publication). Strengths of this RCT include that it controlled for therapist variability by randomizing by therapist and further including adjustment for therapist variability in their multilevel model, it minimized potential for confounding by ruling out variability in treatment intensity and patient clinical characteristics, and it included a feature to reduce bias in MBC performance by providing a 6.5-hour training program. However, as with the majority of the other RCTs, we still have much uncertainty about whether the mechanism of the potential benefit is specific to MBC and was not influenced by expectations due to lack of blinding or use of an independent outcome assessment tool, as the study authors indicated that they “did not have the resources to closely monitor competence in treatment delivery or in feedback use”.

We did not identify any RCTs that have used PCL-5 or BAM for MBC.

## SUMMARY AND DISCUSSION

This rapid review built on previous evidence synthesis work<sup>23,45,52</sup> by adding 14 new studies and identifying the delivery circumstances under which MBC has the most reliable evidence of operating most effectively. Our review found that MBC can lead to clinically meaningful improvements in patient outcomes under certain circumstances. The most reliable evidence<sup>3,6,18,20</sup> points to use of the PCOMS to routinely monitor outcomes in outpatient treatment of anxiety and mood disorders as the most promising approach when paired with a high-intensity implementation strategy (clinically significant improvement for MBC vs usual care: 48% vs 33%, OR 1.91, 95% CI 0.88 to 4.15, P = 0.1025, NNT= 7).<sup>3</sup> As the effectiveness of this MBC approach was demonstrated to increase over time, likely it was the intense and sustained implementation efforts – which appeared more intense than in other applications – that led to its success. PCOMS and the OQ-45 have also shown some promise for use in other diagnostic subgroups including couples therapy<sup>13,32</sup> and inpatient treatment of eating disorders,<sup>10</sup> but not for improving specific symptoms of schizophrenia,<sup>16</sup> or for patients in severe psychiatric crisis seeking emergency help.<sup>20</sup>

Our findings differ somewhat from previous reviews<sup>23,45,52</sup> and this is likely due to differences in scope and methodology. For example, our findings are less favorable compared to the 2017 review by Fortney et al<sup>23</sup> which broadly stated that “virtually all randomized controlled trials with frequent and timely feedback of patient-reported symptoms to the provider during the medication management and psychotherapy encounters significantly improved outcomes.” While we agree that some randomized controlled trials did demonstrate improvement, we disagree with the implication that all improvements are equally clinically meaningful, reliable, and universally applicable. Alternatively, while we completely agree with the suggestion from the 2016 Cochrane review by Kendrick et al that “more research of better quality is needed”, our findings are slightly more positive than theirs, which broadly stated that “we found insufficient evidence to support the use of routine outcome monitoring using PROMs in the treatment of common mental health disorders in terms of improving patient outcomes or in improving management.”<sup>52</sup> This is largely because the RCT we highlighted above as potentially representing the most promising MBC approach was not yet available at the time of the 2016 Cochrane review.

## LIMITATIONS

Despite a large volume of new evidence in the past few years, significant limitations remain in study methodology, applicability to Veterans, and the clinical relevance of the findings. First, regarding study methodology, the main limitation of this evidence was the lack of reporting on the competence and actual delivery of the MBC components of sharing and acting. No study reported the rates in which PROMs were shared, and if and how they were used in making treatment management decisions. The only aspect of fidelity assessed was the collection of patient measures, which was only reported in a quarter of studies (5/21)<sup>3,6,18,20,68</sup> using variable methods with unclear clinical meaningfulness (*ie*, “67% of therapists reported applying PCOMS adequately in > 70% of sessions”).<sup>20</sup> This is important because it prevents us from determining if and how any improvements in clinically important outcomes were actually specifically due to improved management or were nonspecifically due to extra attention that could be achieved with other approaches to enhancing care delivery – such as care management.



Second, we are unclear about the applicability of the findings in this review to the approach of interest of using MBC in shared decision-making within an integrated primary care mental health care management model such as primarily used in VA. This is because we found no studies that used an MBC approach as specifically defined by VA (*ie*, collect, share, and act with shared decision-making), only 1 study in a military/Veteran population,<sup>69</sup> and only 2 studies that used any of the VA-recommended MBC tools (PHQ9 and GAD7),<sup>13,15</sup> and the most promising approach used a highly intensive implementation strategy that included specific practical, technical, and structural components that may not be equally accessible across the diverse range of VA settings. The fact that there is a lack of data on using MBC in shared decision-making is not a weakness of the literature in general. The issue is more about its unclear relevance to the current VA-recommended approach of using MBC in shared decision-making, which is an important element in the VA model of MBC, as it is part of their overall patient-centered approach to mental health care in general. Additionally, because the integrated primary care mental health care management model widely used in VA already provides a great deal of multimodal care, it is unclear whether MBC added to the VA model would provide the same level of benefit as it has when added to single treatment modalities delivered in general mental health settings (*ie*, psychotherapy alone).

Third, the clinical relevance of the findings in this review are largely unknown. Key to determining the clinical utility of using MBC to guide mental health management is to demonstrate improvements across numerous outcomes including improved management (*ie*, increased identification of at-risk patients, improved treatment change decisions), reduced duration of treatment, remission, suicidal behavior, quality of life, functional capacity, adverse effects and unintended consequences, patient satisfaction, and care processes, and to demonstrate these benefits are sustainable beyond 6 months. However, research to date has primarily focused on mean improvement in symptom scores, which aren't always indicators of clinically meaningful improvement, and little other data is yet available.

The primary limitations of our findings related to our review methods include (1) our literature search and (2) our scope. First, although our search included multiple databases, our shortened timeframe precluded searching a more exhaustive range of sources. Also, searching for literature is a common challenge in reviews of complex multicomponent health care delivery models because of the many dimensions and inconsistent terminology used in the studies.<sup>73</sup> We addressed this challenge by including a wider than usual variety of terminology in our search strategy, as well as using a wider than usual range of grey literature searching. However, there is a risk that we may have missed additional relevant studies. Regarding our scope, because we focused on the subset of highest-quality studies that reported the most clinically meaningful patient outcomes that were most relevant to the current specific VA-recommended MBC approach, this may limit the generalizability of our findings to a broader range of users.

## FUTURE RESEARCH IMPLICATIONS

Although this review identified a particular MBC approach as most promising for use in outpatient mental health management of patients with anxiety and/or mood disorders, we suspect it was its intense and sustained implementation efforts that largely led to its success and are concerned that a barrier to its likewise broad success in VA is that the specific practical, technical, and structural components it involved may not be equally accessible across all VA settings. Better understanding of implementation factors that can support MBC implementation

in a broad range of settings is key to increasing its successful uptake consistent with VA's national initiative.

Another challenge in MBC is how to pick an instrument that is valid, brief, actionable, easily understood, and sensitive to change among the multitude that exist that may be appropriate and useful. The VA MBC Initiative currently formally recommends 4 measures (PHQ-9, GAD-7, PCL-5, BAM). While few studies used any of these 4 VA-recommended measures (PHQ-9, GAD-7, PCL-5 and BAM), we acknowledge that their strong psychometric properties and successful use in other complex care models, such as collaborative care, provide a solid rationale for their use for MBC in shared decision-making. However, the most direct evidence of their effects for MBC in shared decision-making would come from a study that evaluated their use specifically in this way. While the VA currently recommends PHQ-9, GAD-7, PCL-5, and BAM, however, adoption of other measures is welcomed. The PCOMS and OQ-45 may be appealing because they are the most widely studied in MBC in mental health RCTs and have the unique features of including assessment of the therapeutic alliance and are accompanied by systems that use large databases to develop predictive models to automatically classify treatment response as inadequate or deteriorating. Also, research has shown that electronic administration of instruments may be preferred as it is acceptable to consumers, highly correlated with pen and paper administration, and be more efficient.<sup>74</sup> Further, to facilitate future analysis to improve understanding of MBC's effects, where applicable, the ability to enter PROMs data into the electronic medical records would be ideal. However, facilitating electronic administration and incorporating additional PROMs into institution-specific software programs that support MBC and interface with electronic medical records can be costly and time consuming, and decisions about their incorporation have to take into account other priorities both within MBC and in other VA-wide initiatives.

Thus, the potential for variation in success based on differences in instrument choice, format of results delivery (*ie*, automated vs manual paper and pencil) and intensity, frequency, and nature of education and training (*ie*, standardized face-to-face trainings vs webinars vs self-directed study) are important to consider. Other proposed provider-level barriers to MBC implementation include lack of time, inaccessibility of scores,<sup>24</sup> worry that MBC undermines professional autonomy or intrudes in sensitive consultations,<sup>50,51</sup> and MBC being viewed as evaluative and threatening.<sup>44</sup> It is encouraging to see the ongoing study by Wray et al<sup>22</sup> that is focused on evaluating implementation facilitation by directly comparing 2 implementation approaches in VA: an implementation facilitation strategy involving use of an "external facilitator and MBC experts who work with intervention sites to form a quality improvement team, develop an implementation plan, and identify and overcome barriers to implementation" versus standard VA national support. Studies such as this are expected to be key in better supporting MBC's success. Other potential areas of study include approaches that compare different specific results formats, education and training, and provider incentives. Additionally, to increase the clinical relevance of evidence and demonstrate sustainability of MBC practices, longer-term studies are needed that evaluate a wider range of outcomes beyond mean changes in symptoms scores that go beyond 6 months.

Although we identified some ongoing MBC research (see Supplemental Materials), with the exception of one study by Metz et al which is expected to report on patient adherence to treatment and quality of life, it is not clear that any other studies will directly and sufficiently address existing gaps. Therefore, concerted research of better quality is still needed in the

specific limitation areas we outlined in detail above, including study methodology, applicability to Veterans, and the clinical relevance of the findings. For example, the 2015 RCT by Guo et al,<sup>63</sup> which is frequently cited as providing strong evidence of MBC's benefits, is the best example we identified of a design that better isolates MBC's effects through explicit documentation of the stepped-care treatment algorithm used, which included specific medication choices. It also took measures to minimize performance and measurement biases through using blind raters to assess outcome and ensured high fidelity to MBC protocol via external compliance monitoring.<sup>63</sup>

## CONCLUSIONS

Effectiveness of the specific VA-recommended approach of using any of 4 recommended PROMs for implementing MBC in the context of shared decision-making in mental health is unknown. We identified other promising approaches to use of PROMs for MBC in general mental health settings, but raise important questions about their applicability and implementation feasibility into heterogenous VA primary care mental health integrated care settings. New research would be more meaningful if it evaluated the specific VA-recommended MBC approach, improved on identified methodological limitations, evaluated a wider range of clinically meaningful outcomes, and simultaneously compared MBC use under 2 or more implementation strategies that are feasible for a wider range of care settings.

## ACKNOWLEDGMENTS

This topic was developed in response to a nomination by the Office of Mental Health and Suicide Prevention (OMHSP) for the purpose of reviewing the evidence on measurement based care in mental health. The scope was further developed with input from the topic nominators (*ie*, Operational Partners), the ESP Coordinating Center, and the review team.

The authors gratefully acknowledge Julia Haskin, MS for editorial support, Sam Aldape for citation management support, Katherine Mackey, MD, MPP for clinical review and the following individuals for their contributions to this project:

### Operational Partners

Operational partners are system-level stakeholders who have requested the report to inform decision-making. They recommend Technical Expert Panel (TEP) participants; assure VA relevance; help develop and approve final project scope and timeframe for completion; provide feedback on draft report; and provide consultation on strategies for dissemination of the report to field and relevant groups.

Rani Hoff, PhD, MPH  
Acting Director, Research and Program Evaluation, Suicide Prevention  
Office of Mental Health and Suicide Prevention

Sandra Resnick, PhD  
Deputy Director, Northeast Program Evaluation Center (NEPEC)  
Office of Mental Health and Suicide Prevention

### Peer Reviewers

The Coordinating Center sought input from external peer reviewers to review the draft report and provide feedback on the objectives, scope, methods used, perception of bias, and omitted evidence. Peer reviewers must disclose any relevant financial or non-financial conflicts of interest. Because of their unique clinical or content expertise, individuals with potential conflicts may be retained. The Coordinating Center and the ESP Center work to balance, manage, or mitigate any potential nonfinancial conflicts of interest identified.

## REFERENCES

1. Amble I, Gude T, Stubdal S, Andersen BJ, Wampold BE. The effect of implementing the outcome questionnaire-45.2 feedback system in Norway: A multisite randomized clinical trial in a naturalistic setting. *Psychotherapy Research*. 2014;25(6):1-9.
2. Anker MG, Duncan BL, Sparks JA. Using client feedback to improve couple therapy outcomes: A randomized clinical trial in a naturalistic setting. *Journal of Consulting and Clinical Psychology*. 2009;77(4):693-704.
3. Brattland H, Koksvik JM, Burkeland O, et al. The effects of routine outcome monitoring (ROM) on therapy outcomes in the course of an implementation process: A randomized clinical trial. *J Couns Psychol*. 2018;65(5):641-652.
4. De Jong K, Timman R, Hakkaart-Van Roijen L, et al. The effect of outcome monitoring feedback to clinicians and patients in short and long-term psychotherapy: A randomized controlled trial. *Psychotherapy Research*. 2014;24(6):1-11.
5. Hawkins EJ, Lambert MJ, Vermeersch DA, Slade KL, Tuttle KC. The therapeutic effects of providing patient progress information to therapists and patients. *Psychotherapy Research*. 2004;14(3):308-327.
6. Kellybrew-Miller A. The impact of systematic client feedback on client outcomes in a community mental health center. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2017;77(7-B(E)):No Pagination Specified.
7. Murphy KP, Rashleigh CM, Timulak L. The relationship between progress feedback and therapeutic outcome in student counselling: A randomised control trial. *Counselling Psychology Quarterly*. 2012;25(1):1-18.
8. Reese RJ, Norsworthy LA, Rowlands SR. Does a continuous feedback system improve psychotherapy outcome? *Psychotherapy: Theory, Research, Practice, Training*. 2009;46(4):418-431.
9. Reese RJ, Toland MD, Slone NC, Norsworthy LA. Effect of client feedback on couple psychotherapy outcomes. *Psychotherapy: Theory, Research, Practice, Training*. 2010;47(4):616-630.
10. Simon W, Lambert M, Busath G, et al. Effects of providing patient progress feedback and clinical support tools to psychotherapists in an inpatient eating disorders treatment program: A randomized controlled study. *Psychotherapy Research*. 2013;23(3):287-300.
11. Simon W, Lambert MJ, Harris MW, Busath G, Vazquez A. Providing patient progress information and clinical support tools to therapists: Effects on patients at risk of treatment failure. *Psychotherapy Research*. 2012;22(6):1-10.
12. Slone NC, Reese RJ, Mathews-Duvall S, Kodet J. Evaluating the efficacy of client feedback in group psychotherapy. *Group Dynamics: Theory, Research, and Practice*. 2015;19(2):122.
13. Delgadillo J, de Jong K, Lucock M, et al. "Feedback-informed treatment versus usual psychological treatment for depression and anxiety: A multisite, open-label, cluster randomised controlled trial": Correction. *The Lancet Psychiatry*. 2018;5(8):e17.
14. Davidsen AH, Poulsen S, Lindschou J, et al. Feedback in group psychotherapy for eating disorders: A randomized clinical trial. *Journal of Consulting and Clinical Psychology*. 2017;85(5):484-494.
15. Kendrick T, Stuart B, Leydon GM, et al. Patient-reported outcome measures for monitoring primary care patients with depression: Promdep feasibility randomised trial. *BMJ Open*. 2017;7(3):e015266.

16. Priebe S, McCabe R, Bullenkamp J, et al. Structured patient-clinician communication and 1-year outcome in community mental healthcare: Cluster randomised controlled trial. *The British journal of psychiatry : the journal of mental science*. 2007;191:420.
17. Rise MB, Eriksen L, Grimstad H, Steinsbekk A. The long-term effect on mental health symptoms and patient activation of using patient feedback scales in mental health outpatient treatment. A randomised controlled trial. *Patient Education & Counseling*. 2016;99(1):164-168.
18. McClintock AS, Perlman MR, McCarrick SM, Anderson T, Himawan L. Enhancing psychotherapy process with common factors feedback: A randomized, clinical trial. *Journal of Counseling Psychology*. 2017;64(3):247-260.
19. Schmidt U, Landau S, Pombo-Carril MG, et al. Does personalized feedback improve the outcome of cognitive-behavioural guided self-care in bulimia nervosa? A preliminary randomized controlled trial. *British Journal of Clinical Psychology*. 2006;45(1):111-121.
20. van Oenen FJ, Schipper S, Van R, et al. Feedback-informed treatment in emergency psychiatry; a randomised controlled trial. *BMC Psychiatry*. 2016;16:110.
21. Hatfield D, McCullough L, Frantz SH, Krieger K. Do we know when our clients get worse? An investigation of therapists' ability to detect negative client change. *Clin Psychol Psychother*. 2010;17(1):25-32.
22. Wray LO, Ritchie MJ, Oslin DW, Beehler GP. Enhancing implementation of measurement-based mental health care in primary care: A mixed-methods randomized effectiveness evaluation of implementation facilitation. *BMC Health Serv Res*. 2018;18(1):753.
23. Fortney JC, Unützer J, Wrenn G, et al. A tipping point for measurement-based care. *Psychiatric Services*. 2017;68(2):179-188.
24. Landes SJ, Carlson EB, Ruzek JI, et al. Provider-driven development of a measurement feedback system to enhance measurement-based care in VA mental health. *Cognitive and Behavioral Practice*. 2015;22(1):87-100.
25. Carlier IV, Meuldijk D, Van Vliet IM, Van Fenema E, Van der Wee NJ, Zitman FG. Routine outcome monitoring and feedback on physical or mental health status: Evidence and theory. *J Eval Clin Pract*. 2012;18(1):104-110.
26. Riemer M, Rosof-Williams J, Bickman L. Theories related to changing clinician practice. *Child Adolesc Psychiatr Clin N Am*. 2005;14(2):241-254, viii.
27. Department of Defense, Department of Veterans Affairs, Department of Health and Human Services. Interagency task force on military and veterans mental health: 2013 annual report. In. Washington, DC2016.
28. Department of Defense, Department of Veterans Affairs, Department of Health and Human Services. Interagency task force on military and veterans mental health: 2013 annual report. In. Washington, DC2013.
29. Miller SD, Duncan BL, Sorrell R, Brown GS. The partners for change outcome management system. *J Clin Psychol*. 2005;61(2):199-208.
30. Gillaspay J, Murphy JJ. Incorporating outcome and session rating scales in solution-focused brief therapy In: *Solution-focused brief therapy: A handbook of evidence-based practice*. Oxford: Oxford University Press; 2011.
31. Duncan BL, Reese RJ. The partners for change outcome management system (pcoms) revisiting the client's frame of reference. *Psychotherapy: Theory, Research, Practice, Training*. 2015;52(4):391-401.

32. Lambert MJ, Shimokawa K. Collecting client feedback. *Psychotherapy*. 2011;48(1):72-79.
33. Miller SD, Bargmann S. The outcome rating scale (ORS) and the session rating scale (SRS) *Integrating Science and Practice*. 2012;2(2):38-31.
34. Lambert MJ, Whipple JL, Smart DW, Vermeersch DA, Nielsen SL, Hawkins EJ. The effects of providing therapists with feedback on patient progress during psychotherapy: Are outcomes enhanced? *Psychotherapy Research*. 2001;11(1):49-68.
35. Lambert MJ, Finch AE. The outcome questionnaire. In: Maruish ME, ed. *The use of psychological testing for treatment planning and outcomes assessment*. NJ: Erlbaum 1999:831-869.
36. Lambert MJ, Whipple JL, Vermeersch DA, et al. Enhancing psychotherapy outcomes via providing feedback on client progress: A replication. *Clinical Psychology & Psychotherapy*. 2002;9(2):91-103.
37. Mavandadi S, Benson A, DiFilippo S, Streim JE, Oslin D. A telephone-based program to provide symptom monitoring alone vs symptom monitoring plus care management for late-life depression and anxiety: A randomized clinical trial. *JAMA psychiatry*. 2015;72(12):1211-1218.
38. Bruce ML, Ten Have TR, Reynolds CF, 3rd, et al. Reducing suicidal ideation and depressive symptoms in depressed older primary care patients: A randomized controlled trial. *Jama*. 2004;291(9):1081-1091.
39. Unutzer J, Katon W, Callahan CM, et al. Collaborative care management of late-life depression in the primary care setting: A randomized controlled trial. *Jama*. 2002;288(22):2836-2845.
40. Excellence NifHaC. Quality standards for the management of depression in adults. 2011; <https://www.nice.org.uk/guidance/qs8>. Accessed October, 2018.
41. Institute of Medicine. *Treatment for posttraumatic stress disorder in military and veteran populations: Initial assessment*. . Washington, DC: National Academies Press 2012
42. Resnick SH, Rani. The measurement based care (MBC) in mental health initiative in VHA. *VA Psychology Leadership Conference 2017*; <https://avapl.org/conference/pubs/2017%20Conference%20Presentations/Day%201/AVA%20PL%20MBC%20Resnick%20Hoff.pdf>. Accessed October 11th, 2018.
43. The Joint Commission. New outcome measures standard [https://www.jointcommission.org/accreditation/bhc\\_new\\_outcome\\_measures\\_standard.aspx](https://www.jointcommission.org/accreditation/bhc_new_outcome_measures_standard.aspx). Accessed October 18th, 2018.
44. Boswell JF, Kraus DR, Miller SD, Lambert MJ. Implementing routine outcome monitoring in clinical practice: Benefits, challenges, and solutions. *Psychotherapy Research*. 2015;25(1):6-19.
45. Krägeloh CU, Czuba KJ, Billington DR, Kersten P, Siegert RJ. Using feedback from patient-reported outcome measures in mental health services: A scoping study and typology. *Psychiatric Services*. 2015;66(3):224-241.
46. Greenhalgh J. The applications of pros in clinical practice: What are they, do they work, and why? *Qual Life Res*. 2009;18(1):115-123.
47. Krageloh CU, Czuba KJ, Billington D, Kersten P, Siegert RJ. Using feedback from patient-reported outcome measures in mental health services: A scoping study and typology. *Psychiatric Services*. 2015;66(3):224-241.



