Measurement-Based Care in Psychiatric Practice: A Policy Framework for Implementation

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This article describes the need for measurement-based care (MBC) in psychiatric practice and defines a policy framework for implementation. Although measurement in psychiatric treatment is not new, it is not standard clinical practice. Thus a gap exists between research and practice outcomes. The current standards of psychiatric clinical care are reviewed and illustrated by a case example, along with MBC improvements. Measurement-based care is defined for clinical practice along with limitations and recommendations. This article provides a policy top 10 list for implementing MBC into standard practice, including establishing clear expectations and guidelines, fostering practice-based implementation capacities, altering financial incentives, helping practicing doctors adapt to MBC, developing and expanding the MBC science base, and engaging consumers and their families. Measurement-based care as the standard of care could transform psychiatric practice, move psychiatry into the mainstream of medicine, and improve the quality of care for patients with psychiatric illness.

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CASE 1: CURRENT STANDARD OF CARE

A 36-year-old female, divorced, elementary school teacher with no prior psychiatric history is referred by her primary care doctor (PMD) to an outpatient psychiatrist with the chief complaint "life is meaningless." She reports 3 months of depressive symptoms, including low mood, increased tearfulness, poor sleep, increased appetite, poor concentration, rumination about her failed marriage, and passive suicidal ideation without intent or plan in the context of recent conflicts with her ex-husband and coworkers. The initial 40-minute history reveals no personal or family history of mania, psychosis, or substance abuse. Her mental status is notable only for depressed mood and constricted affect. The psychiatrist estimates the patient's Global Assessment of Functioning (GAF) score in the range of 45–50. After reviewing risks and benefits, the psychiatrist prescribes duloxetine 30 mg/d available in sample, with instructions to increase the dose to 60 mg/d after 1 week and call if symptoms worsen or side effects become intolerable. The patient is asked to have her PMD send a copy of a recent physical examination and laboratory work.

Four weeks later, the patient returns for a 15-minute visit. The psychiatrist inquires about mood, sleep, appetite, concentration, suicidal ideation, and medication side effects. Noting ongoing depressive symptoms with minimal medication side effects, the psychiatrist increases duloxetine to 90 mg/d. At the third visit (week 10), the patient reports, "feeling somewhat better" with improvements in mood, sleep, and appetite. She denies all suicidal ideation. A 4-month supply of duloxetine 90 mg/d is prescribed and a 3-month follow-up visit scheduled. After 6 months, the patient feels "okay" and tolerates ex-husband interactions. She is looking for employment after quitting her job. Her GAF score is estimated in the range of 55–60. The duloxetine dose is unchanged since the patient reports only some fatigue and nausea and is generally improving. She is scheduled for follow-up in 3 months.

This case is typical of many treatment experiences. The diagnosis is seemingly major depressive disorder and an antidepressant is prescribed. But did it work? How well did it work? What were the type and burden of side effects? How adequate was the patient medication adherence? The patient is somewhat improved after 6 months but still fatigued and now unemployed. While her GAF score as part of the 5-axis diagnosis has slightly improved, it offers the clinician little guidance on how to improve her care during the course of treatment. She isn't depression free and risks relapse.[1]

Was optimal care delivered with a suboptimal outcome or was suboptimal care delivered with a "good enough" outcome that could have been far better? How would the clinician monitor and document longitudinal progress and communicate this with peers or payers? Structured interviews increase detection of various conditions.[2,3] For any disorder, continual adjustment of interventions based on results obtained optimizes outcome and personalizes treatment.[4] With depression, optimal outcomes produce better prognoses.[5] Systematic rating scales help measure outcomes, clarify treatment aims, and track patient progress over time. A diligent step-by-step approach to assessing, treating, and revising treatment produces better outcomes, at potentially lower cost, than usual care.[6–8]

Failure to apply knowledge from patient-oriented research into clinical practice greatly costs patients, who don't obtain full benefits of available treatments, and health care systems paying for suboptimal care and consequent suboptimal outcomes. Measurement-based care seeks to improve and standardize patient care even in underresourced systems.