48. Oslin DW, Hoff R, Mignogna J, Resnick SG. Provider attitudes and experience with measurement-based mental health care in the VA implementation project. *Psychiatr Serv*. 2018;appips201800228.
49. Callaly T, Hyland M, Coombs T, Trauer T. Routine outcome measurement in public mental health: Results of a clinician survey. *Aust Health Rev*. 2006;30(2):164-173.
50. Leydon GM, Dowrick CF, McBride AS, et al. Questionnaire severity measures for depression: A threat to the doctor-patient relationship? *The British journal of general practice : the journal of the Royal College of General Practitioners*. 2011;61(583):117.
51. Dowrick C, Leydon GM, McBride A, et al. Patients' and doctors' views on depression severity questionnaires incentivised in uk quality and outcomes framework: Qualitative study. *BMJ*. 2009;338.
52. Kendrick T, El-Gohary M, Stuart B, et al. Routine use of patient reported outcome measures (proms) for improving treatment of common mental health disorders in adults. *Cochrane Database of Systematic Reviews*. 2016;7:CD011119.
53. Lambert MJ, Whipple JL, Kleinstaub M. Collecting and delivering progress feedback: A meta-analysis of routine outcome monitoring. *Psychotherapy*. 2018;55(4):520-537.
54. Higgins JP, Altman DG, Gotzsche PC, et al. The cochrane collaboration's tool for assessing risk of bias in randomised trials. *BMJ*. 2011;343:d5928.
55. Berkman ND, Lohr KN, Ansari M, et al. Grading the strength of a body of evidence when assessing health care interventions for the effective health care program of the agency for healthcare research and quality: An update methods guide for effectiveness and comparative effectiveness reviews. In. Rockville MD: Agency for Healthcare Research and Quality; 2013.
56. Brodey BB, Cuffel B, McCulloch J, et al. The acceptability and effectiveness of patient-reported assessments and feedback in a managed behavioral healthcare setting. *The American journal of managed care*. 2005;11(12):774.
57. Chamberlin CW. The effective professional: The adoption and use of a feedback system in psychotherapy. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2016;77(6-B(E)):No Pagination Specified.
58. Cheyne A, Kinn S. A pilot study for a randomised controlled trial of the use of the schedule for the evaluation of individual quality of life (seiqol) in an alcohol counselling setting. *Addiction Research & Theory, 2001, Vol9(2), p165-178*. 2001;9(2):165-178.
59. Connolly Gibbons MB, Kurtz JE, Thompson DL, et al. The effectiveness of clinician feedback in the treatment of depression in the community mental health system. *Journal of Consulting and Clinical Psychology*. 2015;83(4):748-759.
60. Davidson KM, Rankin ML, Begley A, et al. Assessing patient progress in psychological therapy through feedback in supervision: The memos\* randomized controlled trial (\*measuring and monitoring clinical outcomes in supervision: Memos). *Behavioural and Cognitive Psychotherapy*. 2017;45(3):209-224.
61. De Jong K, Van Sluis P, Nugter MA, Heiser WJ, Spinhoven P. Understanding the differential impact of outcome monitoring: Therapist variables that moderate feedback effects in a randomized clinical trial. *Psychotherapy Research*. 2012;22(4):464-474.
62. Errazuriz P, Zilcha-Mano S. In psychotherapy with severe patients discouraging news may be worse than no news: The impact of providing feedback to therapists on psychotherapy outcome, session attendance, and the alliance. *Journal of Consulting and Clinical Psychology*. 2018;86(2):125-139.

63. Guo T, Xiang Y-T, Xiao L, et al. Measurement-based care versus standard care for major depression: A randomized controlled trial with blind raters. *American Journal of Psychiatry*. 2015;172(10):1004-1013.
64. Hansson H, Rundberg J, Österling A, Öjehagen A, Berglund M. Intervention with feedback using outcome questionnaire 45 (OQ-45) in a swedish psychiatric outpatient population. A randomized controlled trial. *Nordic Journal of Psychiatry*. 2013;67(4):274-281.
65. Lutz W, Rubel J, Schiefele A-K, Zimmermann D, Bohnke JR, Wittmann WW. Feedback and therapist effects in the context of treatment outcome and treatment length. *Psychotherapy Research*. 2015;25(6):647-660.
66. Probst T, Lambert MJ, Dahlbender RW, Loew TH, Tritt K. Providing patient progress feedback and clinical support tools to therapists: Is the therapeutic process of patients on-track to recovery enhanced in psychosomatic in-patient therapy under the conditions of routine practice? *Journal of Psychosomatic Research*. 2014;76(6).
67. Probst T, Lambert MJ, Loew TH, Dahlbender RW, Göllner R, Tritt K. Feedback on patient progress and clinical support tools for therapists: Improved outcome for patients at risk of treatment failure in psychosomatic in-patient therapy under the conditions of routine practice. *Journal of Psychosomatic Research*. 2013;75(3):255-261.
68. Puschner B, Schöfer D, Knaup C, Becker T. Outcome management in in-patient psychiatric care. *Acta Psychiatrica Scandinavica*. 2009;120(4):308-319.
69. Schuman DL, Slone NC, Reese RJ, Duncan B. Efficacy of client feedback in group psychotherapy with soldiers referred for substance abuse treatment. *Psychother Res*. 2015;25(4):396-407.
70. She Z, Duncan BL, Reese RJ, et al. Client feedback in china: A randomized clinical trial in a college counseling center. *Journal of Counseling Psychology*. 2018:No Pagination Specified.
71. Slade M, McCrone P, Kuipers E, et al. Use of standardised outcome measures in adult mental health services: Randomised controlled trial. *The British journal of psychiatry : the journal of mental science*. 2006;189:330.
72. Trudeau LS. Effects of a clinical feedback system on client and therapist outcomes in a rural community mental health center. In: Digital Repository @ Iowa State University; 2000.
73. Guise JM, Chang C, Viswanathan M, et al. Agency for healthcare research and quality evidence-based practice center methods for systematically reviewing complex multicomponent health care interventions. *J Clin Epidemiol*. 2014;67(11):1181-1191.
74. Goldstein L, Connolly Gibbons M, Thompson S, et al. Outcome assessment via handheld computer in community mental health: Consumer satisfaction and reliability. *The Journal of Behavioral Health Services & Research*. 2011;38(3):414-423.



# Evidence Brief: Use of Patient Reported Outcome Measures for Measurement Based Care in Mental Health Shared Decision-Making

## Supplemental Materials

November 2018

### Prepared for:

Department of Veterans Affairs  
Veterans Health Administration  
Quality Enhancement Research Initiative  
Health Services Research & Development Service  
Washington, DC 20420

### Prepared by:

Evidence-based Synthesis Program (ESP)  
Coordinating Center  
Portland VA Health Care System  
Portland, OR  
Mark Helfand, MD, MPH, MS, Director

### Investigators:

Kim Peterson, MS  
Johanna Anderson, MPH  
Donald Bourne, MPH



**VA**  
HEALTH  
CARE | Defining  
**EXCELLENCE**  
in the 21st Century

## TABLE OF CONTENTS

Search Strategies .....	1
List of Excluded Studies .....	8
Evidence Tables .....	14
Data Abstraction of Included Primary Studies.....	14
Data Abstraction: Patient, Provider and Treatment Characteristics .....	14
Data Abstraction: Intervention Characteristics.....	20
Data Abstraction: Outcomes.....	25
Quality Assessment of Included Primary Studies .....	30
Ongoing Studies.....	33
Peer Review .....	35
References.....	48

## SEARCH STRATEGIES

1. Search Strategy (adapted from Kendrick 2016) Date Searched: 11/16/2018 (restricted from 5/18/2015 forward)	
Sources:	Evidence:
Medline	<p>Database: Ovid MEDLINE(R) and Epub Ahead of Print, In-Process &amp; Other Non-Indexed Citations, Daily and Versions(R) &lt;1946 to November 15, 2018&gt; Search Strategy:</p> <p>-----</p> <ol style="list-style-type: none"> <li>1 EATING DISORDERS/ or ANOREXIA NERVOSA/ or BINGE-EATING DISORDER/ or BULIMIA NERVOSA/ or FEMALE ATHLETE TRIAD SYNDROME/ or PICA/ (27741)</li> <li>2 HYPERPHAGIA/ or BULIMIA/ (8126)</li> <li>3 SELF-INJURIOUS BEHAVIOR/ or SELF MUTILATION/ or SUICIDE/ or SUICIDAL IDEATION/ or SUICIDE, ATTEMPTED/ (59972)</li> <li>4 MOOD DISORDERS/ or AFFECTIVE DISORDERS, PSYCHOTIC/ or BIPOLAR DISORDER/ or CYCLOTHYMIC DISORDER/ or DEPRESSIVE DISORDER/ or DEPRESSION, POSTPARTUM/ or DEPRESSIVE DISORDER, MAJOR/ or DEPRESSIVE DISORDER, TREATMENT-RESISTANT/ or DYSTHYMIC DISORDER/ or SEASONAL AFFECTIVE DISORDER/ (142140)</li> <li>5 NEUROTIC DISORDERS/ (17940)</li> <li>6 DEPRESSION/ (104841)</li> <li>7 ADJUSTMENT DISORDERS/ (4127)</li> <li>8 exp ANTIDEPRESSIVE AGENTS/ (136598)</li> <li>9 ANXIETY DISORDERS/ or AGORAPHOBIA/ or NEUROCIRCULATORY ASTHENIA/ or OBSESSIVE-COMPULSIVE DISORDER/ or OBSESSIVE HOARDING/ or PANIC DISORDER/ or PHOBIC DISORDERS/ or STRESS DISORDERS, TRAUMATIC/ or COMBAT DISORDERS/ or STRESS DISORDERS, POST-TRAUMATIC/ or STRESS DISORDERS, TRAUMATIC, ACUTE/ (86486)</li> <li>10 ANXIETY/ or ANXIETY, CASTRATION/ or KORO/ (72426)</li> <li>11 ANXIETY, SEPARATION/ (2065)</li> <li>12 PANIC/ (2564)</li> <li>13 exp ANTI-ANXIETY AGENTS/ (62900)</li> <li>14 SOMATOFORM DISORDERS/ or BODY DYSMORPHIC DISORDERS/ or CONVERSION DISORDER/ or HYPOCHONDRIASIS/ or NEURASTHENIA/ (15490)</li> <li>15 HYSTERIA/ (3549)</li> <li>16 MUNCHAUSEN SYNDROME BY PROXY/ or MUNCHAUSEN SYNDROME/ (1771)</li> <li>17 FATIGUE SYNDROME, CHRONIC/ (5157)</li> <li>18 OBSESSIVE BEHAVIOR/ (1147)</li> <li>19 COMPULSIVE BEHAVIOR/ or BEHAVIOR, ADDICTIVE/ (10980)</li> <li>20 IMPULSE CONTROL DISORDERS/ or FIRESETTING BEHAVIOR/ or GAMBLING/ or TRICHOTILLOMANIA/ (7937)</li> <li>21 STRESS, PSYCHOLOGICAL/ or BURNOUT, PROFESSIONAL/ (118109)</li> <li>22 SEXUAL DYSFUNCTIONS, PSYCHOLOGICAL/ or VAGINISMUS/ (5916)</li> <li>23 ANHEDONIA/ (745)</li> <li>24 AFFECTIVE SYMPTOMS/ (12286)</li> <li>25 *MENTAL DISORDERS/ (119630)</li> <li>26 (eating disorder* or anorexia nervosa or bulimi* or binge eat* or (self adj (injur* or mutilat*)) or suicide* or suicidal or parasuicid* or mood disorder* or affective disorder* or bipolar i or bipolar ii or (bipolar and (affective or disorder*)) or mania or manic or cyclothymic* or depression or depressive or dysthymi* or</li> </ol>



	<p>neurotic or neurosis or adjustment disorder* or antidepress* or anxiety disorder* or agoraphobia or obsess* or compulsi* or panic or phobi* or ptsd or posttrauma* or post trauma* or combat or somatoform or somati#ation or medical* unexplained or body dysmorphi* or conversion disorder or hypochondria* or neurastheni* or hysteria or munchausen or chronic fatigue* or gambling or trichotillomania or vaginismus or anhedoni* or affective symptoms or mental disorder* or mental health).ti. (350204)</p> <p>27 or/1-26 (883965)</p> <p>28 controlled clinical trial.pt. (92752)</p> <p>29 randomized controlled trial.pt. (471434)</p> <p>30 (randomi#ed or randomi#ation).ab.ti. (559157)</p> <p>31 randomly.ab. (300350)</p> <p>32 (random* adj3 (administ* or allocat* or assign* or class* or control* or determine* or divide* or distribut* or expose* or fashion or number* or place* or recruit* or subsitut* or treat*)),ab. (422409)</p> <p>33 placebo*.ab.ti. (199553)</p> <p>34 drug therapy.fs. (2062572)</p> <p>35 trial.ab.ti. (521635)</p> <p>36 groups.ab. (1851699)</p> <p>37 (control* adj3 (trial* or study or studies)).ab.ti. (463247)</p> <p>38 ((singl* or doubl* or tripl* or trebl*) adj3 (blind* or mask* or dummy*)).mp. (221062)</p> <p>39 clinical trial, phase ii/ or clinical trial, phase iii/ or clinical trial, phase iv/ or randomized controlled trial/ or pragmatic clinical trial/ (494831)</p> <p>40 (quasi adj (experimental or random\$)).ti.ab. (14852)</p> <p>41 ((waitlist* or wait* list* or treatment as usual or TAU) adj3 (control or group)).ab. (5124)</p> <p>42 or/28-41 (4520563)</p> <p>43 27 and 42 (235421)</p> <p>44 COUNSELING/ (33512)</p> <p>45 PSYCHOTHERAPY/ (51971)</p> <p>46 PSYCHOTHERAPEUTIC OUTCOMES/ (0)</p> <p>47 TREATMENT OUTCOMES/ (0)</p> <p>48 THERAPISTS/ (0)</p> <p>49 or/44-48 (84123)</p> <p>50 FEEDBACK/ (28713)</p> <p>51 (feedback or feed-back).ti,ab,kw. (122927)</p> <p>52 symptom monitoring.ti,ab,kw. (364)</p> <p>53 or/50-52 (135738)</p> <p>54 49 and 53 (829)</p> <p>55 ((physician* or psychiatri* or psychotherapist* or therapist* or primary care or general practi*) and ((client* or patient* or outpatient*) adj5 (feedback or feed-back))).ti,ab,kw. (1146)</p> <p>56 ((physician* or psychiatri* or psychotherapist* or therapist* or primary care or general practi*) and (patient reported adj3 (information or outcome*))).ti,ab,kw. (1306)</p> <p>57 (psychotherapeutic outcome* and (feedback or feed-back or (patient reported adj3 (information or outcome*))))).ti,ab,kw. (4)</p> <p>58 (measurement based care or measurement-based care).mp. (145)</p> <p>59 or/54-58 (3326)</p> <p>60 43 and 59 (288)</p> <p>61 limit 60 to yr="2015 -Current" (119)</p> <p>62 limit 61 to english language (118)</p> <p>*****</p>
--	--



<p>PsycINFO</p>	<p>Database: PsycINFO &lt;1806 to November Week 2 2018&gt;                  Search Strategy:                  -----                  1 EATING DISORDERS/ or ANOREXIA NERVOSA/ or BULIMIA/ or HYPERPHAGIA/ or KLEINE LEVIN SYNDROME/ or PICA/ or "PURGING (EATING DISORDERS)"/ (27863)                  2 APHAGIA/ (57)                  3 COPROPHAGIA/ (13)                  4 BINGE EATING/ (2644)                  5 SELF DESTRUCTIVE BEHAVIOR/ or ATTEMPTED SUICIDE/ or HEAD BANGING/ or SELF INFLICTED WOUNDS/ or SELF INJURIOUS BEHAVIOR/ or SELF MUTILATION/ or SUICIDE/ (37757)                  6 SUICIDE PREVENTION/ (4258)                  7 SUICIDAL IDEATION/ (8023)                  8 AFFECTIVE DISORDERS/ (13474)                  9 AFFECTIVE PSYCHOSIS/ (559)                  10 BIPOLAR DISORDER/ or CYCLOTHYMIC PERSONALITY/ (25377)                  11 MAJOR DEPRESSION/ or ANACLITIC DEPRESSION/ or DYSTHYMIC DISORDER/ or ENDOGENOUS DEPRESSION/ or POSTPARTUM DEPRESSION/ or REACTIVE DEPRESSION/ or RECURRENT DEPRESSION/ or TREATMENT RESISTANT DEPRESSION/ (120153)                  12 ATYPICAL DEPRESSION/ (190)                  13 "DEPRESSION (EMOTION)"/ (24632)                  14 SEASONAL AFFECTIVE DISORDER/ (1038)                  15 ANXIETY DISORDERS/ or ACUTE STRESS DISORDER/ or CASTRATION ANXIETY/ or DEATH ANXIETY/ or GENERALIZED ANXIETY DISORDER/ or OBSESSIVE COMPULSIVE DISORDER/ or PANIC DISORDER/ or POSTTRAUMATIC STRESS DISORDER/ or SEPARATION ANXIETY/ (69814)                  16 PHOBIAS/ or ACROPHOBIA/ or AGORAPHOBIA/ or CLAUSTROPHOBIA/ or OPHIDIOPHOBIA/ or SCHOOL PHOBIA/ or SOCIAL PHOBIA/ (12544)                  17 "DEBRIEFING (PSYCHOLOGICAL)"/ (277)                  18 NEUROSIS/ or CHILDHOOD NEUROSIS/ or EXPERIMENTAL NEUROSIS/ or OCCUPATIONAL NEUROSIS/ or TRAUMATIC NEUROSIS/ (7629)                  19 ADJUSTMENT DISORDERS/ (654)                  20 COPING BEHAVIOR/ (45227)                  21 ADJUSTMENT/ or exp EMOTIONAL ADJUSTMENT/ or OCCUPATIONAL ADJUSTMENT/ or SCHOOL ADJUSTMENT/ or SOCIAL ADJUSTMENT/ (49310)                  22 EMOTIONAL TRAUMA/ (14937)                  23 STRESS/ or CHRONIC STRESS/ or ENVIRONMENTAL STRESS/ or OCCUPATIONAL STRESS/ or PSYCHOLOGICAL STRESS/ or SOCIAL STRESS/ or STRESS REACTIONS/ (95629)                  24 ANXIETY/ or COMPUTER ANXIETY/ or MATHEMATICS ANXIETY/ or PERFORMANCE ANXIETY/ or SOCIAL ANXIETY/ or SPEECH ANXIETY/ or TEST ANXIETY/ (65491)                  25 PANIC ATTACK/ or PANIC/ or PANIC DISORDER/ (9379)                  26 SOMATOFORM DISORDERS/ or BODY DYSMORPHIC DISORDER/ or HYPOCHONDRIASIS/ or NEURASTHENIA/ or NEURODERMATITIS/ or SOMATIZATION DISORDER/ or SOMATOFORM PAIN DISORDER/ (11174)                  27 CONVERSION DISORDER/ or HYSTERICAL PARALYSIS/ or HYSTERICAL VISION DISTURBANCES/ or PSEUDOCYESIS/ (1213)                  28 SOMATIZATION/ (2226)                  29 HYSTERIA/ or MASS HYSTERIA/ (2045)                  30 HYSTERICAL PARALYSIS/ (47)                  31 HISTRIONIC PERSONALITY DISORDER/ (384)                  32 MALINGERING/ (2119)</p>
-----------------	---



33	FACTITIOUS DISORDERS/ or MUNCHAUSEN SYNDROME BY PROXY/ or MUNCHAUSEN SYNDROME/ (790)
34	CHRONIC FATIGUE SYNDROME/ (1867)
35	COMPULSIONS/ or REPETITION COMPULSION/ (2411)
36	OBSSESSIONS/ (1696)
37	OBSESSIVE COMPULSIVE PERSONALITY DISORDER/ (562)
38	TRICHOTILLOMANIA/ (867)
39	GAMBLING/ or PATHOLOGICAL GAMBLING/ (7218)
40	SEXUAL FUNCTION DISTURBANCES/ or DYSPAREUNIA/ or ERECTILE DYSFUNCTION/ or FEMALE SEXUAL DYSFUNCTION/ or INHIBITED SEXUAL DESIRE/ or PREMATURE EJACULATION/ or VAGINISMUS/ (8721)
41	PREMENSTRUAL DYSPHORIC DISORDER/ (449)
42	*MENTAL DISORDERS/ (64225)
43	(eating disorder* or anorexi* or bulimi* or binge eat* or (self adj (injur* or mutilat*)) or suicide* or suicidal or parasuicid* or mood disorder* or affective disorder* or bipolar i or bipolar ii or (bipolar and (affective or disorder*)) or mania or manic or cyclothymi* or depression or depressive or dysthymi* or neurotic or neurosis or adjustment disorder* or antidepress* or anxiety disorder* or agoraphobia or obsess* or compulsi* or panic or phobi* or ptsd or posttrauma* or post trauma* or combat or somatoform or somati#ation or medical* unexplained or body dysmorphi* or conversion disorder or hypochondria* or neurastheni* or hysteria or munchausen or chronic fatigue* or gambling or trichotillomania or vaginismus or anhedoni* or affective symptoms or mental disorder* or mental health).ti,id. (438091)
44	or/1-43 (705521)
45	treatment effectiveness evaluation.sh. (22433)
46	clinical trials.sh. (11137)
47	mental health program evaluation.sh. (2052)
48	placebo.sh. (5165)
49	placebo\$.ti,ab. (37988)
50	randomly.ab. (67265)
51	randomi#ed.ti,ab. (73513)
52	trial\$.ti,ab. (165978)
53	((singl\$ or doubl\$ or trebl\$ or tripl\$) adj3 (blind\$ or mask\$ or dummy)).mp. (24772)
54	(control\$ adj3 (trial\$ or study or studies or group\$)).ti,ab. (152187)
55	"2000".md. (0)
56	factorial\$.ti,ab. (18152)
57	allocat\$.ti,ab. (27739)
58	assign\$.ti,ab. (89907)
59	volunteer\$.ti,ab. (35980)
60	(crossover\$ or cross over\$).ti,ab. (9436)
61	(quasi adj (experimental or random\$)).mp. (10566)
62	((waitlist* or wait* list* or treatment as usual or TAU) adj3 (control or group)).ab. (4927)
63	(random* adj3 (administ* or class* or control* or determine* or divide* or distribut* or expose* or fashion or number* or place* or recruit* or subsitut* or treat*)).ab. (49495)
64	or/45-63 (476311)
65	44 and 64 (92760)
66	COUNSELING/ (22327)
67	PSYCHOTHERAPY/ (50587)
68	PSYCHOTHERAPEUTIC OUTCOMES/ (4713)
69	TREATMENT OUTCOMES/ (31500)
70	THERAPISTS/ (10325)
71	or/66-70 (112133)





	<p>72 FEEDBACK/ (16288)  73 (feedback or feed-back).ti,ab,id. (62159)  74 symptom monitoring.ti,ab,id. (193)  75 or/72-74 (62974)  76 71 and 75 (1516)  77 ((physician* or psychiatri* or psychotherapist* or therapist* or primary care or general practi*) and ((client* or patient* or outpatient*) adj5 (feedback or feed-back))).ti,ab,id. (720)  78 ((physician* or psychiatri* or psychotherapist* or therapist* or primary care or general practi*) and (patient reported adj3 (information or outcome*))).ti,ab,id. (236)  79 (psychotherapeutic outcome* and (feedback or feed-back or (patient reported adj3 (information or outcome*))))).ti,ab,id. (13)  80 (measurement based care or measurement-based care).mp. (122)  81 (or/76-80) and 64 (682)  82 (68 or 69) and 75 (594)  83 (or/77-80) and 65 (111)  84 81 or 82 or 83 (1024)  85 limit 84 to yr="2015 -Current" (286)  86 limit 85 to english language (274)</p> <p>*****</p>
CENTRAL	<p>Database: EBM Reviews - Cochrane Central Register of Controlled Trials  &lt;October 2018&gt;  Search Strategy:</p> <p>-----</p> <p>1 exp EATING DISORDERS/ (796)  2 Bulimia/ (442)  3 SELF-INJURIOUS BEHAVIOR/ (254)  4 SELF MUTILATION/ (33)  5 SUICIDE/ (555)  6 SUICIDE, ATTEMPTED/ (344)  7 SUICIDAL IDEATION/ (304)  8 exp MOOD DISORDERS/ (12600)  9 NEUROTIC DISORDERS/ (301)  10 DEPRESSION/ (9555)  11 ADJUSTMENT DISORDERS/ (226)  12 ANXIETY/ (6481)  13 exp ANXIETY, CASTRATION/ (2)  14 exp ANXIETY DISORDERS/ (7458)  15 ANXIETY, SEPARATION/ (89)  16 PANIC/ (261)  17 exp SOMATOFORM DISORDERS/ (572)  18 HYSTERIA/ (14)  19 exp FACTITIOUS DISORDERS/ (3)  20 FATIGUE SYNDROME, CHRONIC/ (339)  21 exp OBSESSIVE BEHAVIOR/ (43)  22 exp COMPULSIVE BEHAVIOR/ (582)  23 GAMBLING/ (305)  24 TRICHOTILLOMANIA/ (55)  25 SEXUAL DYSFUNCTIONS, PSYCHOLOGICAL/ (353)  26 DYSPAREUNIA/ (155)  27 VAGINISMUS/ (9)  28 exp STRESS, PSYCHOLOGICAL/ (5206)  29 AFFECTIVE SYMPTOMS/ (421)</p>



	30 (anorexia and nervosa).mp. [mp=title, original title, abstract, mesh headings, heading words, keyword] (854)
	31 bulimi*.mp. (1138)
	32 (eating and disorder*).mp. (2571)
	33 (suicid* or parasuicid*).mp. (3913)
	34 (self and mutilat*).mp. (62)
	35 (self and injur*).mp. (2707)
	36 (affective and disorder*).mp. (2705)
	37 (mood and disorder*).mp. (6954)
	38 bipolar.mp. (6508)
	39 (mania or manic or hypomani*).mp. (2493)
	40 (rapid NEXT cycling and disorder*).mp. (0)
	41 schizoaffective.mp. (1391)
	42 (neurotic or neurosis or neuroses or psychoneuro*).mp. (1533)
	43 depress*.mp. (61771)
	44 dysthymi*.mp. (757)
	45 (anxiety or anxious).mp. (34881)
	46 panic.mp. (2477)
	47 (phobia* or phobic* or agoraphobi* or clasutrophobi* or acrophobi* or ophidiophobi*).mp. (3248)
	48 (stress and disorder*).mp. (8461)
	49 (PTSD or posttrauma* or post-trauma* or post NEXT trauma*).mp. (5531)
	50 (psychological and stress*).mp. (9019)
	51 combat.mp. (1280)
	52 (somatoform or somatic or somatization).mp. (3741)
	53 hypochondri*.mp. (257)
	54 hysteri*.mp. (72)
	55 (conversion and disorder*).mp. (361)
	56 neurastheni*.mp. (59)
	57 munchausen.mp. (3)
	58 ((chronic and fatigue and syndrome) or CFS).mp. (1371)
	59 (OCD or obsess* or compulsi*).mp. (2891)
	60 (gambli* or betting or wagering or ludomania* or ludopath*).mp. (702)
	61 trichotillomani*.mp. (95)
	62 psychosexual.mp. (150)
	63 or/1-62 (111747)
	64 ((physician* or psychiatri* or psychotherapist* or therapist* or primary care or general practi*) and ((client* or patient* or oupatient*) adj5 (feedback or feed-back))).mp. (629)
	65 ((physician* or psychiatri* or psychotherapist* or therapist* or primary care or general practi*) and (patient reported adj3 (information or outcome*))).mp. (605)
	66 (psychotherapeutic outcome* and (feedback or feed-back or (patient reported adj3 (information or outcome*))).mp. (1)
	67 (measurement based care or measurement-based care).mp. (31)
	68 or/64-67 (1243)
	69 exp MENTAL DISORDERS/ (59324)
	70 exp MENTAL HEALTH/ (1160)
	71 exp "Psychological Phenomena and Processes"/ and PROCESSES/ (0)
	72 ((psychiatri* or psychotherapist* or therapist*) and ((client* or patient* or oupatient*) adj3 (feedback or feed-back))).ti,ab,kw. (119)
	73 ((psychiatri* or psychotherapist* or therapist*) and (patient-reported adj3 (outcome* or progress))).ti,ab,kw. (62)
	74 ((psychotherapeutic outcome* or treatment outcome*) and (feedback or feed-back or patient-reported) and (information or outcome* or progress)).ti,ab,kw. (353)

	<p>75 ((physician or primary care or general practi*) and ((client* or patient* or outpatient*) adj3 (feedback or feed-back or progress))).ti,ab,kw. (331)</p> <p>76 symptom monitoring.ti,ab,kw. (180)</p> <p>77 or/72-76 (1000)</p> <p>78 77 and (or/69-71) (134)</p> <p>79 63 and 68 (282)</p> <p>80 77 or 78 or 79 (1155)</p> <p>81 limit 80 to yr="2015 -Current" (552)</p> <p>82 limit 81 to english language (443)</p> <p>*****</p>
<a href="#">World Health Organization (WHO) International Clinical Trials Registry Platform (ICTRP)</a>	<p>Search: depression OR depressive OR mental OR psychiatric OR anxiety OR PTSD OR phobia OR OCD AND feedback; measurement based care</p>
ClinicalTrials.gov	<p>Search: depression OR depressive OR mental OR psychiatric OR anxiety OR PTSD OR phobia OR OCD AND feedback; measurement based care</p>
Google Scholar	<p>Search: "Patient Reported Outcome Measures" and "mental health" and (randomised or randomized); "Measurement based care" and "mental health" and (randomised or randomized)</p>
Google.com	<p>Search: "Patient Reported Outcome Measures" and "mental health" and (randomised or randomized); "Measurement based care" and "mental health" and (randomised or randomized)</p>

## LIST OF EXCLUDED STUDIES

Exclude reasons: 1=Ineligible population (*eg*, patients receiving mental health care not separately evaluated), 2=Ineligible intervention (*eg*, not patient reported outcome measures, MBC as part of a more intensive collaborative care/care management/integrated care approach), 3=Ineligible comparator (*eg*, not shared decision making or usual care without an MBC component), 4=Ineligible outcome (*eg*, patient preferences or implementation experiences), 5=Ineligible setting, 6=Ineligible study design (*eg*, case report), 7=Ineligible publication type (*eg*, editorial, narrative review), 8=Outdated or ineligible systematic review, 9=non-English language, S=non-RCT meeting other criteria

#	Citation	Exclude reason
1.	Aardoom JJ, Dingemans AE, van Ginkel JR, Spinhoven P, Van Furth EF, Van den Akker-van Marle ME. Cost-utility of an internet-based intervention with or without therapist support in comparison with a waiting list for individuals with eating disorder symptoms: a randomized controlled trial. <i>International journal of eating disorders</i> . 2016;49(12):1068-1076.	E2
2.	Amble I, Gude T, Ulvenes P, Stubdal S, Wampold BE. How and when feedback works in psychotherapy: Is it the signal? <i>Psychotherapy Research</i> . 2015;26(5):545-555.	E3
3.	Bargmann S. Achieving excellence through feedback-informed supervision. In: <i>Feedback-informed treatment in clinical practice: Reaching for excellence</i> . Washington, DC: American Psychological Association; US; 2017:79-100.	E7
4.	Bastiaansen JA, Meurs M, Stelwagen R, et al. Self-monitoring and personalized feedback based on the experiencing sampling method as a tool to boost depression treatment: A protocol of a pragmatic randomized controlled trial (ZELF-i). <i>BMC Psychiatry</i> Vol 18 2018, ArtID 276. 2018;18.	E7
5.	Bech P, Timmerby N. An overview of which health domains to consider and when to apply them in measurement-based care for depression and anxiety disorders. <i>Nordic Journal of Psychiatry</i> . 2018;72(5):367-373.	E7
6.	Bengtson AM, Pence BW, Gaynes BN, et al. Improving Depression Among HIV-Infected Adults: Transporting the Effect of a Depression Treatment Intervention to Routine Care. <i>Journal of Acquired Immune Deficiency Syndromes: JAIDS</i> . 2016;73(4):482-488.	E3
7.	Berking M, Orth U, Lutz W. Wie effektiv sind systematische Rückmeldungen des Therapieverlaufs an den Therapeuten? - How effective is systematic feedback of treatment progress to the therapist? An empirical study in a cognitive-behavioural oriented inpatient setting. <i>Zeitschrift für Klinische Psychologie und Psychotherapie</i> . 2006;35(1):21-29.	E9
8.	Bickman L, Kelley SD, Breda C, de Andrade AR, Riemer M. Effects of Routine Feedback to Clinicians on Mental Health Outcomes of Youths: Results of a Randomized Trial. <i>Psychiatric Services</i> . 2011;62(12):1423-1429.	E1
9.	Bilsker D, Goldner EM. Routine outcome measurement by mental health-care providers: is it worth doing? <i>The Lancet</i> . 2002;360(9346):1689-1690.	E7
10.	Black SW, Owen J, Chapman N, Lavin K, Drinane JM, Kuo P. Feedback informed treatment: An empirically supported case study of psychodynamic treatment. <i>Journal of Clinical Psychology</i> . 2017;73(11):1499-1509.	E7
11.	Boyd MR, Powell BJ, Endicott D, Lewis CC. A method for tracking implementation strategies: An exemplar implementing measurement-based care in community behavioral health clinics. <i>Behavior Therapy</i> . 2018;49(4):525-537.	E4

#	Citation	Exclude reason
12.	Brodey BB, Gonzalez NL, Elkin KA, Sasiela WJ, Brodey IS. Assessing the Equivalence of Paper, Mobile Phone, and Tablet Survey Responses at a Community Mental Health Center Using Equivalent Halves of a 'Gold-Standard' Depression Item Bank. <i>JMIR Mental Health</i> . 2017;4(3):e36.	E3
13.	Brown GS, Simon A, Cameron J, Minami T. A collaborative outcome resource network (ACORN): Tools for increasing the value of psychotherapy. <i>Psychotherapy</i> . 2015;52(4):412-421.	E6
14.	Burlingame GM, Whitcomb KE, Woodland SC, Olsen JA, Beecher M, Gleave R. The effects of relationship and progress feedback in group psychotherapy using the Group Questionnaire and Outcome Questionnaire-45: A randomized clinical trial. <i>Psychotherapy</i> . 2018;55(2):116-131.	E3
15.	Chan AT, Sun GY, Tam WW, Tsoi KK, Wong SY. The effectiveness of group-based behavioral activation in the treatment of depression: An updated meta-analysis of randomized controlled trial. <i>Journal of Affective Disorders</i> . 2017;208:345-354.	E8
16.	Chang TE, Jing Y, Yeung AS, et al. Effect of communicating depression severity on physician prescribing patterns: findings from the Clinical Outcomes in MEasurement-based Treatment (COMET) trial. <i>General Hospital Psychiatry</i> . 2012;34(2):105-112.	ES
17.	Cornish PA, Berry G, Benton S, et al. Meeting the mental health needs of today's college student: Reinventing services through Stepped Care 2.0. <i>Psychological Services</i> . 2017;14(4):428-442.	E2
18.	Cross S, Mellor-Clark J, Macdonald J. Tracking Responses to Items in Measures as a Means of Increasing Therapeutic Engagement in Clients: A Complementary Clinical Approach to Tracking Outcomes. <i>Clinical Psychology &amp; Psychotherapy</i> . 2015;22(6):698-707.	E7
19.	Davidson K, Perry A, Bell L. Would continuous feedback of patient's clinical outcomes to practitioners improve NHS psychological therapy services? Critical analysis and assessment of quality of existing studies. <i>Psychology and Psychotherapy: Theory, Research and Practice</i> . 2015;88(1):21-37.	E8
20.	Delgado J, Overend K, Lucock M, et al. Improving the efficiency of psychological treatment using outcome feedback technology. <i>Behaviour Research &amp; Therapy</i> . 2017;99:89-97.	ES
21.	Drummond KL, Painter JT, Curran GM, et al. HIV patient and provider feedback on a telehealth collaborative care for depression intervention. <i>AIDS Care</i> . 2017;29(3):290-298.	E2
22.	Duncan BL, Reese RJ. The Partners for Change Outcome Management System (PCOMS) revisiting the client's frame of reference. <i>Psychotherapy: Theory, Research, Practice, Training</i> . 2015;52(4):391-401.	E7
23.	Dyer K, Hooke GR, Page AC. Effects of providing domain specific progress monitoring and feedback to therapists and patients on outcome. <i>Psychotherapy Research</i> . 2014;26(3):297-306.	E3
24.	Eisen SV, Dickey B, Sederer LI. A Self-Report Symptom and Problem Rating Scale to Increase Inpatients' Involvement in Treatment. <i>Psychiatric Services</i> . 2000;51(3):349-353.	ES
25.	Faurholt-Jepsen M, Frost M, Martiny K, et al. Reducing the rate and duration of Re-ADMISSions among patients with unipolar disorder and bipolar disorder using smartphone-based monitoring and treatment - the RADMIS trials: study protocol for two randomized controlled trials. <i>Trials [Electronic Resource]</i> . 2017;18(1):277.	E7
26.	Fihn SD, McDonnell MB, Diehr P, et al. Effects of sustained audit/feedback on self-reported health status of primary care patients. <i>The American Journal of Medicine</i> . 2004;116(4):241-248.	E1

#	Citation	Exclude reason
27.	Fortney JC, Unützer J, Wrenn G, et al. A Tipping Point for Measurement-Based Care. <i>Psychiatric Services</i> . 2017;68(2):179-188.	E8
28.	Fridberg DJ, Cao D, King AC. Integrating alcohol response feedback in a brief intervention for young adult heavy drinkers who smoke: a pilot study. <i>Drug and alcohol dependence</i> . 2015;155:293-297.	E2
29.	Friedhoff LA. Question development by individuals in therapeutic assessment: Does it result in more positive outcomes? <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2013;75(8-B(E)):No Pagination Specified.	E3
30.	Gondek D, Edbrooke-Childs J, Fink E, Deighton J, Wolpert M. Feedback from outcome measures and treatment effectiveness, treatment efficiency, and collaborative practice: A systematic review. <i>Administration and Policy in Mental Health and Mental Health Services Research</i> . 2016;43(3):325-343.	E8
31.	Haland AT, Tilden T. Lessons learned from the implementation of a feedback system in couple and family therapy. In: <i>Routine outcome monitoring in couple and family therapy: The empirically informed therapist</i> . Cham, Switzerland: Springer International Publishing; Switzerland; 2017:211-224.	E4
32.	Hamann J, Parchmann A, Sassenberg N, et al. Training patients with schizophrenia to share decisions with their psychiatrists: A randomized-controlled trial. <i>Social Psychiatry and Psychiatric Epidemiology</i> . 2017;52(2):175-182.	E2
33.	Harmon SC, Lambert MJ, Smart DM, et al. Enhancing outcome for potential treatment failures: Therapist–client feedback and clinical support tools. <i>Psychotherapy Research</i> . 2007;17(4):379-392.	ES
34.	Hartmann JA, Wichers M, Menne-Lothmann C, et al. Experience Sampling-Based Personalized Feedback and Positive Affect: A Randomized Controlled Trial in Depressed Patients. <i>PLoS ONE</i> . 2015;10(6):e0128095.	E2
35.	Hooke GR, Sng AA, Cunningham NK, Page AC. Methods of delivering progress feedback to optimise patient outcomes: The value of expected treatment trajectories. <i>Cognitive Therapy and Research</i> . 2018;42(2):204-211.	E4
36.	Janse PD, De Jong K, Van Dijk MK, Hutschemaekers GJ, Verbraak MJ. Improving the efficiency of cognitive-behavioural therapy by using formal client feedback. <i>Psychotherapy Research</i> . 2017;27(5):525-538.	ES
37.	Jensen-Doss A, Haimes EM, Smith AM, et al. Monitoring treatment progress and providing feedback is viewed favorably but rarely used in practice. <i>Administration and Policy in Mental Health and Mental Health Services Research</i> . 2018;45(1):48-61.	E4
38.	Jolley S, Onwumere J, Bissoli S, et al. A pilot evaluation of therapist training in cognitive therapy for psychosis: Therapy quality and clinical outcomes. <i>Behavioural and Cognitive Psychotherapy</i> . 2015;43(4):478-489.	E2
39.	Kendrick T, El-Gohary M, Stuart B, et al. Routine use of patient reported outcome measures (PROMs) for improving treatment of common mental health disorders in adults. <i>Cochrane Database of Systematic Reviews</i> . 2016;7:CD011119.	E8
40.	Kennedy SH, Lam RW, McIntyre RS, et al. Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 Clinical Guidelines for the Management of Adults with Major Depressive Disorder: Section 3. Pharmacological Treatments. <i>Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie</i> . 2016;61(9):540-560.	E7
41.	Khdour HY, Abushalmaq OM, Mughrabi IT, et al. Generalized Anxiety Disorder and Social Anxiety Disorder, but Not Panic Anxiety Disorder, Are Associated with Higher Sensitivity to Learning from Negative Feedback: Behavioral and Computational Investigation. <i>Frontiers in Integrative Neuroscience</i> . 2016;10:20.	E2
42.	Kilbourne AM, Beck K, Spaeth-Rublee B, et al. Measuring and improving the quality of mental health care: a global perspective. <i>World Psychiatry</i> . 2018;17(1):30-38.	E7