Table 1. Measurement-Based Care Key Elements

Assessments that are	Specific
	Targeted to a specific issue (Is *X* working?)
	Tailored to the individual
	Psychometrically and conceptually sound
	Brief
	Inexpensive
Action plans that are	Specific
	Evidence based (whenever possible)
	Flexible—provide an array of reasonable options
	Evaluable

Table 2. Limitations of Measurement-Based Care

Efficacy has not been established in larger numbers of comparative trials
Excessive assessments are burdensome
Risk of oversystematizing and depersonalizing
Replaying a clinical question with a lengthy scale is not useful
Without an action plan, measurement is unhelpful
Many action plans are not evidence based

What Is Measurement-Based Care?

Measurement-based care (MBC) is enhanced precision and consistency in disease assessment, tracking, and treatment to achieve optimal outcomes. This approach is used universally in chronic medical disease management and regularly in psychiatric research. Although measurement in psychiatric treatment is not new, it is curiously not standard practice.[9] Integrating MBC with clear measures and benchmarks into clinical practice would mainstream psychiatry into the rest of medicine and likely improve reimbursement for services.

Like diabetes or hypertension, most psychiatric conditions are chronic diseases. Consider a double-blind randomized trial comparing a new antihypertensive drug to placebo. Blood pressure measurements every 5 days guide dose adjustments. The drug works and is sold widely, but no one using the drug in practice measures blood pressure. Instead, patients' symptoms such as headaches, fatigue, and dizziness are asked. Guidelines suggest raising doses until complaints diminish or side effects interfere. When treatment methods diverge between research and practice, outcomes vary. For depressed patients in research protocols, medication dose adjustments are measurement based, with 35% remission rates in 6–8 weeks. Medication dose adjustment in practice differs. When precision is lacking, suboptimal outcomes increase. It is not *what* treatment is used but *how* it is used. Indeed, the *how* far outweighs the *what* in the management of chronic diseases.[10] Therefore, improved care delivery improves outcomes.

What Are Measurement-Based Care Essential Elements?

Measurement-based care seeks to optimize the accuracy and speed with which patients receive the most appropriate treatments and achieve the best possible results with the least patient burden in the most economical way. In essence, MBC aims to get the diagnosis and management right as often and as quickly as possible. As compared to usual care, MBC more precisely defines problems through regular, targeted, assessment of key clinical outcomes that inform an action plan (Table 1). Assessments and action plans in MBC are specific, not global, and depend on key outcomes (symptoms, level of functioning, etc). Patients and clinicians jointly implement and revise treatment goals and plans, helping patients and families join in disease management. Clinicians and patients select from step-wise, clinical options depending on individual history, concurrent conditions, and medications. MBC also utilizes side effect and medication adherence questionnaires. Finally, tracking patient progress allows enhanced communications with other providers.

Limitations and Adaptations of Measurement-Based Care

MBC cannot substitute for observant and caring clinicians who view measures in the larger context of the individual patient's unique history. That is, MBC may augment, but doesn't replace clinical judgment. There is general concern that MBC changes the fundamental doctor-patient interaction and does little to improve a patient's continued participation in treatment.[11] Excessive measurement in lieu of developing physician-patient relationships is not best care. Additionally, MBC has limitations in its current state: trials directly comparing treatment strategies for most psychiatric disorders are quite limited, as well as studies comparing the effectiveness of MBC to usual care in standard practice. Most MBC research has studied depressive illness, with more limited data on other psychiatric illnesses. Thus, clinical wisdom largely guides many decisions, eg, when to raise or augment a treatment strategy. Patients and doctors need protection from requirements to measure irrelevant outcomes and processes and encouragement to use only measures meaningful to each patient's condition (Table 2).

CASE 2: MEASUREMENT-BASED CARE EXAMPLE

Consider if the patient in case 1 was initially referred by her PMD to a different outpatient psychiatrist using MBC in her practice. After arranging her initial visit, the patient received an e-mail with the clinic Web site link and a secure username and password. After log-in, a page appeared outlining privacy practices and patient rights, which the patient clicked she understood. In less than 10 minutes, she filled in demographic information, a release of medical information form for her PMD, as well as an online 9-item Patient Health Questionnaire (PHQ-9 [score, 15]) and Self-Evaluation Questionnaire. Later that day, a clinic care manager called to "check in" because the patient had reported suicidal ideation. The patient assured she had no history or intent and would call or go to the emergency room if anything changed. She reported a sister in town she could call if she felt worse. Her appointment was moved up, and an e-mail reminder was sent before the visit.

At the initial appointment, the psychiatrist reviewed the patient's completed responses and health history and laboratory results received from her PMD. Her potassium was low-normal. A full medical history included brief structured interview screening questions covering all major psychiatric disorders. The psychiatrist entered the patient's answers directly into the secure Web-based electronic health record and then discussed

the results, current moderate-to-severe depression and bulimia. Recent stressors, including relationships and work life, were reviewed. The final 10 minutes of the 40-minute initial interview covered discussion of the goal of symptom remission and treatment options. The drop-down menu of evidence-based treatment guidelines, updated daily, suggested fluoxetine 10 mg for both depression and bulimia. Doctor and patient discussed treatment possibilities, including medication and psychotherapy. The patient chose fluoxetine and group therapy for women with bulimia that routinely utilized patient monitoring, including the self-report Outcome Questionairre-45, and therapist feedback systems to monitor and adjust adequacy of treatment response.[12] *The patient's self-management "wellness action plan" included monitoring symptoms and side effects weekly via the online clinical system and resuming evening jogs 3 times/wk, stopped following her separation. The patient was encouraged to schedule a PMD appointment and received an e-mail reminder. The electronic health record data generated a PMD report, sent electronically following the visit.*

Two weeks later, the patient returned for a 15-minute follow-up visit, prior to which she received an e-mail prompting her to fill out relevant measures. At the visit, the patient's wellness action plan progress and symptom (assessed by PHQ-9) and medication side effect responses (assessed by Frequency, Intensity, and Burden of Side Effects Rating) were reviewed. The electronic health record graphed her progression. Her repeat potassium was normal. Given ongoing depressive symptoms and good medication tolerability, fluoxetine was increased to 20 mg/d. A short-term sedative was added for sleep difficulty. At the third visit (week 4), the patient had a 20% depressive symptoms reduction (PHQ-9 score of 12), no passive suicidal ideation, and a 50% purging reduction. With the goal of recovery, the fluoxetine was increased to 40 mg/d. At week 6, despite "feeling somewhat better," the patient's PHQ-9 score exposed 2 weeks of worsening symptoms (PHQ-9 score of 16), prompting the psychiatrist and patient to increase the fluoxetine to 60 mg/d. While the patient reported fatigue and nausea, symptoms remained unchanged from baseline side effect monitoring, and she was referred to her PMD for likely purging-related nausea. At week 12, the patient had a 55% depressive symptom reduction and 60% purging reduction. A proton pump inhibitor treated the nausea. After routine monitoring revealed ongoing interpersonal problems, the patient was referred for individual cognitive-behavioral therapy to address interpersonal issues leading to continued purging not addressed in group therapy. At her 6-month follow-up visit, the patient had an 80% depressive symptom reduction (PHQ-9 score of 3) and 90% purging reduction. She was employed and had started dating. Her GAF score was estimated in the range of 65–70.

HOW CAN MEASUREMENT-BASED CARE BECOME A REALITY FOR PATIENTS?