#	Citation	Exclude reason
43.	Klundt JS. Are therapists using outcome measures and does it matter? a naturalistic usage study. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2015;76(3-B(E)):No Pagination Specified.	ES
44.	Knaup C, Koesters M, Schoefer D, Becker T, Puschner B. Effect of feedback of treatment outcome in specialist mental healthcare: meta-analysis. <i>The British journal of psychiatry : the journal of mental science</i> . 2009;195(1):15.	E8
45.	Koementas-de Vos MM, Nugter M, Engelsbel F, De Jong K. Does progress feedback enhance the outcome of group psychotherapy? <i>Psychotherapy</i> . 2018;55(2):151-163.	ES
46.	Krägeloh CU, Czuba KJ, Billington DR, Kersten P, Siegert RJ. Using Feedback From Patient-Reported Outcome Measures in Mental Health Services: A Scoping Study and Typology. <i>Psychiatric Services</i> . 2015;66(3):224-241.	E8
47.	Lambert MJ. Maximizing psychotherapy outcome beyond evidence-based medicine. <i>Psychotherapy and Psychosomatics</i> . 2017;86(2):80-89.	E8
48.	Lambert MJ, Shimokawa K. Collecting Client Feedback. <i>Psychotherapy</i> . 2011;48(1):72-79.	E8
49.	Lambert MJ, Whipple JL, Kleinstaub M. Collecting and delivering progress feedback: A meta-analysis of routine outcome monitoring. <i>Psychotherapy</i> . 2018;55(4):520-537.	E8
50.	Lambert MJ, Whipple JL, Vermeersch DA, et al. Enhancing psychotherapy outcomes via providing feedback on client progress: a replication. <i>Clinical Psychology &amp; Psychotherapy</i> . 2002;9(2):91-103.	ES
51.	Lutz W, Zimmermann D, Müller V, Deisenhofer AK, Rubel JA. Randomized controlled trial to evaluate the effects of personalized prediction and adaptation tools on treatment outcome in outpatient psychotherapy: study protocol. <i>BMC Psychiatry</i> . 2017;17(1):306.	E7
52.	Maeschalck CL, Barfknecht LR. Using client feedback to inform treatment. In: <i>Feedback-informed treatment in clinical practice: Reaching for excellence</i> . Washington, DC: American Psychological Association; US; 2017:53-77.	E7
53.	Mathias SD, Fifer SK, Mazonson PD, Lubeck DP, Buesching DP, Patrick DL. Necessary but not sufficient: the effect of screening and feedback on outcomes of primary care patients with untreated anxiety. <i>Journal of general internal medicine</i> . 1994;9(11):606.	E2
54.	Mavandadi S, Benson A, DiFilippo S, Streim JE, Oslin D. A Telephone-Based Program to Provide Symptom Monitoring Alone vs Symptom Monitoring Plus Care Management for Late-Life Depression and Anxiety: a Randomized Clinical Trial. <i>JAMA psychiatry</i> . 2015;72(12):1211-1218.	E2
55.	Metz MJ, Franx GC, Veerbeek MA, de Beurs E, van der Feltz-Cornelis CM, Beekman AT. Shared Decision Making in mental health care using Routine Outcome Monitoring as a source of information: a cluster randomised controlled trial. <i>BMC Psychiatry</i> . 2015;15:313.	E7
56.	Metz MJ, Veerbeek MA, Franx GC, van der Feltz-Cornelis CM, de Beurs E, Beekman AT. A National Quality Improvement Collaborative for the clinical use of outcome measurement in specialised mental healthcare: Results from a parallel group design and a nested cluster randomised controlled trial. <i>BJPsych Open</i> . 2017;3(3):106-112.	E4
57.	Mikeal CW, Gillaspay J, Scoles MT, Murphy JJ. A dismantling study of the Partners for Change Outcome Management System. <i>Journal of Counseling Psychology</i> . 2016;63(6):704-709.	E3
58.	Miller SD, Bargmann S, Chow D, Seidel J, Maeschalck C. Feedback-informed treatment (FIT): Improving the outcome of psychotherapy one person at a time. In: <i>Quality improvement in behavioral health</i> . Cham, Switzerland: Springer International Publishing; Switzerland; 2016:247-262.	E7

#	Citation	Exclude reason
59.	Newnham EA, Hooke GR, Page AC. Progress monitoring and feedback in psychiatric care reduces depressive symptoms. <i>Journal of Affective Disorders</i> . 2010;127(1):139-146.	ES
60.	Pence BW, Gaynes BN, Williams Q, et al. Assessing the effect of Measurement-Based Care depression treatment on HIV medication adherence and health outcomes: rationale and design of the SLAM DUNC Study. <i>Contemp Clin Trials</i> . 2012;33(4):828-838.	E2
61.	Priebe S, McCabe R, Bullenkamp J, et al. The impact of routine outcome measurement on treatment processes in community mental health care: approach and methods of the MECCA study. <i>Epidemiologia e psichiatria sociale</i> . 2002;11(3):198.	E4
62.	Rollman BL, Hanusa BH, Lowe HJ, Gilbert T, Kapoor WN, Schulberg HC. A Randomized Trial Using Computerized Decision Support to Improve Treatment of Major Depression in Primary Care. <i>Journal of General Internal Medicine</i> . 2002;17(7):493-503.	E2
63.	Rush AJ. Isn't It About Time to Employ Measurement-Based Care in Practice? <i>American Journal of Psychiatry</i> . 2015;172(10):934-936.	E7
64.	Schiepek G, Eckert H, Aas B, Wallot S, Wallot A. <i>Integrative psychotherapy: A feedback-driven dynamic systems approach</i> . Boston, MA: Hogrefe Publishing; US; 2015.	E7
65.	Scott K, Lewis CC. Using Measurement-Based Care to Enhance Any Treatment. <i>Cognitive and Behavioral Practice</i> . 2015;22(1):49-59.	E7
66.	Seitz J, Mee-Lee D. Feedback-informed treatment in an addiction treatment agency. In: <i>Feedback-informed treatment in clinical practice: Reaching for excellence</i> . Washington, DC: American Psychological Association; US; 2017:231-248.	E7
67.	Shimokawa K, Lambert MJ, Smart DW. Enhancing Treatment Outcome of Patients at Risk of Treatment Failure: Meta-Analytic and Mega-Analytic Review of a Psychotherapy Quality Assurance System. <i>Journal of Consulting and Clinical Psychology</i> . 2010;78(3):298-311.	E8
68.	Slade K, Lambert MJ, Harmon SC, Smart DW, Bailey R. Improving psychotherapy outcome: the use of immediate electronic feedback and revised clinical support tools. <i>Clinical Psychology &amp; Psychotherapy</i> . 2008;15(5):287-303.	ES
69.	Stanley-Olson AR. Client feedback and group therapy outcomes for adults with co-occurring mental illness and substance abuse. <i>Dissertation Abstracts International: Section B: The Sciences and Engineering</i> . 2017;79(4-B(E)):No Pagination Specified.	ES
70.	Trivedi MH, Rush AJ, Wisniewski SR, et al. Evaluation of Outcomes With Citalopram for Depression Using Measurement-Based Care in STARD: Implications for Clinical Practice. <i>American Journal of Psychiatry</i> . 2006;163(1):28-40.	ES
71.	Tryon GS, Birch SE, Verkuilen J. Meta-analyses of the relation of goal consensus and collaboration to psychotherapy outcome. <i>Psychotherapy</i> . 2018;55(4):372-383.	E8
72.	Waldrop J, McGuinness TM. Measurement-Based Care in Psychiatry. <i>J Psychosoc Nurs Ment Health Serv</i> . 2017;55(11):30-35.	E8
73.	Wampold BE. Routine outcome monitoring: Coming of age-With the usual developmental challenges. <i>Psychotherapy</i> . 2015;52(4):458-462.	E7
74.	Whipple JL, Lambert MJ, Vermeersch DA, Smart DW, Nielsen SL, Hawkins EJ. Improving the Effects of Psychotherapy: The Use of Early Identification of Treatment Failure and Problem-Solving Strategies in Routine Practice. <i>Journal of Counseling Psychology</i> . 2003;50(1):59-68.	E3
75.	Whittingham M, Graham L. The impact of providing group performance feedback on a large mental health system. <i>Psychotherapy</i> . 2018;55(2):203-206.	E2
76.	Wise EA, Streiner D. Routine outcome monitoring and feedback in an intensive outpatient program. <i>Practice Innovations</i> . 2018;3(2):69-83.	E2



#	Citation	Exclude reason
77.	Zagorscak P, Heinrich M, Sommer D, Wagner B, Knaevelsrud C. Benefits of Individualized Feedback in Internet-Based Interventions for Depression: A Randomized Controlled Trial. <i>Psychotherapy &amp; Psychosomatics</i> . 2018;87(1):32-45.	E2

## EVIDENCE TABLES

### DATA ABSTRACTION OF INCLUDED PRIMARY STUDIES

#### Data Abstraction: Patient, Provider and Treatment Characteristics

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
Amble 2014 Norway N=259	NR (study ran for 2 years)	Psychiatric clinic (2 inpatient, 4 outpatient: 1 of which was a substance abuse clinic)	Various affective disorders (47%), anxiety disorders (33%)	35.8 yrs 31% male NR	45 licensed therapists	Cognitive-behavioral, psychodynamic, and eclectic orientations
Anker 2009 Norway N=410	6 months	Community family counseling clinic (outpatient)	Couples therapy: typical relationship problems such as communication difficulties, jealousy, or infidelity, <i>etc</i>	37.83 yrs 50% male 100% white	10 licensed therapists: 4 psychologists, 5 social workers, 1 psychiatric nurse	Eclectic orientation, using a variety of approaches: solution focused, narrative, cognitive behavioral, humanistic, and systemic
Brattland 2018 Norway N=170	NR (study ran for 4 years)	Hospital-based mental health clinic (outpatient)	Affective (30.1%), anxiety (30.1%), hyperkinetic (10.2%), personality (8.7%), and other disorders (9.7%)	34 yrs 37% male Race NR	20 therapists: 11 clinical psychologists, 6 psychiatrists, 3 other	Psychodynamic, humanistic/existential, and cognitive therapy models
Brodey 2005 USA N=1374	6 wks	Managed behavioral health organization	40% depression, 15% anxiety	27% male 87.5% white	NR	NR
Chamberlin 2016 USA N=92	NR	Local therapists	NR	42.6 yrs 9% male 71% white	92 therapists (licensed or pre-licensed): counselors, psychologists, social workers, and trainees	NR

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
Cheyne 2001 Scotland N=42	6 months	Alcohol counselling service	Referred for alcohol counselling	NR	7 full-time or volunteer staff	CBT and social learning theory
Davidson 2017 Denmark N=159	NR (study ran 10-14 months)	Outpatient psychotherapy center	Bulimia nervosa (45.9%), binge eating disorder (18.2%), or eating disorders not otherwise specified (35.8%)	26.9 yrs 22% male Race NR	15 therapists: 6 licensed social workers, 3 licensed psychologists, 4 psychiatrists/physicians in training, 2 licensed physiotherapists	20-25 weekly group therapy sessions plus as needed therapy sessions with physician, dietician, physiotherapist, and social worker
Davidson 2017 Scotland N=129	NR (163 days S-Sup vs 155 days MEMOS)	Routine mental health and general medical services	63.2% anxiety/stress, 62.4% depression, 26.4% eating disorders	42.4 yrs 38.4% male 85.6% white	NR	NR
De Jong 2012 Netherlands N=544	NR (up to 1 year)	2 mental healthcare institutions	Mood (23%), anxiety (19%), adjustment (22%), personality (8%)	36.8 yrs 39% male Race NR	57 licensed therapists: psychologists (49%), psychiatric nurses (39%), social workers (7%), or other mental healthcare professionals (5%)	Cognitive behavioral therapy, interpersonal therapy, brief solution focused therapy, and counseling
De Jong 2014 Netherlands N=604	NR	Mental health care institutions or private practices	Mood (27%), anxiety (10%), adjustment (18%), personality (39%)	38.2 yrs 22% male Race NR	110 therapists: psychologists (76%), psychiatrists (15%)	Cognitive behavioral therapy (27%), client-centered therapy (24%), and psychodynamic therapy (14%) were most frequent
Delgado 2018 England N=2,233	NR (up to 1 year)	8 National Health Service Primary Care Sites	35% primary affective disorder (major depression episode or recurrent depression), 14% mixed anxiety and depression disorder, 15% generalized anxiety disorder, and 6%	40.8 yrs 16% male 84% white	79 therapists	By therapist: 62% delivered high-intensity CBT, 30% delivered low-intensity CBT, and 8% delivered counselling for depression.

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
			posttraumatic stress disorder			
Errazuriz 2018 Chile N=547	NR (study ran for 3 years)	Outpatient mental health center	73.5% depressive disorders, 6% bipolar, 1.2% adjustment, 1.2% dysthymic	41 yrs 25% male NR (95% Latino)	28 therapists with professional degree in psychology	Therapist theoretical orientation: systemic, cognitive, psychodynamic, behavioral, and humanistic
Gibbons 2015 USA N=100	NR	Community mental health center	MDD (43%), PTSD (21%), depressive disorder not otherwise specified (10%), adjustment disorder (9%)	39.8 yrs 29% male 6% white (78% AA)	18 master's-level clinicians + 2 doctoral-level clinicians	NR
Guo 2015 China N=120	24 wks	Outpatient department of university-affiliated teaching hospital	Non-psychotic major depression	41.1 yrs 23% male Race NR	NR	Paroxetine (20-60mg/day) or mirtazapine (15-45mg/day)
Hansson 2013 Sweden N=374	NR (study ran for 1 year)	2 general psychiatry outpatient clinics	Depression (32%), bipolar disorder (8%), anxiety syndrome (25%), personality disorder (12%)	39 yrs 27% male Race NR	56 therapists: psychiatrists, qualified mental hospital nurses and nurses' assistants, clinical psychologists, social workers, physiotherapists, and occupational therapists	NR
Hawkins 2004 USA N=201	NR	Outpatient, hospital-based psychotherapy clinic	Mood (74%) and anxiety (21%) disorders were most common	30.8 yrs 32% male 94% white	3 licensed psychologists, 2 licensed social workers	CBT, interpersonal, humanistic
Kellybrew-Miller 2014 USA N=162	NR (study ran for 2 years)	2 outpatient Community Mental Health Centers	Mood (54.9%), anxiety (24.8%), psychotic (0.7%), adjustment (7.8%), substance related (6.5%), and other (5.2%) disorders	36.58 yrs 38.3% male 64.8% white	9 therapists: 1 PhD, 2 Licensed Psychological Examiners-Independent, 3 Licensed Professional Counselors, 2 social workers, and 1 doctoral intern	CBT, and/or client-centered. Therapy was provided alone or in conjunction with medication management.

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
Kendrick 2017 England N=47	26 wks	9 general practices	Newly diagnosed depression	44 yrs 38% male 98% white	General practitioners and practice nurses (# NR)	NR
Lambert 2001 USA N=609	NR	University counseling center	27% mood disorder, 14% adjustment disorder, 9% anxiety disorder, 5% somatoform disorder	22.2 yrs 30% male 88% white	31 counseling center staff: 16 PhD-level psychologist, 15 doctoral students	Cognitive behavioral, psychodynamic, humanistic, behavioral
Lutz 2015 Germany N=349	NR	Private practices in German health insurance system	39% MDD, 9.2% dysthymic disorder, 20.1% adjustment disorder, 2% eating disorder, 8.6% other	44.8 yrs 35.5% male	44 therapists	CBT, psychodynamic, psychoanalysis
McClintock 2017 USA N=79	5 weeks, 9 month study period	Midwestern university	Depression (39% mild, 34% moderate depression, and 26% severe)	19.3 yrs 17.7% male 81% white	6 therapists: doctoral students in clinical psychology	Five 50-min weekly individual treatment sessions: CBT, integrative/eclectic, humanistic
Murphy 2012 Ireland N=110	NR	Irish university counselling service	Anxiety (29.1%), depression (19.1%), "other" (22.7%)	24 yrs 41.8% male Race NR	8 master's-level counsellors (psychology, psychotherapy, social work, family therapy)	Constructivist, cognitive-behavioral therapy, psychodynamic, and/or integrative approaches
Priebe 2007 6 European Countries N=507	1 yr.	Multi-disciplinary comprehensive care programs for people with severe and enduring mental illness	Schizophrenia or related disorder	42.2 yrs 66.2% male Race NR	Professional qualification in mental health or minimum of 1 yr professional experience in outpatient setting: psychiatric nurse, social worker, psychiatrist, or psychologist	NR
Probst 2013 Germany N=43		Psychosomatics Hospital Department	76.7% depressive disorders, 58.1% somatoform disorders, 20.9% anxiety disorders	45.3 yrs 44.2% male Race NR	17 therapists: psychologist, physicians, nurses	In-patient individual and group psychotherapy, relaxation and mindfulness training, physical activity therapy, creative therapy

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
Probst 2014 Germany N=209		Psychosomatics Hospital Department	64.6% depressive disorders, 58.9% somatoform disorders, 26.3% anxiety disorders	48.3 yrs 40.2% male Race NR	17 therapists: psychologist, physicians, nurses	In-patient individual and group psychotherapy, relaxation and mindfulness training, physical activity therapy, creative therapy
Puschner 2009 Germany N=294	8 wk. average LOS	Psychiatric inpatient University hospital	Schizophrenia or related disorder (29%), affective disorders (56%), neurotic, stress-related, and somatoform disorders (15%)	41.2 yrs 52.8% male Race NR	30 resident physicians, 8 special registrars, and 5 psychotherapists	Daily physician contact, other clinician contact, psychoeducation group sessions, social worker contact, occupational therapy, physical exercise, art/music therapy, pharmacological treatment options available as required
Reese 2009 USA N=148	NR (study lasted 1 academic year ~9 months)	Private university counseling center or graduate training clinic	New clients, not having received previous services	26.4 yrs 29.8% male 79.0% white	27 therapists: 5 professional staff and 22 practicum students (enrolled either in a master's counseling, clinical psychology, or marriage and family therapy program)	Individual therapy: marriage and family therapy
Reese 2010 USA N=92	NR (study ran for 1 yr.)	Graduate training clinic for marriage and family therapy	Couples therapy for relationship distress, individual distress affecting the relationship, and relationship enhancement	30.2 yrs 50% male 74% white	13 2 <sup>nd</sup> -year graduate student therapists	Couples therapy with no particular treatment format or protocol. A variety of approaches used including solution-focused, narrative/postmodern, and strategic therapy.
Rise 2016 Norway N=75	1 yr.	Outpatient unit in mental health hospital	NR	29.9 yrs 37.3% male Race NR	25 therapists: 16 psychologists, 5 psychiatric nurses	NR

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
Schmidt 2006 UK N=61	6 months	Specialist eating disorders unit	Bulimia nervosa or eating disorder not otherwise specified	28.8 yrs Sex NR Race NR	Experienced in eating disorders and included psychologists, psychiatrists, nurses, occupational therapists	10 individual weekly sessions of CBT guided self-care and 4 booster/follow-up sessions
Schuman 2015 USA N=263	NR (study ran for 16 months)	Army Substance Abuse Outpatient Treatment Program (ASAP)	Active duty soldiers with some type of alcohol or drug related misconduct	27.13 yrs 88% male 57% white	10 therapists: NR	5 sessions of group therapy: CBT, interpersonal process, psychodynamic, solution-focused
She 2018 China N=310	NR	University counseling center	Mainly "interpersonal and family problems, emotional problems like depression and anxiety, self-injury, trauma..."	21.4 yrs 21.5% male Race NR	43 therapists: 6 staff therapists, 18 part-time and 19 practicum students	Humanistic, CBT, and psychoanalytic therapies
Simon 2012 USA N=141	NR	Hospital-based outpatient psychotherapy clinic	Mood (64%), anxiety (30%) disorders most frequent, substance abuse (5%)	36.1 yrs 34.86% male 92.7% white	4 licensed psychologists and 2 licensed social workers	Individual psychotherapy (CBT, interpersonal, humanistic)
Simon 2013 USA N=160	NR (mean 11 days of treatment)	Inpatient clinic for women with eating disorders	Anorexia nervosa, bulimia nervosa, or eating disorders not otherwise specified	25.5 yrs 0% male 92.5% white	6 licensed psychologists, 3 marriage and family therapists, 7 licensed social workers	Individual and group psychotherapy, family counseling, nutrition counseling
Slade 2006 UK N=160	7 months	Community mental health centers	Schizophrenia (38%), affective disorder (27%), bipolar affective disorder (11%), other psychoses (13%), personality disorder (7%)	41.2 yrs 49% male 76% white	NR	NR

Author Year Country N	Follow-up	Setting	Patient Main Diagnoses	Patient Characteristics: Age (mean) Sex (% male) Race (% white)	Types of Providers	Treatments Provided
Slone 2015 USA N=84	NR (study lasted 1 academic semester)	University counseling center	All but 2 participants were new group therapy clients, although 58.3% endorsed attending individual therapy in the past. Diagnoses NR	21.5 yrs 35.7 male 84.5% white	20 therapists: graduate students, predoctoral interns, and doctoral-level staff psychologists	Group therapy: integrative (65.0%), interpersonal process therapy (20.0%), and cognitive behavioral therapy (15.0%) orientations
Trudeau 2000 USA N=127	4 months	Rural community health center	67% single episode Axis I disorder (mild depression, generalized anxiety, adjustment disorder)	33.9 yrs 28% male 97% white	11 therapists: 7 social workers, 3 mental health counselors, 1 psychiatric nurse	NR
Van Oenen 2016 Netherlands N=287	2 yrs	Emergency outpatient crisis clinic for severe psychiatric and psychosocial problems	Adjustment disorder (21%), depression (19%) and psychosis (15%).	38 yrs 47% male	6 psychiatrists, 10 social psychiatric nurses, 2 psychologists, and a family and marital therapist	NR

### Data Abstraction: Intervention Characteristics

Author Year	Comparator	PROMS Tool	PROMS Timing/ Frequency	Feedback Mechanisms to Therapist and Patient	Discussion of Feedback Between Patient and Therapist
Amble 2014	TAU (no feedback)	OQ-45 (Norwegian version)	OQ-45 immediately before every session	OQ-Analyst software (provides the therapist and patient with a report showing the session-by-session progress)	Therapists instructed to consider the feedback report, show it to the patient every session, and discuss the report when useful or necessary
Anker 2009	TAU (no feedback)	PCOMS ORS/SRS	ORS immediately before and SRS after every session	Therapist scores paper test (ORS, SRS) and a web-based program calculates expected treatment response (ETR): therapists and patients had ongoing access to ORS/SRS and ETR	Therapists advised to discuss feedback with couples if one or both individuals of the couple were not on track or were at risk



Author Year	Comparator	PROMS Tool	PROMS Timing/ Frequency	Feedback Mechanisms to Therapist and Patient	Discussion of Feedback Between Patient and Therapist
Brattland 2018	TAU (no feedback)	PCOMS ORS/SRS	ORS during the beginning and SRS at the end of every session	A web-based scoring program (www.fit-outcomes.com) automatically scored responses and delivered to therapist.	Therapists were trained to share and discuss information gained through the ORS and the SRS with the client.
Brodey 2005	TAU (no feedback)	SCL-11	At baseline and at 6 wks	Clinicians received summary of feedback responses	Unclear
Chamberlin 2016	TAU (no feedback)	PCOMS ORS/SRS	ORS during the beginning and SRS at the end of every session	Paper chart that client files out and the therapist scores	It is unknown specifically what any of the therapists did in any session as a response to the feedback they gathered.
Cheyne 2001	TAU (no feedback)	SEIQoL	At start of first and at the end of last counselling session	Patient completed visual disc tool	Unclear
Davidson 2017	TAU (no feedback)	PCOMS ORS/SRS	ORS before and SRS after every session	A web-based scoring program (www.fit-outcomes.com) automatically scored responses and delivered to therapist.	Therapists encouraged to discuss feedback with patients in session
Davidson 2017	Standard supervision (feedback to therapist only on monthly basis)	CORE-10	CORE-10 completed every session, feedback to therapists monthly	Feedback to therapist and supervisor monthly and discussion with supervisor	Unclear
De Jong 2012	TAU (no feedback)	OQ-45 (Dutch version)	Prior to each of the 1st 5 sessions, subsequently every 5th session for 1 yr.	The therapist received e-mails that contained a progress report after sessions 1, 3, 5, and subsequently every fifth session. Patients did not receive scores.	NR
De Jong 2014	Feedback to therapist (FbT); TAU (no feedback)	OQ-45 (Dutch version)	Before each therapy session, though not more than once a week	Therapists and patients could access the feedback either through email or by logging into the therapist/patient portal of the online feedback system.	Therapists were given full autonomy on discussing the feedback messages with the patient.
Delgadillo 2018	TAU (no feedback)	PHQ-9 and GAD-7	NR	Electronic clinical record system called Patient Case Management Information System with expected treatment response curves and automated risk signals	Therapists trained to review outcome feedback graphs with patients at the start of every session, discuss signals with the patient to identify obstacles to improvement, and discuss not-on-track cases with a clinical supervisor, and use

Author Year	Comparator	PROMS Tool	PROMS Timing/ Frequency	Feedback Mechanisms to Therapist and Patient	Discussion of Feedback Between Patient and Therapist
					outcome feedback graphs to assess therapeutic plan
Errazuriz 2018	TAU (no feedback), unprocessed OQ feedback, WAI feedback, or OQ+WAI feedback	OQ-30.2 WAI	Weekly before next session	Weekly written processed feedback provided to therapists before next session	Therapists decide how to use feedback
Gibbons 2015	TAU (no feedback)	BASIS-24 CCFS CCFQ	Immediately prior to each session	One-page printed feedback report to clinicians, CCFQ given at next session for patients not on track	Therapists could use reports as desired: 66% reviewed BASIS-24 reports with clients, 83.3% reviewed CCFQ reports with clients
Guo 2015	TAU	QIDS-SR	Every 2 weeks	NR	Unclear
Hansson 2013	TAU (no feedback)	OQ-45	Prior to each treatment session, but not more than once a week.	Feedback to therapist via web application as soon as the questionnaire scanned by the reception staff. Treatment feedback process diagram given to each patient by the therapist.	NR
Hawkins 2004	Feedback to therapist (FbT); TAU (no feedback)	OQ-45	Prior to each treatment session	A graph depicting all prior assessments on the OQ-45 and a brief written message describing a patient's progress were given as feedback to therapists and patients.	Therapists required to verbally introduce the feedback information and provide a format for patients to discuss their treatment progress.
Kellybrew-Miller 2014	TAU (no feedback)	PCOMS ORS/SRS	ORS before and SRS after every session	Paper ORS scored and charted and discussed with the client.	Clinicians had general guidelines provided for discussing ORS results with clients during each session
Kendrick 2017	TAU (no feedback)	PHQ-9 PSYCHLOPS DTAS	At baseline survey and at follow-up appts	Patient took paper copies of questionnaires to follow-up appt with GP	Feedback of scores left to participating practitioners. Therapists asked to take PROMs into account at consultation
Lambert 2001	TAU (no feedback)	OQ-45	Weekly before each session	Feedback given to therapist after OQ administered	Unclear
Lutz 2015	Traditional case report model	BIS IIP	Intermittently after sessions depending	Feedback to therapists within a few days of assessment with decision rules about patient's progress	Unclear

Author Year	Comparator	PROMS Tool	PROMS Timing/ Frequency	Feedback Mechanisms to Therapist and Patient	Discussion of Feedback Between Patient and Therapist
			on treatment approach		
McClintock 2017	TAU (no feedback)	CFF (original tool)	After each session	Common factors feedback (CFF) system (ratings were entered into an Excel spreadsheet) that graphed results and provided color-coded feedback to therapists and patients.	Therapists were instructed to review graphs with clients at the beginning of Sessions 2–5. Discussions were designed to be collaborative between client and therapist.
Murphy 2012	TAU (no feedback)	PCOMS ORS	Immediately prior to each session	ASIST software scores ORS and immediately provides feedback to therapist/client	Therapists given freedom as to how they incorporate feedback in session, guidance provided on ORS
Priebe 2007	TAU (no feedback)	DIALOG	Every 2 months during treatment session	Computer-mediated response and discussion of 11 domains to therapist/patient	Patients and clinicians discussed current and previous rating, reasons for change, and support needed
Probst 2013	TAU (no feedback)	OQ-45 ASC	Weekly	OQ-Analyst feedback reports printed and given to therapists	Therapists could choose to discuss feedback with patient
Probst 2014	TAU (no feedback)	OQ-45 ASC	Weekly	OQ-Analyst feedback reports printed and given to therapists	Therapists could choose to discuss feedback with patient
Puschner 2009	TAU (no feedback)	EB-45 (German version of OQ-45)	At admission, every week of inpatient stay, and at discharge	Computer-based tool, feedback to patient and clinician given 1 or 2 days after filling in EB-45	Feedback discussed between patient and therapist; feedback included change in score, status, and treatment recommendation to discuss
Reese 2009	TAU (no feedback)	PCOMS ORS/SRS	ORS before and SRS after every session	Therapists scored paper test	Discretion is given to the therapist to decide how to best integrate the scores within a given session.
Reese 2010	TAU (no feedback)	PCOMS ORS/SRS	ORS at beginning of every session, SRS toward the end of each session	Therapist scored ORS and charted scores and showed progress to patients	Therapists used data in sessions following guidance manual
Rise 2016	TAU (no feedback)	PCOMS ORS/SRS	Baseline (timing NR) and at 6 and 12 months after treatment started	ORS scored and curve plotted	Therapists trained to use feedback curve together with patients to evaluate treatment progress
Schmidt 2006	CBT guided self-care with no feedback	TREAT-EAT SEED	1/2 way through treatment (BASIC ID), every 2 weeks	BASIC ID form completed collaboratively by patient and therapist,	Patients and therapists reviewed forms and noted remaining problems and discussed changes and treatment

Author Year	Comparator	PROMS Tool	PROMS Timing/Frequency	Feedback Mechanisms to Therapist and Patient	Discussion of Feedback Between Patient and Therapist
		HADS BASIC ID	(SEED, TREAT-EAT, HADS)	computerized feedback from TREAT-EAT, SEED, and HADS	
Schuman 2015	TAU (no feedback)	PCOMS ORS/Signal alarm system	ORS beginning of every session	A software program was used to collect data and provide feedback. Therapists were given progress graphs at the end of each session	Unclear. Therapists asked not to disclose whether patients were in feedback or TAU
She 2018	TAU (no feedback)	PCOMS ORS/SRS	Before (ORS) and after (SRS) every session	Feedback given to therapists after each session by administrators	Therapists encouraged to discuss feedback with patients in session
Simon 2012	TAU (no feedback)	OQ-45 and ASC	Immediately prior to each session, ASC given if OQ-45 scored as "not-on-track"	OQ-Analyst software provided session-b-session progress reports with alerts to clinicians, some of which prompted patient to take ASC and provides CST	Therapists instructed to present OQ-45 progress information to patients during each treatment session
Simon 2013	TAU (no feedback)	OQ-45 and ASC	OQ-45 weekly, ASC given prior to next treatment session if OQ-45 scored as "not-on-track"	OQ-Analyst software provided session-b-session progress reports with alerts to clinicians, some of which prompted patient to take ASC and provides CST	Therapists instructed to discuss feedback with patient when deemed appropriate and use ASC and CST as they saw fit
Slade 2006	TAU (no feedback)	CANSAS-S MANSA	Baseline and follow-up of study	Staff and patients completed monthly postal questionnaires and each were provided with their specific feedback	Written care plans audited at baseline and follow-up
Slone 2015	TAU (no feedback)	PCOMS ORS/GSRS	ORS beginning and GSRS at the end of every session	Clients plotted their total scores on a progress graph during screenings. Research personnel provided a "signal system" to all group coleaders in the feedback condition that categorized their group member's progress according to manualized procedures.	Leaders (therapists) asked group members (patients) to share an update on their progress based on ORS Total scores during a check-in procedure as well as to share any needs they had from the group to help them improve.
Trudeau 2000	OQ-45 completed with no feedback given, no OQ-45	OQ-45	At each session	Clinicians provided feedback following each session	Unclear
van Oenen 2016	TAU (no feedback)	PCOMS ORS/SRS	ORS immediately prior to each session, SRS at the end of each session	Patients immediately received feedback on clipboard and brought to therapist	Feedback discussed by therapist and patient together

**Data Abstraction: Outcomes**

<b>Author Year</b>	<b>Clinically relevant Change in Mental Health Symptom Scores</b>	<b>Provider Attitudes</b>	<b>Therapeutic Alliance</b>	<b>Other outcomes reported</b>
Amble 2014	% Recovered (final OQ-45 score in non-clinical range): 22.9% Fb vs 13.9% NFb  % Improved (final OQ-45 score improved by 16 points but still clinical range): 18.8% Fb vs 18.3% NFb	NR	NR	Effect size for OQ-45 score, Number of sessions, marriage intact
Anker 2009	% responding ("reliable change" or "clinically significant change" by ORS): (Fb vs NFb): 66.7% vs 39.1% (P=0.01)	Attitude survey on continuous feedback: neutral (4 therapists) to positive (6 therapists) attitudes about continuous assessment at beginning of study	NR	Effect size for ORS score, LW marital adjustment test
Brattland 2018	Improved BASIS-32 score (Reliable Change Index – Improved Difference): 58.2% Fb vs 36.2% TAU	NR	NR	Effect size for BASIS-32, number of sessions, mean pre-post-treatment scores
Brodey 2005	NR	Yes, 47% feedback helped to monitor changes in patient, 58% summary information was useful	NR	Mean symptom score change
Chamberlin 2016	% reporting clinically significant change: 46.63% Fb vs 27.72% (p=0.059) % reporting reliable change: 64.42% Fb vs 40.43% TAU (p=0.021)	Evidence Based Practice Attitude Scale: no significant differences in attitudes before or after study, 72% of therapists likely to adopt measures	3rd session alliance not related to final outcome ratings (p=0.319)	None
Cheyne 2001	NR	NR	NR	Change in favorable outcome, change in SEIQoL cues
Davidson 2017	NR	Attitude survey after study: "All therapists agreed that it would improve their clinical work..."	NR	Rate of attendance, session attendance, eating disorder examination, Sheehan disability scale, WHO-five well-being index, symptom checklist
Davidson 2017	Reliable clinical change: 65.7% S-Sup vs 50% MEMOS (OR 0.52, 0.17 to 1.6)	NR	NR	Change in CORE, CGI, number of sessions, use of CST

Author Year	Clinically relevant Change in Mental Health Symptom Scores	Provider Attitudes	Therapeutic Alliance	Other outcomes reported
De Jong 2012	NR	Perceived validity: mean 21.2, commitment to use feedback: mean 23.9 (unclear scales)	NR	Multi-level models on effect of feedback and moderating therapist factors
De Jong 2014	% Recovered (per OQ-45): 43% FbTP vs 38% FbT vs 37% TAU % Improved (per OQ-45): 13% FbTP vs 8% FbT vs 10% TAU	NR	NR	Effect size for OQ-45 score, number of sessions
Delgadillo 2018	Adjusted odds ratio for reliable improvement: 1.21 (0.85-1.171) Adjusted odds ratio for reliable deterioration: 1.07 (0.86-1.32)	NR	NR	Mean difference in post-treatment PHQ-9, effect size for PHQ-9, effect size for GAD-7, effect size for WSAS, number of treatment sessions
Errazuriz 2018	Clinically significant change (per OQ): No sig. differences: 21% TAU, vs 21% OQ only vs 23% WAI only vs 30% OQ+WAI vs 20% OQ report	"Most" therapists had positive impression of feedback.	NR	Time and potential moderator effects
Gibbons 2015	Clinically significant improvement (Fb vs TAU): 36% vs 13%, $\chi^2(1) = 6.13, p = 0.013$	High overall satisfaction with feedback system (mean 5.0 (7-point scale))	NR	Patient satisfaction
Guo 2015	Time to treatment response ( $p < 0.001$ ) or remission ( $p < 0.001$ ) was faster in the MBC group	NR	NR	Number of visits, number of treatment adjustments, change in symptom ratings, adverse events
Hansson 2013	NR	NR	NR	Mean difference in change for OQ-45 score, Effect size for OQ-45 score, number of sessions
Hawkins 2004	% NOT reporting clinically significant change (per OQ45): 23% FbTP vs 10% FbT vs 10% TAU % NOT reporting reliable change (per OQ45): 33% FbTP vs 30% FbT vs 22% TAU	NR	NR	Mean difference in change for OQ-45 score, Effect size for OQ-45 score, number of sessions
Kellybrew-Miller 2014	% reporting clinically significant change in ORS: 33% Fb vs 25% TAU ( $\chi^2 = 0.64, p > 0.05$ ) % reporting reliable change in	Attitude toward client feedback: "overall... reported use of client feedback measures as positive"	NR	SOS-10, number of sessions/attendance frequency, client retention

Author Year	Clinically relevant Change in Mental Health Symptom Scores	Provider Attitudes	Therapeutic Alliance	Other outcomes reported
	ORS: 53% Fb vs 38% TAU (Chi2= 2.34, p>0.05)			
Kendrick 2017	NR	Yes, "Overall considered use of PROMS to be feasible"	NR	Mean score depressive symptoms, social functioning, quality of life, ease of use
Lambert 2001	Reliable or clinically significant change in not-on-track patients (Fb vs TAU): 26% vs 16%, chi2(2,66)= 4.257, p>0.05	Yes, 9/26 reported almost always or frequently finding feedback helpful	NR	Pre-post OQ change, timing of feedback, number of sessions
Lutz 2015	NR	Yes, 16.3% satisfied/one modification, 30.5% satisfied/several modifications	Yes, HAQ	Pre-post BSI, IIP change, effect size by patient and therapist attitude, predictors of treatment length
McClintock 2017	NR	Therapist satisfaction: mean 4.17 (scale 1-5) Usefulness of CFF: mean 4.0 (scale 1-5)	Working alliance inventory short-form mean 43.6 at first session	Random effects coefficients for BDI-2, SOS-10, WAI-SR, BLRI-E, OEQ
Murphy 2012	% responding ("reliable change" by ORS): (Fb vs NFb) : 61.0% vs 47.1% (P>0.05)	NR	NR	Mean change pre-post treatment ORS score, % responding by presenting issue
Priebe 2007	NR	NR	NR	Symptom changes (PANSS), quality of life, unmet needs, satisfaction with treatment
Probst 2013	Reliably improved (i.e. improved by at least 21 OQ-45 points) (Fb vs TAU): 13% vs 0%, p=NR	NR	Yes, ASC	Multilevel model of OQ-45
Probst 2014	NR	NR	Yes, ASC	Multilevel model of OQ-45
Puschner 2009	NR	NR	NR	Hierarchical linear modeling effect of outcome management, client sociodemographic and service receipt inventory (CSSRI), global assessment of functioning (GAF), patient attitudes toward feedback
Reese 2009	*specifically reported reliable change instead of significant change Study 1 Fb vs TAU: 80% vs 54.2%, chi2 (1,74)= 5.32, p<0.05	NR	Mean SRS: study 1: 35.94, study 2: 37.09	Mean ORS score improvement, effect size of ORS score, number of sessions, time to reliable change

Author Year	Clinically relevant Change in Mental Health Symptom Scores	Provider Attitudes	Therapeutic Alliance	Other outcomes reported
	Study 2 fb vs TAU: 66.67% vs 41.40%, chi2 (1,74)= 4.60, p<0.05			
Reese 2010	NR	NR	NR	Pre-post ORS scores; multilevel models with effects of feedback, therapist, client, <i>etc</i>
Rise 2016	NR	NR	Yes, SRS	Change in BASIS-32, PAM, TAS, SF-12, F, SRS, ORS
Schmidt 2006	NR	NR	NR	Pre-post SEED bulimic symptoms, linear mixed model, drop out
Schuman 2015	Clinically Significant Change (Fb vs TAU): 28.47% vs 15.08%, chi2 (1, 263)= 28.06, p<0.001	NR	NR	Effect size for ORS, number of sessions
She 2018	Clinically Significant (Fb vs TAU): 58.42% vs 40.5%, p<0.01	NR	Yes, change in SRS and effect of feedback on SRS	Pre-post ORS scores; multilevel models with effects of feedback, therapist, client, <i>etc</i>
Simon 2012	% of not-on-track patients meeting clinically significant change on OQ-45: 11% feedback vs 6.1% TAU (P=0.1)	NR	NR	Pre-post treatment scores and effect sizes by therapist
Simon 2013	% responding (met OQ-45 clinically significant change criteria): 52.95% feedback vs 28.6% TAU (P=0.01)	NR	NR	Pre-post treatment OQ-45 scores, end of treatment OQ-45 (feedback vs no feedback), BMI
Slade 2006	NR	Yes, see Table 5	Yes, HAS-S, HAS-P	Adverse events, unmet needs, quality of life, follow-up BPRS
Slone 2015	Clinically Significant Change (Fb vs TAU): 41.9% vs 29.3%, chi2 (3, 84)= 7.6, p=0.05	NR	NR	Means, standard deviations, and effect sizes for ORS; number of sessions
Trudeau 2000	NR	NR	Yes, OQ-AM	Mean improvement in symptom score OQ-45, RAND health survey, Work/School Questionnaire, service utilization, client level of functioning
van Oenen 2016	NR	Therapists attitudes "very positive on average"	NR	GSI, OQ-45, BSI, ORS