Key Problems Measurement-Based Care Can Address

Tremendous variability of psychiatric care exists across treatment sites.[10,13] To move beyond the current "inappropriately complacent state of care" in mental health,[14] we need to identify the root causes of this variation, particularly between research and routine practice outcomes, and identify corrective actions and effective solutions. Psychiatry currently lacks an interlocking infrastructure with identified systems for continuous quality improvement both at a practice and national level. This absence stems from a current lack of standard accepted and available measures and outcomes, a fragmented mental health infrastructure lacking alignment between financial incentives and patient needs, limited provider training in the use and helpfulness of measures and continuous quality improvement, limited national prior investment in health services research, and limited public expectations for more defined mental health outcomes. MBC, which retains the fundamental doctor-patient bond while seeking recovery through systematic measures, could play a key role in addressing these problems, reducing variability and improving patient outcomes. A "top 10" policy list follows to help mental health patient care become more systematic and transform actual practice into best practice.

Top 10 Policy List

1. Establish clear expectations and guidelines using measurement-based care. Few patients actually receive evidence-based mental health care.[15,16] Without standardized assessment tools, the reliability and validity of physician assessments cannot be verified.[17] Physicians follow systematic guidelines to treat disease, yet nonspecific guidelines are problematic.[18] Current psychiatric treatment guidelines[19] are general and not specific, leading to variability in care and expensive but suboptimal outcomes. For instance, guidelines for major depressive disorder recommend treatment selection by "severity of symptoms" and "if at least moderate improvement is not observed following 4–6 weeks of pharmacotherapy, a reprisal of the treatment regimen." However, "severity" and "moderate improvement" are estimations. Defining *moderate improvement* as a 35%–50% symptom reduction on a standard depression scale would be useful. Instead, guidelines recommend clinicians "monitor response to treatment" and "adequacy of response" without providing operational guidance such as how, when, by whom, or how often. Although ideal frequencies of monitoring treatment responses remain largely unanswered until further research is done, having no parameters seems problematic. Furthermore, clinicians are told to "work with the patient to address early signs of relapse," yet no definition of *relapse* using standard measures, such as a 15% change in baseline, is offered. Rating scales are mentioned generally under the introductory "psychiatric evaluation of adults," yet little usage guidance is offered in specific diseases. Clinical practice guidelines recommend broad strategies with unspecified tactics, partly due to lack of evidence (eg, which depression measure is better?) and the risk of overspecifying making inappropriate recommendations (eg, an elderly person may require slower dose titration); however, the introduction of conservative initial parameters may aid the field in reducing variability.

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Clinical guidelines must include MBC to establish whether patients are responding to treatment and to what degree. Increased monitoring through standard measures can identify care gaps and highlight areas for improvement.[20] While the field is still defining recovery thresholds,[21] expert consensus with MBC could determine a minimal standard for remission and recovery. This process for standardization is similar to care for other chronic conditions, such as high blood pressure or cholesterol, in which parameters reflecting the growing evidence base are adjusted over time.[22]

2. Create a measurement tool kit. An important component of mental health MBC is getting specific about what tools to apply. Primary care routinely evaluates basic health measurements, such as pulse, blood pressure, and weight, and adds others depending on an individual's unique health history. Psychiatric care currently lacks useful vital signs to assess overall mental health and identify disease. A crucial first step for consistency in diagnosis and monitoring of a range of mental health conditions is development of standard measures,[10] which may offer opportunity to introduce the "mental health checkup," shifting focus from pathology to markers of mental wellness and prevention.

Psychiatry needs a standard measurement tool kit, providing both a picture of mental health and monitoring for specific conditions. Current psychiatric research uses a variety of validated psychiatric measures; however, use of these measures is not yet standard practice in typical clinical settings. Identification and dissemination of mental health "vital signs" and an easily accessible, such as online, tool kit would assist with continuity of care within a practice and across providers over time. Such efforts are already underway at the MacArthur Foundation (http://www.depression-primarycare.org/clinicians/toolkits/) and Project IMPACT for evidence-based depression care (http://impact-uw.org/tools/). Having documentation of a decline in functioning could help patients and their families recognize the need for hospitalization, provide a baseline for treatment goals, and ensure continuity of care across practice settings. Just as patients wouldn't want internists to estimate blood pressure by history alone and have the goal of treatment be only "less hypertensive,"[23] psychiatric patients deserve reliable, easily used, inexpensive measures of mental health.