Abbreviations: AA: Alcoholics Anonymous; ASC: Assessment for Signal Cases; BASIC ID: Behavior, Affect, Sensation, Imagery, Cognition, Interpersonal relationships and Drugs; BASIS: Behavioral and Symptom Identification Scale; BDI-2: Beck Depression Inventory-2; BIS: Barratt Impulsiveness Scale; BLRI-E: Barrett-Lennard Relationship Inventory; BPRS: Brief Psychiatric Rating Scale; BSI: Brief Symptom Inventory; CANSAS-S: Camberwell Assessment of Needs Short Appraisal Schedule; CBT: Cognitive Behavioral Therapy; CCFS: Community Clinician Feedback System; CCFQ: Community Clinician Feedback Questionnaire; CFF: Common factors feedback; CGI: Clinical Global Impression; CORE: Clinical Outcomes for Routine Evaluation; CSQ: Client Satisfaction Questionnaire-8; CSSRI: Client Sociodemographic and Service Receipt Inventory; CST: Clinical Support Tools; DTAS: Distress Thermometer Analog Scale; EB-45: Ergebnisfragebogen-45 (German version of the Outcome Questionnaire); ETR: Expected treatment response; Fb: feedback; FbT: Feedback to therapist; FbTP: feedback to therapist and patient; GAD-7: Generalized Anxiety Disorder-7; GAF: Global Assessment of Functioning; GP: General practitioner; GSI: Global Severity Index; GSRS: Group Session Rating Scale; HADS: Hospital Anxiety and Depression Scale; HAS-P: Helping Alliance Scale-patient version; HAS-S: Helping Alliance Scale-staff version; HAQ: Penn Helping Alliance Questionnaire; IIP: Inventory of Interpersonal Problems; LOS: Length of stay; LW: Locke-Wallace Marital Adjustment Test; MDD: Major depressive disorder; MANSA: Manchester Short Assessment of Quality of Life; MEMOS: Measuring and Monitoring Clinical Outcomes in Supervision; NFb: no feedback; NR: Not reported; OEQ: Outcome Expectations Questionnaire; OQ: Outcome Questionnaire; OQ-AM: Outcomes Questionnaire Alliance and Motivation Questionnaire; ORS: Outcome Rating Scale; PANSS: Positive and Negative Syndrome Scale; PAM: Patient Activation Measure; PCOMS: Partners for Change Outcome Management System; PHQ-9: Patient Health Questionnaire-9; PSYCHLOPS: Psychological Outcome Profiles; PTSD: Post-traumatic stress disorder; QIDS-SR: The Self-Rated Quick Inventory of Depressive Symptomatology; SCL-11: Symptom Checklist-11; SEED: Short Evaluation of Eating Disorders; SEIQoL: Schedule for the Evaluation of Individual Quality of Life; SF-12: The Short Form Health Survey; SOS-10: Schwartz Outcome Scale-10; SRS: Session Rating Scale; S-Sup: Information only given to the therapist; TAS: Treatment Alliance Scale; TAU: Treatment as usual; WAI: Working Alliance Inventory; WHO: World Health Organization; WSAS: Work and Social Adjustment Scale;

**QUALITY ASSESSMENT OF INCLUDED PRIMARY STUDIES**

<b>Author Year</b>	<b>Adequate randomization?</b>	<b>Balanced baseline characteristics?</b>	<b>Any control for confounding variables?</b>	<b>Fidelity/adherence reported?</b>
Amble 2014	Unclear	Unclear	No	No
Anker 2009	Unclear - forms shuffled then coin flip	Yes - reported no differences in baseline ORS scores, age, years as couple	Yes - multivariate model to predict ORS score	No
Brattland 2018	Yes - off-site web-based randomization program	Yes - reported no differences in demographics, baseline ORS scores, or ICD-10 diagnoses	Yes - multilevel model with effects of moderating variables	Yes
Brodey 2005	Unclear	Unclear - reported differences in age and relationship to insured, but mentioned no other differences in "subject characteristics"	Yes - adjusted for age and relationship to insured	No
Chamberlin 2016	Unclear	Unclear- no demographic information was captured	No	No
Cheyne 2001	Yes - outside randomization scheme	Yes - reported no differences on age, sex, postcode, drinking status, health status, personal and social functioning, employment, and others	No	No
Davidson 2017	Yes - centrally located unit, computer-generated sequence	Unclear - table 1 shows similar values, but no statistical testing done	No	Yes
Davidson 2017	Unclear	No - baseline differences in living arrangement, main problem, use of psychotropic medication, and risk of self-harm	Yes - models adjusted for baseline differences	No
De Jong 2012	Unclear	Yes - reported no differences except in marital status	Yes - controlled for moderating therapist factors (only for rate of change outcome)	No
De Jong 2014	Yes - online system randomized patients	No - differences in baseline OQ-45 score	Yes - multilevel model including feedback effects, therapy lengths, and whether patients were on track	Yes
Delgadillo 2018	Yes - independent randomization using computer-generated sequence	Unclear - no statement of whether there were statistical significant differences, but look similar (Table 1)	Yes - multilevel modeling including baseline severity, number of sessions	No
Errazuriz 2018	Unclear	Yes - no differences in age, gender, income, education or severity	Yes - reported on effects of potential patient, therapist, and process moderators and the	No

Author Year	Adequate randomization?	Balanced baseline characteristics?	Any control for confounding variables? interactions between them (supplemental materials)	Fidelity/adherence reported?
Gibbons 2015	Yes - randomization using computer-generated sequence	Unclear - differences between experimental and control groups not reported	Yes - controlled for gender, age, racial group	Yes
Guo 2015	Yes - table of random numbers	No - differences in marital status and age	Yes - controlled for marital status, age, concomitant medications	Yes
Hansson 2013	Unclear	Yes - reported no significant differences at baseline	No	No
Hawkins 2004	Unclear	Yes - reported no significant differences at baseline	Yes - ANCOVA for effect of feedback	No
Kellybrew-Miller 2014	Unclear - Excel spreadsheet	No - differences in race and medication	Yes - repeated measures ANOVA for effect of feedback	Yes
Kendrick 2017	Yes – computer-generated sequence	No - differences in marital status, and depression, social functioning and anxiety scores	Yes - adjusted for baseline differences and clustering	No
Lambert 2001	Unclear	Yes - reported no significant differences on demographic variables or baseline OQ score	Yes - ANCOVA for effect of feedback, report on-track vs not-on-track patients	Yes
Lutz 2015	Unclear	Yes - reported no differences in demographic variables or outcomes	Yes - multilevel modeling for effect of feedback	No
McClintock 2017	Yes - table of random numbers	Yes - reported no significant differences on demographic variables	Yes - multilevel modeling for effect of feedback	Yes
Murphy 2012	Yes - online random number generator	Yes - reported no significant differences in age, ORS score, presenting issues, gender	No	No
Priebe 2007	Yes - computer-generated sequence	Yes - reported no significant differences at baseline	Yes - mixed effects model controlling for length of follow up, center, keyworker	No
Probst 2013	Unclear	Yes - reported no significant differences at baseline	Yes - multilevel modeling	No
Probst 2014	Unclear	Yes - reported no significant differences at baseline	Yes - multilevel modeling	No
Puschner 2009	Unclear	Unclear - table of characteristics but did not report on any differences	No	Yes

Author Year	Adequate randomization?	Balanced baseline characteristics?	Any control for confounding variables?	Fidelity/adherence reported?
Reese 2009	Unclear	Unclear - Report no differences in baseline ORS only	Yes - adjustment for therapist	No
Reese 2010	Unclear	Unclear	Yes - multilevel modeling	No
Rise 2016	Yes - computer-generated sequence	Unclear - table of characteristics but did not report on any differences	Yes - ANCOVA adjusted for baseline values	No
Schmidt 2006	Yes - random numbers table	No - differences in BMI and depression	Yes - linear mixed models adjusted for baseline values	No
Schuman 2015	Unclear	Yes - reported no differences in baseline ORS, gender, race, marital status	Yes - ANCOVA controlling for pretreatment function	No
She 2018	Unclear	Unclear	Yes - multilevel modeling	No
Simon 2012	Unclear	Unclear	Yes - ANCOVA with pretreatment scores	No
Simon 2013	Unclear	Yes - reported no significant differences at baseline	Yes - ANCOVA with pretreatment scores	No
Slade 2006	Yes - computer-generated sequence	Yes - reported no significant differences at baseline	Yes - ANCOVA with pretreatment scores	No
Slone 2015	Unclear	Unclear - reported no differences in baseline ORS only	Yes - multilevel modeling	No
Trudeau 2000	No - case number used for randomization	No - significant differences on mental health score	Yes - adjusted for baseline mental health score	No
van Oenen 2016	Yes - computer-generated sequence	Yes - reported no significant differences at baseline	Yes - MANCOVA with number of sessions and multilevel modeling	Yes

ANCOVA: analysis of covariance; ANOVA: analysis of variance; BMI: body mass index; CORE-OM: Clinical outcomes for Routine Evaluation-Outcome Measures; ICD-10: International Statistical Classification of Diseases and Related Health Problems-10; MANCOVA: multivariate analysis of covariance; OQ: Outcome Questionnaire; STIC: Systemic Therapy Inventory of Change Feedback.

## ONGOING STUDIES

PI Institution	Study Title Study Identifier	Population	Interventions	Outcomes	Estimated completion
William Pinsof, Ph.D.  The Family Institute at Northwestern University	Assessing Psychotherapy Outcome in Treatment as Usual Versus Treatment as Usual With the STIC Feedback System NCT02023736	Clients seeking psychotherapy treatment at 4 Chicago-area clinics.	Systemic Therapy Inventory of Change Feedback	Change in mental health symptoms at termination including some or all of the following: Beck Depression Inventory II, Beck Anxiety Inventory, Outcome Questionnaire 45, Short-form 36 Health Survey, Revised Dyadic Adjustment Scale, Family Assessment Device, Strengths-Difficulties Questionnaire.	August 2017
Ori Ganor and Lior Biran  Shalvata Mental Health Center	A Randomized Trial of Routine Computerized Outcome and Process Clinical Measures Monitoring in Mental Health Outpatient Services: Preparing for the Planned Public Mental Health Reform in Israel <a href="#">NCT02095457</a>	Patients undergoing intake to the Shalvata Mental Health Center clinic	Implementation of a Routine Outcome Monitoring System with frequent monitoring and feedback vs No feedback	Overall clinical well-being as measured by the CORE-OM rating scale, hospitalization rates	July 2017
<a href="#">Dr. J.A.C.J. Bastiaansen</a>  <a href="#">University Medical Center Groningen</a>	Self-monitoring and personalized feedback as a tool to boost depression treatment NTR5707	Patients receiving depression treatment	Experience sampling feedback via smartphone	Change in depression symptom severity as measured by the self-report Inventory of Depressive Symptomatology across  Change in psychosocial functioning by means of the Outcome Questionnaire and the extent to which individuals regain self-esteem and take control over their own lives by means of the Dutch Empowerment questionnaire	July 2018
<a href="#">Drs. A.M. Bovendeerd</a>  <a href="#">University of Groningen, Dimence</a>	Routine Process Monitoring, systematic patient feedback in the primary and specialized mental healthcare NTR5466	Patients receiving psychological treatment in the primary or specialized mental healthcare	Routine Process Monitoring + Treatment as usual	Outcome Questionnaire 45, Dutch Mental Health Continuum - Short Form, dropout, patient-satisfaction, treatment duration, treatment costs	July 2019

---

Margot Metz Trimbos-institute and GGz Breburg, Postbus, The Netherlands	Shared Decision Making in Mental Health Care Using Routine Outcome Monitoring as a Source of Information: A Cluster Randomized Trial TC5262	Dutch specialized mental health care teams	Shared Decision Making with Routine Outcome Measurement	Decisional conflict, patient adherence to treatment, clinical outcome, quality of life	June 2016
---	--	---	--	---	-----------

---

## PEER REVIEW

Comment #	Reviewer #	Comment	Author Response
<i>Are the objectives, scope, and methods for this review clearly described?</i>			
1	1	Yes	None
2	2	Yes	None
3	3	No - the objectives didn't seem to match with the key findings to me	<i>As per this and your comment below, we have revised the key message to better align with the objectives.</i>
4	4		
<i>Is there any indication of bias in our synthesis of the evidence?</i>			
5	1	Yes - See below	<i>Addressed below.</i>
6	2	No	None
7	3	No	None
8	4		
<i>Are there any published or unpublished studies that we may have overlooked?</i>			
9	1	Yes - See below	
10	2	Yes - The care management and collaborative care literature for depression, anxiety, and bipolar disorder might be worth considering, for example, studies of the Improving Mood-Promoting Access to Collaborative Treatment (IMPACT) such as doi:10.1001/jama.288.22.2836, or studies of Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT), such as doi:10.1001/jama.291.9.1081. These models are bundled interventions that include repeated use of PROMs, usually collected by nurse managers. Some of these models use algorithms to determine frequency of assessment with PROMs and/or to assist with prescribing and/or the need for modifications to the care plan. "Care management" and "collaborative care" might have been helpful search terms for identification of these models, which may not overtly be identified as including MBC.	<i>As the operational partners who nominated this review were interested specifically in the practice of using MBC in the context of shared decision-making, we deliberately did not search for or consider studies such as IMPACT or PROSPECT that used MBC in the context of broader bundled intervention models, which included MBC as one of many "extras", such as case managers, patient education, etc. Such studies that compare the bundled intervention models to usual care do not allow evaluation of the individual contribution of the MBC component outside of the bundled model. But, you raise a great question that may come up for other readers and so we added context to the Introduction about how MBC can be used in care management and collaborative models, distinguish how that use of MBC differs from the specific use of MBC which is the focus of this report, and added clarification to the Methods about why studies of MBC as part of collaborative care/care managements models do not necessarily inform evaluation of the specific MBC use of interest.</i>
11	3	Yes - I don't know if it is relevant to the review or not but we just published a paper on MBC attitudes. it does speak to some of the challenges of implementation.	<i>Thank you. We have added all of these to the review for context, except for Marshall 2006, which is an outdated review.</i>

		<p>Provider Attitudes and Experience With Measurement-Based Mental Health Care in the VA Implementation Project David W. Oslin, M.D., Rani Hoff, Ph.D., Joseph Mignogna, Ph.D., Sandra G. Resnick, Ph.D. Psychiatric Services Ahead of Print 30 Oct 2018</p> <p>I didn't check if these were used or needed Callaly T, Hyland M, Coombs T, et al.: Routine outcome measurement in public mental health: results of a clinician survey. Aust Health Rev 2006; 30:164–173Crossref, Google Scholar</p> <p>Marshall S, Haywood K, Fitzpatrick R: Impact of patient-reported outcome measures on routine practice: a structured review. J Eval Clinical Pract 2006; 12:559–568Crossref, Medline, Google Scholar</p> <p>Boswell JF, Kraus DR, Miller SD, et al.: Implementing routine outcome monitoring in clinical practice: benefits, challenges, and solutions. Psychother Res 2015; 25:6–19Crossref, Medline, Google Scholar</p> <p>Hatfield D, McCullough L, Frantz SH, et al.: Do we know when our clients get worse? An investigation of therapists' ability to detect negative client change. Clin Psychol Psychother 2010; 17:25–32Medline, Google Scholar</p> <p>Dowrick C, Leydon GM, McBride A, et al.: Patients' and doctors' views on depression severity questionnaires incentivised in UK quality and outcomes framework: qualitative study. BMJ 2009; 338:b663Crossref, Medline, Google Scholar</p> <p>Goldstein LA, Connolly Gibbons MB, Thompson SM, et al.: Outcome assessment via handheld computer in community mental health: consumer satisfaction and reliability. J Behav Health Serv Res 2011; 38:414–423Crossref, Medline, Google Scholar</p>	
12	4		
<i>Additional suggestions or comments can be provided below. If applicable, please indicate the page and line numbers from the draft report.</i>			
13	1	<p>The Key Questions posed by this review are relevant. However, there are a number of major problems with this review that call into question the validity of the findings.</p> <p>First, the third MBC step specified by the VA is ACT defined as “Together, providers and Veterans use outcome measures to</p>	<p><i>MBC is a complex, multicomponent, multidisciplinary, care delivery process and there are many nuances to discussion of its context and evidence. This reviewer has raised great points about some key complexities that require further clarification. Below we describe how these issues can be interpreted more as unintentional ambiguities rather than major problems that</i></p>





		<p>develop treatment plans, assess progress over time, and inform shared decisions about changes to the treatment plan over time.” The latter part of this sentence about shared decision making is visionary, but it is not really a part of the consensus definition of MBC. Moreover, formal shared decision making is rarely used in mental health treatment settings, inside or outside the VA. Thus, condemning the MBC trials for not including shared decision making as part of the intervention is way off the mark in my opinion. The accepted definition of MBC does not include shared decision, and therefore the fact that none of the trials included a shared decision making component is not surprising. It is visionary that the VA is promoting shared decision making, but it is not a weakness of the literature that shared decision making was not explicitly included in the MBC interventions tested. I suggest greatly deemphasizing this from the review.</p>	<p><i>call into question the validity of the findings and how we’ve clarified these ambiguities in the report.</i></p> <p><i>We are not aware of any single accepted consensus definition of MBC – even the term measurement based care isn’t standard as ‘process feedback’ and ‘outcome measurement’ is also used. But, to better clarify that this report focuses on the specific approach of using MBC in the context of SDM, we’ve changed the title of the review to “Use of Patient Reported Outcome Measures for Measurement Based Care in Mental Health Shared-Decision Making” and changed language about the evidence from MBC studies that don’t use SDM as having limited relevance to “the approach of using MBC in SDM”, rather than having limited relevance to the VA in general. We agree it is not a weakness of the literature in general that it doesn’t use MBC in SDM, the issue is its relevance to the approach of using MBC in SDM. While MBC in SDM may not be consistent with the existing research, SDM is an important element in the VA model of MBC as it is part of their overall patient-centered approach to mental health care in general. The identification of this specific knowledge gap for MBC in SDM is important to acknowledge as it can inform assessment of a need for future research.</i></p>
<p>14</p>	<p>1</p>	<p>Second, a number of important RCTs were inexplicably/incorrectly excluded from the main findings (see below).</p>	<p><i>As detailed below, although we added more detail about the Guo 2015 RCT, no other RCTs were incorrectly excluded from the main findings.</i></p>
<p>15</p>	<p>1</p>	<p>Third, the authors conclude that the literature does not support the VA’s MBC program because few studies used the VA recommended measures (PHQ-9, GAD-7, PCL-5 and BAM). While it is true that not many studies used those instruments, this does not make these studies irrelevant to the VA MBC program. MBC is about the principle of monitoring patient reported symptoms and feeding them back to their clinicians. While MBC discussions often devolve into arguments about which instrument is best, the principle itself is still sound. As long as the instruments are psychometrically reliable and valid (which the PHQ-9, GAD-7, PCL-5, and BAM are), then they should work as intended in a MBC system. Moreover, the PHQ-9, GAD-7 and PCL-5 have all been used as MBC components of larger interventions (e.g., collaborative care) and have contributed to the positive findings of those trials.</p>	<p><i>The point we were trying to make is that the available evidence on using other measures more generally for MBC has unclear applicability to the specific practice of using 1 of the 4 VA-recommended measures in the context of shared decision making. We agree that does not mean the available evidence on using other measures more generally for MBC is then completely irrelevant overall. To better clarify this distinction, we have refined our more general statement about “limited applicability to the VA setting” to “unclear applicability to the specific practice of using any of the 4 VA-recommended tools for MBC in the context of shared decision making.” We agree that there is a strong rationale for these 4 instruments working for MBC – psychometrically reliable and valid and used as part of collaborative care – but are noting that the most direct evidence of this would come from a study that evaluated any of them as used in the specific approach of</i></p>



			<i>interest – for MBC in SDM. We have added this context to the Discussion.</i>
16	1	Page 1, 2nd paragraph: The authors conclude that the biggest weakness with the MBC literature is that research has not tested mechanisms of action because few studies monitored fidelity. Both statements are true, but I do not see how mechanisms and fidelity are related to one another. The weaknesses should simply be stated as 1) lack of measurement of the hypothesized mechanism of action (e.g., detection of non-response and change in treatment plan) and 2) lack of information about MBC protocol fidelity.	<i>Changed as suggested.</i>
17	1	Page 2, 3rd paragraph: The review states there are no studies on outpatient eating disorders or patients in severe psychiatric crisis. First, lack of studies focused eating disorders is hardly a major weakness for the VA MBC program, because the prevalence of eating disorders is low in VA. Second, MBC is not appropriate for patients in acute crisis, so this is not a gap in the literature. The review is correct that there are no studies of monitoring schizophrenia symptoms and the importance of this gap should be emphasized more. Likewise, there are not studies of monitoring bipolar symptoms and this should be highlighted as an important gap in the literature. The VA treats large numbers of Veterans with SMI.	<i>This statement, “MBC has also shown some promise in couples’ therapy and in inpatient treatment of eating disorders, but not for outpatient treatment of eating disorders, the specific symptoms of schizophrenia, or for patients in severe psychiatric crisis seeking emergency help.”, does not state that there are no studies in these populations. It states that there are studies, but they did not find benefits in those populations. But, we agree that these populations are not the highest priority populations in the VA. We added bipolar disorder to the list of important SMI’s for which we found no studies.</i>
18	1	Page 6, 3rd paragraph: The review states that the MBC literature has been difficult to interpret because of the heterogeneity of the studies. I could not disagree more. The fact the MBC has been found to be effective for different diagnosis, different settings, and different populations is a strength of the literature because it demonstrates that it is effective under a wide range of contexts. The literature would not be stronger if the same study was replicated for the same disorder, setting and population over and over again.	<i>We revised this paragraph to clarify that our point is that “identification of key components have been difficult to identify among mixed findings because of multiple potential sources of heterogeneity and confounding”. If MBC had been universally found to be effective across a diversity of conditions we would agree with this reviewer. However, it wasn’t. Our point was that among the 13 studies that reported rates of patients with a clinically meaningful response, only 54% of studies found MBC to statistically significantly improve outcomes. However, determining what specific features – MBC approach, patient population, setting, etc. – led to the improvements was not possible due to the heterogeneity across studies on all these variables. Our point is not that the heterogeneity weakened the literature in general, it is that the heterogeneity makes it difficult to identify the most effective conditions in the context of mixed effects.</i>
19	1	Page 6, 3rd paragraph: The fact that diagnoses in the trials have not been reliably verified by structure clinical interview does not make the literature less relevant for the VA because the VA does not diagnosis Veterans using structure clinical interviews. So not using	<i>Although we agree that there is no national mandate in VA to use structured clinical interviews, it is also likely not entirely uncommon. But, as our point was more about inadequate details about illness characteristics, i.e., subtype, severity,</i>

		structured clinical interviews actually improves the literature’s generalizability to the VA.	<i>duration, etc., we removed the structured clinical interview piece.</i>
20	1	Page 6, 3rd paragraph (and elsewhere): This issue of “demand characteristics” was not explained well and it was not clear how it might bias findings. It seems as if the authors are concerned about social desirability bias. If so, completing rating scales prior to seeing the clinician probably decreases the likelihood that the patient will say they are feeling better to please the clinician compared to telling the clinician how they are feeling in person. If the reviewers are concerned about not using an independent instrument to evaluate differences in outcomes across groups, I agree that is major concern that should be raised. However, I would call this something like “habituation” bias.	<i>We agree we could better explain our concern here and how it might bias findings. Our concern is the latter – not using an independent instrument to corroborate progress in the feedback group that was based on the feedback instrument alone. As blinding the patients and therapists to whether or not they are in the feedback group in MBC studies is not feasible, there already exists an inherently increased risk of more favorable outcomes in the feedback due to expectations alone and the potential for more attention in general. Then, in addition to knowing you’re in a group where you know use of a specific instrument is hoped to improve your treatment, when you are then fed back your scores on that instrument and if you are not improving as you perceive is expected, you may then be extra motivated to improve, which may further favor the feedback group. Therefore, we were suggesting that to better rule out this possibility and corroborate progress, another independent outcome measure should be used as assessed by a blinded outcome assessor and the results of which are not discussed by the therapist or client. We have added this more detailed context to the report. We had used the term ‘demand characteristics’ based on its use in the van Oenen 2016 RCT, which raised this issue that “providing outcome information to patients may result in ‘demand characteristics’ (patients responding to incidental hints about the therapists’ expectations) that favor the feedback condition”. But, rather than use any term, we’ve now removed all mention of demand characteristics and focused on whether or not independent and/or blinded outcome assessment was used.</i>
21	1	Page 7: The eligibility criteria state that any comparator could have been used in the trial design for the study to be included in the review. However, according to List of Excluded Studies, 7 studies were excluded because of an ineligible comparator. One of these studies was an incredibly important MBC study. It was a complicated study that I suggest the reviewers read more carefully. There were multiple comparators, but the study clearly compared feedback to no feedback. The study is important because it is large (n=981), reported statistically significant differences between feedback and no feedback and examined the mechanism of action. Specifically, they found that MBC only improved outcomes for patients that were not	<i>We thank the reviewer for highlighting this seeming inconsistency. As the objective of this review is to evaluate the effectiveness of MBC in the context of shared decision, the ideal comparator would be shared decision making without MBC. The next best comparator would be usual care, without MBC or shared decision making. In the Inclusion criteria, by “any” comparator, we meant any that didn’t involve any MBC component. We have updated the inclusion criteria accordingly. The 7 studies in the excluded study list excluded for the reason of ineligible comparator – including the large study of 981 patients that the reviewer points out (Whipple</i>



		responding to treatment initially and did not for those who did respond initially. This suggests that feedback was leading to a treatment change.	<i>2003) were excluded because they did not have a comparison to a no-MBC group. In all groups in Whipple 2003, patient-reported outcome data was collected from patients, which we did not consider to be “usual care”, and then the comparison was between collect outcomes to more intense practices of feedback to clinician, with or without additional aid of a clinical support tool (clinical support tool cuing clinicians to problem solving strategies including assessing therapeutic alliance, readiness to change, social support resources, and other treatment options). The focus of the study is on the use of feedback in the context of the clinical support tool and doesn’t tell us about MBC in the context of shared decision making. Typically, studies are ineligible for many reasons. While “ineligible comparator” may not have been the most salient reason to highlight, ultimately this study does not inform the practice of using MBC in shared decision making.</i>
22	1	Page 7: Not clear why the Guo et al. article was excluded. It is not listed in the List of Excluded Studies table. This study used rigorous methods and should be included in the results.	<i>The Guo et. al. article was included and its findings are discussed both in the Results and the Discussion. We agree that it used rigorous methods and we have discussed it as the best example of a design that adequately isolates MBC’s effects. But we noted that it likely has limited applicability to VA because it did not appear that MBC ratings were shared with the patients and the patients did not appear to have the opportunity to contribute to treatment decisions because of the strict treatment algorithm used..</i>
23	1	Page 7: I would exclude small underpowered trials. Reporting non-significant differences between groups in an underpowered trial contributes virtually no useful information. It would be helpful if the reviewers calculated the sample size need to detect a small effect size and excluded those trials with low power? At least 7 trials in Table 1 appear to be underpowered.	<i>We agree that evidence of non-significant differences between groups from underpowered trial has limited usefulness. We added “inadequate power to detect differences in clinically important response outcomes” as another weakness in the Methodological quality section. But, rather than exclude these small trials, we de-emphasize their findings and instead emphasize findings from the better quality studies.</i>
24	1	Page 7: The Fihn et al. article was reportedly excluded because the population was ineligible (E1). The patients were Veterans seeking care in the VA! Thus, this study should not have been excluded for reason E1. However, I agree this trial should be excluded. The feedback of patient reported outcomes was too infrequent and outcomes were too temporally distant to the encounter to be considered MBC.	<i>No change needed. We properly excluded the Fihn 2004 article for the reason of ineligible population because it was not focused on using MBC in mental health. Instead it evaluated a mixed primary care population of Veterans with ischemic heart disease, diabetes, chronic obstructive pulmonary disease, depression, alcohol use, and hypertension.</i>
25	1	Page 8, paragraph 1: The non-diagnostic search terms seem strange to me. Why “psychotherapy”? Also, I recommend searching for	<i>We replicated the peer-reviewed search strategy from the 2016 Kendrick review, which is where the non-diagnostic search terms such as “psychotherapy” came from. As we are</i>



		<p>“measurement based care” and “symptom monitoring”. The reviewers missed several highly relevant papers.</p> <p>Mavandadi S, Benson A, DiFilippo S, Streim J, Oslin D. A Telephone-Based Program to Provide Symptom Monitoring Alone vs Symptom Monitoring Plus Care Management for Late-Life Depression and Anxiety A Randomized Clinical Trial, JAMA, 72(12):1211-1218, 2015. This large RCT included 1018 patients and monitored symptoms with the PHQ-9 and GAD-7. The comparator was a more intensive intervention (collaborative care) that included MBC as a component so MBC was found to be inferior but still effective.</p> <p>Brodey BB, Cuffel B, McCulloch J, Tani S, Maruish M, Brodey I, Unutzer J. The acceptability and effectiveness of patient-reported assessments and feedback in a managed behavioral healthcare setting. The American journal of managed care. 2005;11:774-780. This large RCT included 1387 patients and outcomes were significantly better in the MBC group compared to usual care.</p>	<p><i>interested in using feedback approaches in psychotherapy, combining those terms has high relevance. Per this reviewer’s suggestion, on 11/16/18, we updated our search with “measurement based care” and “symptom monitoring” terms and did not find any additional studies we had missed. As documented throughout this disposition table, we did not miss any of the papers this reviewer has offered as being highly relevant. All are either already included, such as Brodey 2005 – which is a study of feedback to only clinicians and does not inform MBC in shared decision-making – or using MBC as part of more intense collaborative care/ care management/ integrated care delivery models that do not allow isolation of the independent effects of MBC.</i></p>
26	1	<p>Page 8, paragraph 4: I did not see any quantitatively synthesized outcome data.</p>	<p><i>In Key Question 3 we pooled data on 2 similar RCT’s (Anker 2009, Reese 2010) of MBC in couples therapy and listed the OR as an ESP-calculated OR (page 21).</i></p>
27	1	<p>Page 9: I could not tell the difference between the R0 and R1 definitions. This needs a more detailed definition.</p>	<p><i>We refined R0 to: “Explicitly describes all 3 components of the VA-specific MBC approach with shared decision-making (collect, share, and act with shared decision-making)”; the R1 category refers to approaches where collection and either sharing or action are explicitly described; the R2 category refers to approaches where only collection is described.</i></p>
28	1	<p>Page 10, 2nd paragraph: I strongly suggest deleting this sentence (and most of the paragraph) for the reasons stated above. “The MBC approaches used in the available RCTs have limited applicability to VA primarily because no studies explicitly required providers and participants to together to use outcomes measures to inform decisions...”. This is not required in the consensus definition of MBC and VA has made little progress in incorporating shared-decision making into routine care. Also, just because it is not explicitly stated in the Guo article that the outcomes measures were not shared with the patient, I think it is a mistake to assume they were not if the clinician felt there needed to be a treatment change.</p>	<p><i>We changed “...limited applicability to the VA” to “limited applicability to the specific practice of using MBC in the context of shared decision-making”. Regardless of the status of the use of MBC in shared decision-making in the VA, this is the specific focus of this report. As noted above, to better clarify the focus, we have changed to title to MBC in shared decision making.</i></p> <p><i>We cannot assume one way or another whether measures were shared with the patient. But, we did recategorize Guo as an R1 study with at least a standardized procedure for the Act piece of MBC.</i></p>



29	1	Page 10, 3rd paragraph: I would delete the paragraph containing the quote “to engage the client in a dialogue about how therapy could be improved” for the same reason (shared decision making is not a core component of MBC).	<i>We deleted this paragraph because the point we were making was actually about the risk of performance bias due to lack of documentation about actual use of MBC or the quality of its implementation, which did not belong in the “Applicability” section and was already covered in the “Methodological Quality” section.</i>
30	1	Page 11, 1st paragraph: I disagree with some of the interpretations about methodological weakness including: 1) lack of reliable diagnosis (see comments above”, 2) demand characteristics (see comments above), 3) differences in patient characteristics between study arms, and 4) lack of information about treatment type. The last supplemental table suggests that most studies had balanced baseline characteristics between groups and most used multivariate methods to control for differences in patient characteristics. Likewise, the second to last supplemental table clearly describes the types of treatments delivered to patients.	<i>As reported in our supplemental tables, we agree with this reviewer that most studies adequately controlled for confounding on basic demographic characteristics, through adequate randomization methods and/or use of multivariate methods, and that general treatment type was reported. Our point in this paragraph is that important information is lacking on between-groups balance in diagnosis method, illness severity, comorbidities and treatment intensity (i.e., frequency, duration). We changed the text there clarify that our concerns are about the lack of information on treatment intensity (not type) and on patient illness severity and comorbidities (not necessarily diagnostic methods). And, as discussed elsewhere, we have removed the ‘demand characteristics’ term, to instead focus on the concern of lack of use of an independent outcome assessment tool.</i>
31	1	Page 11, 3rd paragraph: I strongly disagree that the heterogeneity of the studies weakens the MBC literature. I consider it a strength that MBC is found to be effective despite the diversity of the disorders, treatments, clinics and patients.	<i>We would agree with this reviewer’s point if MBC had been universally found to be effective across a diversity of conditions. However, it wasn’t. Our point was that among the 13 studies that reported rates of patients with a clinically meaningful response, only 54% of studies found MBC to statistically significantly improve outcomes. However, determining what specific features – MBC approach, patient population, setting, etc. – led to the improvements was not possible due to the heterogeneity across studies. Our point is not that the heterogeneity weakened the literature in general, it is that the heterogeneity makes it difficult to identify the most effective conditions in the context of mixed effects.</i>
32	1	Page 12, 1st paragraph: I strongly recommend deleting most of this sentence “Weaknesses included not adequately minimizing other sources of potential bias including variation in specific types or dose of psychotherapy, medical treatment, or treatment outside the clinic...” In effectiveness or pragmatic trials it is desirable to not over control the treatment because this reduces the external validity of the results. Eliminating this type of variation is only appropriate for an efficacy/explanatory trial. In addition, it seems wrong to criticize the Brattland trial for having high fidelity to the MBC protocol. High	<i>First, we agree about the value of not over controlling treatment in general in pragmatic trials. The weakness we are pointing out here is that because no information was provided about treatment intensity (i.e., frequency, duration), we can’t rule out that differences between groups are due to important variation in treatment intensity. We have added clarification that we meant variation between groups. Second, we were not criticizing the Brattland trial for having high fidelity to the protocol. In fact, we noted the high fidelity</i>

		<p>fidelity to the intervention being tested is essential for strong science because negative results from a high fidelity intervention are informative whereas negative results from a low fidelity intervention are not informative. Lastly, this trial should not be characterized as being in an “inpatient setting”, as the patients were not hospitalized, but rather were being seen in the outpatient setting</p>	<p><i>as its first strength. Our point here is that the feasibility of the intensive implementation strategy used in this RCT to more typical clinical settings with potentially fewer implementation resources is unclear. We have revised the last few sentences of that paragraph to better clarify this point. Third, we revised “hospital-based psychiatric clinic” to “hospital-based outpatient psychiatric clinic.”</i></p>
33	1	<p>Page 12, 3rd, 4th and 5th paragraph: I would deemphasize the lack of data about QoL, satisfaction and adherence. MBC was not intended to improve these outcome domains. In particular, there is often a long lag time between symptom reduction and improvements in QoL, and therefore long term studies are needed to examine that outcome domain.</p>	<p><i>Regardless of whether MBC was originally intended to impact these outcome domains, improvement in adherence and QOL and at least no change in patient satisfaction with treatment are important and desirable outcomes for any mental health treatment. For example, if MBC resulted in mean symptom score improvements, but had an unintended consequence of reducing patient satisfaction on the short-term, that could raise questions about its longer-term sustainability. Therefore, evaluating the impact of MBC on these domains has clinical relevance. But, we agree that long-term studies are likely needed to adequately evaluate these outcomes and have added this point to the Discussion.</i></p>
34	1	<p>Page 18, 1st paragraph: MBC was not intended to be used in emergency settings where patients are seen either briefly or intermittently. I would delete this paragraph</p>	<p><i>No change needed. The VA is specifically interested in guidance on how to provide MBC for any specific mental populations, regardless of perspectives about the original intent of MBC. This study provides some indication that that MBC does not benefit patients in severe psychiatric crisis seeking emergency psychiatric, which could appropriately help guide clinicians away from a use of MBC that best evidence suggests is ineffective and could have consequences including opportunity and financial costs.</i></p>
35	1	<p>Page 19, last sentence: I do not understand the concern here about “demand characteristics”.</p>	<p><i>As discussed in detail above, we have removed the “demand characteristics” terminology and replaced it with better clarification of the actual concern, which is the lack of use of an independent instrument to evaluate differences in outcomes.</i></p>
36	1	<p>Page 20, 2nd paragraph: MBC was designed to improve symptoms, not the other domains discussed in this paragraph and it should not be considered a weakness of the MBC literature that trials have not examined these outcomes. I agree that the lack of information about mechanisms of action is very important.</p>	<p><i>As noted above, regardless of whether MBC was originally intended to impact these outcome domains, improvement in adherence and QOL and at least no change in patient satisfaction with treatment are important and desirable outcomes for any mental health treatment. For example, if MBC resulted in mean symptom score improvements, but had an unintended consequence of reducing patient satisfaction on the short-term, that could raise questions about its longer-term sustainability. Therefore, evaluating the impact of MBC on</i></p>



			<i>these domains has clinical relevance. But, we agree that long-term studies are likely needed to adequately evaluate these outcomes and have added this point to the Discussion.</i>
37	1	Page 20, 4th paragraph, first sentence: Again, I do not think it makes sense to criticize the Brattland trial because it had high fidelity to the MBC protocol. Most treatments adopted by the VA such as PE and CPT were first tested in trials with high fidelity. Once effectiveness was established, a second line of implementation research was used to determine how to get these evidence based practices adopted with high fidelity. That is where the VA should be investing its research funds, not replicating MBC trials	<i>We agree that implementation research is important once effectiveness is established, but as there are no studies of MBC in shared decision making - which is the specific MBC use that is the focus of this report – there is still a need for effectiveness research. But, here in the Future Research section, as described above was the case in the Results section, we are not criticizing the Brattland 2018 because of its high fidelity. We are questioning the feasibility of broadly applying such an intensive implementation strategy across a wide range of settings in the VA with variable management support and technical and structural resources; which supports the need for implementation research.</i>
38	1	List of Excluded Studies Table: E7, the ineligible publication type needs further explanation. Why is the Lancet (Blisker, 2002) an ineligible publication? Perhaps this table could describe why the study was excluded in more detail. Also there are some studies (e.g., Probst 2014) which are not included in Table 1 (page 14), but were also not included in the List of Excluded Studies Table.	<i>To our excluded studies table, to further explain the exclusion reasons, we added examples for each reason: 1=Ineligible population (eg, patients not receiving mental health care), 2=Ineligible intervention (eg, not patient reported outcome measures, MBC as part of a more intensive collaborative care/care management/integrated care approach), 3=Ineligible comparator (eg, not shared decision making or usual care without an MBC component), 4=Ineligible outcome (eg, patient preferences or implementation experiences), 5=Ineligible setting, 6=Ineligible study design (eg, case report), 7=Ineligible publication type (eg, editorial, narrative review), 8=Outdated or ineligible systematic review, 9=non-English language, , S=non-RCT meeting other criteria. Blisker 2002 is an ineligible publication type because it is an editorial. Probst 2014 is included as an MBC intervention, but is not discussed in detail because it only described a process for PROMS collection, but no detail about sharing or usage; which does not inform use of MBC in shared decision making.</i>
39	2	Given that the PCOMS has emerged as a strong MBC system, I think it is critical to point out that systems like PCOMS and the OQ45 not only include the elements of MBC that VA considers to be essential, they also have a unique feature that VA-specific MBC does not. These are contained systems of assessment that include "real time treatment response." Real time treatment response systems use large databases to develop predictive models so that each individual patient's response can be compared to a "good" treatment response. These algorithmic systems have a sophistication that is	<i>Thank you. Considering this and the comment below from reviewer #3, we added a paragraph to the discussion about picking or using measures. As you recommend, here we note these and other reasons why the PCOMS and OQ-45 maybe be appealing as alternatives to the 4 VA-recommended measures.</i>





		different from just sharing and discussing treatment responses from individual PROMs with patients, even when those PROMs have normative data for comparative purposes, and/or clear definitions of clinically meaningful change.	
	2	Another point that might be better elaborated upon is the heterogeneity of interventions and treatment settings for which VA is trying to implement MBC, from pharmacological treatment to psychotherapy to residential care to psychiatric rehabilitation models such as employment services and assertive community treatment to homeless services. Care management models (such as those in the literature identified above) are part of VA's Primary Care Mental Health Integration services. The literature identified by the review is largely MBC integrated into psychotherapy or "mental health outpatient treatment" aka general mental health. VA mental health provides a great deal of specialty care.	<i>We added this context to the Discussion, making the point that because the integrated primary care mental health care management model widely used in VA already provides a great deal of multimodal care, it is unclear whether MBC added to the VA model would provide the same level of benefit as when added to single treatment modalities delivered in general mental health settings (i.e., psychotherapy alone) as reported in the literature.</i>
40	2	p.1, lines 39-41: please specify that this is a Joint Commission requirement, not a VA requirement	<i>Corrected.</i>
41	2	p. 2, line 15: "non-VA-recommended assessment tool." The connotation here is not quite accurate, and this issue comes up a few times in the review. While it is true that VA "endorsed" the four measures identified by the interagency task force, I am not aware of any PROM that VA has dissuaded facilities from using (e.g., "non-recommended" as stated in the review). In fact, VA has been careful to point out that there are many measures beyond the four recommended measures that may be appropriate and useful, but that we simply do not have enough experience with some of them to know whether or not they will be strong MBC measures. We would welcome additional measures if the evidence supports them. We thus encourage adoption of other measures, especially in the absence of research that have examined measures for the purpose of MBC (e.g., sensitivity to change over short time periods), because only by facilities using them, entering the data into the medical record (where applicable) allowing us to analyze the data, will we have a better understanding of how other measures work for MBC in Veterans, and therefore be able to feel confident in recommending them. For certain programs where a depression, anxiety, substance use or PTSD measure would be appropriate, we do require one of the four, but we also encourage use of other measures in addition to one of the four, recognizing that quality of life, functioning, etc are important domains. So there really isn't anything that's a non-recommended measure, it's more that all but the four PROMS are "not-yet-recommended" measures. The connotation is quite different.	<i>This is a great point – thank you. We have removed the “non-VA-recommended assessment tool” language and replaced it with “not yet VA-recommended tool”. We also added a paragraph in the Discussion about picking a tool in which we noted that VA welcomes use of additional measures and the trade-offs of the most widely studied OQ-45 and PCOMS tools.</i>



		The other relevant point here is that VA software programs that support MBC and interface with the medical record (Mental Health Assistant, Behavioral Health Lab) also limit the available assessments. Mental Health Informatics teams are responsible for these contracts, and therefore what measures can be included; the contracts limit the number of assessments that can be added at any given time. The informatics teams make decisions in collaboration with other SMEs about inclusion of measures based on various priorities within MBC and other VHA initiatives. Adding measures to these packages is costly and time consuming. So if measures aren't available within the two enterprise wide software packages, this is not necessarily a lack of endorsement, but another "not-yet-recommended" issue.	
42	2	p. 4 line 55, "in the VA" - the Joint Commission requirement is for all JC accredited facilities, not just those in VA	<i>Changed to accredited programs "both within and outside of VA"</i>
43	2	p. 5, line 58, "VA does not endorse" - see comment above for p. 2 and revise	<i>We changed this paragraph entirely to open with a statement that there are numerous instruments available that may be useful and appropriate. Then, it goes on to identify the 4 currently recommended by VA. Then it introduces the PCOMS and OQ-45 as other measures commonly used in trials and no longer frames them as measures that the VA does not endorse.</i>
44	2	p. 6, lines 4 - 8: it might be helpful to again mention in this paragraph that VA encourages the use of additional measures beyond the four core measures	<i>Yes, we added this mention.</i>
45	3	Page 2 lines 1-10 - this sentence needs work. it is very hard to grasp.	<i>Agreed. Changed per this and comment below about shifting the unintended emphasis away from the specific tool and onto the overall approach: The most promising MBC approach we identified was when MBC was used in a single Norwegian general outpatient psychiatric clinic in the course of an intense implementation strategy including extensive training provided by the PROMS tool creators, use of technology-assisted automated risk scoring, and strong management advocacy including moral and financial support for providers (48% vs 33%; OR 1.91; 95% CI 0.88 to 4.15; P = 0.1025; NNT = 7, Executive Summary Table).</i>
46	3	Page 1 - I would disagree with the equating of MBC to only PROM's. The VA has high jacked the term MBC to mean delivery of PROM's but MBC is much broader than PROM as it appears in the literature. For instance the use of urine drug screens, labs, genetics or other biomarkers. As the term implies in the name, any systematic	<i>We added clarification to the title and inclusion criteria that our focus was on the specific approach of using PROMS for MBC in shared decision making.</i>

		measure can be used in care. This should be clarified as it appears to focus of this review was on the use of PROM rather than MBC.	
47	3	There might be a mention of screening in this review in terms of that the review is not meant to cover screening for new cases. many of the discussed measures are used for both MBC and screening. It is again the confusing use of MBC as screens can be considered systematic collection of data to inform care for shared decision making.	<i>We added clarification to our inclusion criteria that we are focused on MBC as used in treatment monitoring, not screening.</i>
48	3	I struggled a bit with the key message. was this review about the value of MBC or trying to find a software product or process for which the VA could use. I was confused if the former why PCOMS was mentioned in the executive summary. I would think it would be much more important for this issue brief to say whether or not there is evidence for use of PROMs in MH. That should be a key message. How to collect seems much less important to this review.	<i>The review was about both the overall value of MBC and, if possible, identification of specific best practices. But, we did revise the key messages to better clarify the message that there is no evidence for use of the specific VA-recommended approach of using any of 4 recommended PROMS to implement MBC in the context of shared decision making.</i>
49	3	The PCOMS was not an approach in my mind but rather a measure, what we don't know from the PCOMS study is if they substituted any other measure would the outcomes be the same. My guess is yes. the review makes it seem like we should all switch to PCOMS which misses the point of MBC.	<i>We did not intend to suggest all should switch to PCOMS and have added a paragraph on picking measures that details the trade-offs of the PCOMS systems in VA. Also, per your comment below about page 2, lines 1-10, we edited the text to shift the unintended emphasis away from the specific tool and onto the overall approach.</i>
50	3	I would take issue with the most commonly used PROM is the oq45 - the PHQ9 is likely the most common, required by many insurance companies, used throughout Kaiser, DOD, Intermountain health etc. the OQ45 might be studied more for MBC but I run into almost no use in the private sector. PHQ9 is also what is cited in the VA DOD CPG	<i>We appreciate this reviewer's point and have re-contextualized the PCOMS and OQ-45 in the Introduction as most commonly used in MBC studies.</i>
51	3	Missing is a discussion of picking or using measures - they must be actionable, understood by many, amenable to change.... there is literature on this	<i>We agree with this reviewer and have added a paragraph to the discussion on picking measures. Here we acknowledge that even though the 4 VA-recommended measures currently lack evidence of use specifically in MBC for shared decision making, there is a promising rationale for their use. As use of alternative measures is welcome in the VA, we note important practical considerations for using the PROMS and OQ-45.</i>

## REFERENCES

1. Aardoom JJ, Dingemans AE, van Ginkel JR, Spinhoven P, Van Furth EF, Van den Akker-van Marle ME. Cost-utility of an internet-based intervention with or without therapist support in comparison with a waiting list for individuals with eating disorder symptoms: A randomized controlled trial. *International journal of eating disorders*. 2016;49(12):1068-1076.
2. Amble I, Gude T, Ulvenes P, Stubdal S, Wampold BE. How and when feedback works in psychotherapy: Is it the signal? *Psychotherapy Research*. 2015;26(5):545-555.
3. Bargmann S. Achieving excellence through feedback-informed supervision. In: *Feedback-informed treatment in clinical practice: Reaching for excellence*. Washington, DC: American Psychological Association; US; 2017:79-100.
4. Berking M, Orth U, Lutz W. Wie effektiv sind systematische rückmeldungen des therapieverlaufs an den therapeuten? - how effective is systematic feedback of treatment progress to the therapist? An empirical study in a cognitive-behavioural oriented inpatient setting. *Zeitschrift für Klinische Psychologie und Psychotherapie*. 2006;35(1):21-29.
5. Bickman L, Kelley SD, Breda C, de Andrade AR, Riemer M. Effects of routine feedback to clinicians on mental health outcomes of youths: Results of a randomized trial. *Psychiatric Services*. 2011;62(12):1423-1429.
6. Bilsker D, Goldner EM. Routine outcome measurement by mental health-care providers: Is it worth doing? *The Lancet*. 2002;360(9346):1689-1690.
7. Black SW, Owen J, Chapman N, Lavin K, Drinane JM, Kuo P. Feedback informed treatment: An empirically supported case study of psychodynamic treatment. *Journal of Clinical Psychology*. 2017;73(11):1499-1509.
8. Brodey BB, Gonzalez NL, Elkin KA, Sasiela WJ, Brodey IS. Assessing the equivalence of paper, mobile phone, and tablet survey responses at a community mental health center using equivalent halves of a 'gold-standard' depression item bank. *JMIR Mental Health*. 2017;4(3):e36.
9. Brown GS, Simon A, Cameron J, Minami T. A collaborative outcome resource network (acorn): Tools for increasing the value of psychotherapy. *Psychotherapy*. 2015;52(4):412-421.
10. Burlingame GM, Whitcomb KE, Woodland SC, Olsen JA, Beecher M, Gleave R. The effects of relationship and progress feedback in group psychotherapy using the group questionnaire and outcome questionnaire-45: A randomized clinical trial. *Psychotherapy*. 2018;55(2):116-131.
11. Chan AT, Sun GY, Tam WW, Tsoi KK, Wong SY. The effectiveness of group-based behavioral activation in the treatment of depression: An updated meta-analysis of randomized controlled trial. *Journal of Affective Disorders*. 2017;208:345-354.
12. Chang TE, Jing Y, Yeung AS, et al. Effect of communicating depression severity on physician prescribing patterns: Findings from the clinical outcomes in measurement-based treatment (comet) trial. *General Hospital Psychiatry*. 2012;34(2):105-112.
13. Cross S, Mellor-Clark J, Macdonald J. Tracking responses to items in measures as a means of increasing therapeutic engagement in clients: A complementary clinical approach to tracking outcomes. *Clinical Psychology & Psychotherapy*. 2015;22(6):698-707.
14. Davidson K, Perry A, Bell L. Would continuous feedback of patient's clinical outcomes to practitioners improve nhs psychological therapy services? Critical analysis and



- assessment of quality of existing studies. *Psychology and Psychotherapy: Theory, Research and Practice*. 2015;88(1):21-37.
15. Delgadillo J, Overend K, Lucock M, et al. Improving the efficiency of psychological treatment using outcome feedback technology. *Behaviour Research & Therapy*. 2017;99:89-97.
  16. Drummond KL, Painter JT, Curran GM, et al. Hiv patient and provider feedback on a telehealth collaborative care for depression intervention. *AIDS Care*. 2017;29(3):290-298.
  17. Duncan BL, Reese RJ. The partners for change outcome management system (pcoms) revisiting the client's frame of reference. *Psychotherapy: Theory, Research, Practice, Training*. 2015;52(4):391-401.
  18. Dyer K, Hooke GR, Page AC. Effects of providing domain specific progress monitoring and feedback to therapists and patients on outcome. *Psychotherapy Research*. 2014;26(3):297-306.
  19. Eisen SV, Dickey B, Sederer LI. A self-report symptom and problem rating scale to increase inpatients' involvement in treatment. *Psychiatric Services*. 2000;51(3):349-353.
  20. Faurholt-Jepsen M, Frost M, Martiny K, et al. Reducing the rate and duration of re-admissions among patients with unipolar disorder and bipolar disorder using smartphone-based monitoring and treatment - the radmis trials: Study protocol for two randomized controlled trials. *Trials [Electronic Resource]*. 2017;18(1):277.
  21. Fihn SD, McDonell MB, Diehr P, et al. Effects of sustained audit/feedback on self-reported health status of primary care patients. *The American Journal of Medicine*. 2004;116(4):241-248.
  22. Fortney JC, Unützer J, Wrenn G, et al. A tipping point for measurement-based care. *Psychiatric Services*. 2017;68(2):179-188.
  23. Fridberg DJ, Cao D, King AC. Integrating alcohol response feedback in a brief intervention for young adult heavy drinkers who smoke: A pilot study. *Drug and alcohol dependence*. 2015;155:293-297.
  24. Friedhoff LA. Question development by individuals in therapeutic assessment: Does it result in more positive outcomes? *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2013;75(8-B(E)):No Pagination Specified.
  25. Gondek D, Edbrooke-Childs J, Fink E, Deighton J, Wolpert M. Feedback from outcome measures and treatment effectiveness, treatment efficiency, and collaborative practice: A systematic review. *Administration and Policy in Mental Health and Mental Health Services Research*. 2016;43(3):325-343.
  26. Haland AT, Tilden T. Lessons learned from the implementation of a feedback system in couple and family therapy. In: *Routine outcome monitoring in couple and family therapy: The empirically informed therapist*. Cham, Switzerland: Springer International Publishing; Switzerland; 2017:211-224.
  27. Hamann J, Parchmann A, Sassenberg N, et al. Training patients with schizophrenia to share decisions with their psychiatrists: A randomized-controlled trial. *Social Psychiatry and Psychiatric Epidemiology*. 2017;52(2):175-182.
  28. Harmon SC, Lambert MJ, Smart DM, et al. Enhancing outcome for potential treatment failures: Therapist–client feedback and clinical support tools. *Psychotherapy Research*. 2007;17(4):379-392.
  29. Hartmann JA, Wichers M, Menne-Lothmann C, et al. Experience sampling-based personalized feedback and positive affect: A randomized controlled trial in depressed patients. *PLoS ONE*. 2015;10(6):e0128095.



30. Hooke GR, Sng AA, Cunningham NK, Page AC. Methods of delivering progress feedback to optimise patient outcomes: The value of expected treatment trajectories. *Cognitive Therapy and Research*. 2018;42(2):204-211.
31. Janse PD, De Jong K, Van Dijk MK, Hutschemaekers GJ, Verbraak MJ. Improving the efficiency of cognitive-behavioural therapy by using formal client feedback. *Psychotherapy Research*. 2017;27(5):525-538.
32. Jensen-Doss A, Haimes EM, Smith AM, et al. Monitoring treatment progress and providing feedback is viewed favorably but rarely used in practice. *Administration and Policy in Mental Health and Mental Health Services Research*. 2018;45(1):48-61.
33. Jolley S, Onwumere J, Bissoli S, et al. A pilot evaluation of therapist training in cognitive therapy for psychosis: Therapy quality and clinical outcomes. *Behavioural and Cognitive Psychotherapy*. 2015;43(4):478-489.
34. Kendrick T, El-Gohary M, Stuart B, et al. Routine use of patient reported outcome measures (proms) for improving treatment of common mental health disorders in adults. *Cochrane Database of Systematic Reviews*. 2016;7:CD011119.
35. Khdour HY, Abushalbak OM, Mughrabi IT, et al. Generalized anxiety disorder and social anxiety disorder, but not panic anxiety disorder, are associated with higher sensitivity to learning from negative feedback: Behavioral and computational investigation. *Frontiers in Integrative Neuroscience*. 2016;10:20.
36. Klundt JS. Are therapists using outcome measures and does it matter? A naturalistic usage study. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2015;76(3-B(E)):No Pagination Specified.
37. Knaup C, Koesters M, Schoefer D, Becker T, Puschner B. Effect of feedback of treatment outcome in specialist mental healthcare: Meta-analysis. *The British journal of psychiatry : the journal of mental science*. 2009;195(1):15.
38. Koementas-de Vos MM, Nugter M, Engelsbel F, De Jong K. Does progress feedback enhance the outcome of group psychotherapy? *Psychotherapy*. 2018;55(2):151-163.
39. Krägeloh CU, Czuba KJ, Billington DR, Kersten P, Siegert RJ. Using feedback from patient-reported outcome measures in mental health services: A scoping study and typology. *Psychiatric Services*. 2015;66(3):224-241.
40. Lambert MJ, Whipple JL, Vermeersch DA, et al. Enhancing psychotherapy outcomes via providing feedback on client progress: A replication. *Clinical Psychology & Psychotherapy*. 2002;9(2):91-103.
41. Lambert MJ, Shimokawa K. Collecting client feedback. *Psychotherapy*. 2011;48(1):72-79.
42. Lambert MJ. Maximizing psychotherapy outcome beyond evidence-based medicine. *Psychotherapy and Psychosomatics*. 2017;86(2):80-89.
43. Lutz W, Zimmermann D, Muller V, Deisenhofer AK, Rubel JA. Randomized controlled trial to evaluate the effects of personalized prediction and adaptation tools on treatment outcome in outpatient psychotherapy: Study protocol. *BMC Psychiatry*. 2017;17(1):306.
44. Maeschalck CL, Barfknecht LR. Using client feedback to inform treatment. In: *Feedback-informed treatment in clinical practice: Reaching for excellence*. Washington, DC: American Psychological Association; US; 2017:53-77.
45. Mathias SD, Fifer SK, Mazonson PD, Lubeck DP, Buesching DP, Patrick DL. Necessary but not sufficient: The effect of screening and feedback on outcomes of primary care patients with untreated anxiety. *Journal of general internal medicine*. 1994;9(11):606.
46. Metz MJ, Franx GC, Veerbeek MA, de Beurs E, van der Feltz-Cornelis CM, Beekman AT. Shared decision making in mental health care using routine outcome monitoring as a

- source of information: A cluster randomised controlled trial. *BMC Psychiatry*. 2015;15:313.
47. Mikeal CW, Gillaspay J, Scoles MT, Murphy JJ. A dismantling study of the partners for change outcome management system. *Journal of Counseling Psychology*. 2016;63(6):704-709.
  48. Miller SD, Bargmann S, Chow D, Seidel J, Maeschalck C. Feedback-informed treatment (fit): Improving the outcome of psychotherapy one person at a time. In: *Quality improvement in behavioral health*. Cham, Switzerland: Springer International Publishing; Switzerland; 2016:247-262.
  49. Newnham EA, Hooke GR, Page AC. Progress monitoring and feedback in psychiatric care reduces depressive symptoms. *Journal of Affective Disorders*. 2010;127(1):139-146.
  50. Priebe S, McCabe R, Bullenkamp J, et al. The impact of routine outcome measurement on treatment processes in community mental health care: Approach and methods of the mecca study. *Epidemiologia e psichiatria sociale*. 2002;11(3):198.
  51. Rollman BL, Hanusa BH, Lowe HJ, Gilbert T, Kapoor WN, Schulberg HC. A randomized trial using computerized decision support to improve treatment of major depression in primary care. *Journal of General Internal Medicine*. 2002;17(7):493-503.
  52. Schiepek G, Eckert H, Aas B, Wallot S, Wallot A. *Integrative psychotherapy: A feedback-driven dynamic systems approach*. Boston, MA: Hogrefe Publishing; US; 2015.
  53. Scott K, Lewis CC. Using measurement-based care to enhance any treatment. *Cognitive and Behavioral Practice*. 2015;22(1):49-59.
  54. Seitz J, Mee-Lee D. Feedback-informed treatment in an addiction treatment agency. In: *Feedback-informed treatment in clinical practice: Reaching for excellence*. Washington, DC: American Psychological Association; US; 2017:231-248.
  55. Shimokawa K, Lambert MJ, Smart DW. Enhancing treatment outcome of patients at risk of treatment failure: Meta-analytic and mega-analytic review of a psychotherapy quality assurance system. *Journal of Consulting and Clinical Psychology*. 2010;78(3):298-311.
  56. Slade K, Lambert MJ, Harmon SC, Smart DW, Bailey R. Improving psychotherapy outcome: The use of immediate electronic feedback and revised clinical support tools. *Clinical Psychology & Psychotherapy*. 2008;15(5):287-303.
  57. Stanley-Olson AR. Client feedback and group therapy outcomes for adults with co-occurring mental illness and substance abuse. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. 2017;79(4-B(E)):No Pagination Specified.
  58. Trivedi MH, Rush AJ, Wisniewski SR, et al. Evaluation of outcomes with citalopram for depression using measurement-based care in star: Implications for clinical practice. *American Journal of Psychiatry*. 2006;163(1):28-40.
  59. Waldrop J, McGuinness TM. Measurement-based care in psychiatry. *J Psychosoc Nurs Ment Health Serv*. 2017;55(11):30-35.
  60. Wampold BE. Routine outcome monitoring: Coming of age-with the usual developmental challenges. *Psychotherapy*. 2015;52(4):458-462.
  61. Whipple JL, Lambert MJ, Vermeersch DA, Smart DW, Nielsen SL, Hawkins EJ. Improving the effects of psychotherapy: The use of early identification of treatment failure and problem-solving strategies in routine practice. *Journal of Counseling Psychology*. 2003;50(1):59-68.
  62. Whittingham M, Graham L. The impact of providing group performance feedback on a large mental health system. *Psychotherapy*. 2018;55(2):203-206.
  63. Wise EA, Streiner D. Routine outcome monitoring and feedback in an intensive outpatient program. *Practice Innovations*. 2018;3(2):69-83.