3. Build information systems into practice. Once tools are identified, they must be readily available to clinicians. Given the variety of psychiatric practice settings, building MBC capacity will involve a technology spectrum. While MBC is possible with just paper, pen, and index cards, electronic health records will greatly facilitate implementation, allowing clinicians to systematically track patients individually and in groups through patient registries.

Since many psychiatrists are solo practitioners, special barriers exist for implementing electronic health records into psychiatric practice; however, with advancing technology, decreasing costs, increased Web-based services, and an unprecedented national agenda for health information technology, such systems may become obtainable for most practice settings. Under President Obama's plan,[24] funded by the American Recovery and Reinvestment Act of 2009, $19 billion is designated to promote the adoption of health information technology and electronic health records into US practice settings by 2014. Starting in 2011, physicians using a "certified" electronic health record capable of exchanging data with other parts of the health care system will be eligible for substantial incentives.[24]

What would a health information technology system look like for MBC? Above all, it must easily fit with physician workflow. Together the psychiatrist and patient could graphically track progress. Regularly updated decision support with standardized protocols and pre-identified decision points could guide clinicians toward evidence-based care. The Texas Medication Algorithm Project (TMAP) project and Sequenced Treatment Alternatives to Relieve Depression (STAR*D) have already set a successful precedent for this model, and evidence indicates decision support improves physician adherence to treatment guidelines.[5,6,25] The electronic health record could generate clinical reminders for visits with links to a patient site, where the patient could input self-report data for the clinician to review, track his/her own treatment progress, and find links to patient learning resources.

Electronic health records can serve as patient registries, so clinicians can easily identify all the people with a certain disease they treat. By tracking group trends, clinicians can monitor patients' collective baseline characteristics and response rates. Registries are a useful tool in physician assessment and self-assessment (see policy number 8) and can be pooled for research to improve patient care.

4. Foster practice-based implementation capacities for measurement-based care. Measurement and technology alone are not enough: the system infrastructure for providing mental health care needs strengthening. The patient-centered chronic care model, used to improve outcome measures and reduce costs for patients with diabetes, offers one such framework.[26,27] This model utilizes evidence-based guidelines, encourages informed patients and proactive physicians, applies appropriate health information technology, and demonstrates accountability for the quality of care provided. An elaboration of this concept is the Advanced Medical Home[28] or "Mental Health Home,"[29] with enhanced access and coordination of care, integration of primary and preventive care, use of evidence-based practices and continuous quality improvement, family and community outreach, and adoption of recovery principles and shared decision making (see policy number 10 below). Adoption of this model by existing clinics and care teams would support MBC.

While hard-working clinicians strive to improve patient care, they rarely have the time or know-how to implement practice-based quality improvement. Thus, guidelines and implementation assistance are needed. One such practice is utilization of non-MD support, such as care managers used in primary care.[30] Psychiatric care managers can perform tasks for physicians that are not typically reimbursed, such

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as care activities between appointments (ie, phone calls, e-mail reminders). Their role can include monitoring MBC and developing patient registries. Care managers aid with quality improvement while improving physician efficiency.

Solo-practice psychiatrists may see implementing a care manager as economically challenging. Although it would initially pose a major paradigm shift for many psychiatrists, increased collaboration could facilitate MBC infrastructure development for small practices, with shared personnel and resources between practices diminishing costs and improving returns. Another option is to contract with an outside Web- or phone-based care management service. In radiology, scans are often read remotely and reported back to a local clinician.[31] Primary care physicians also uses Web- and phone-based care management.[32,33] In psychiatry, the Veterans Affairs system utilized remote telephone care coordinators to regularly check in with patients and relay information back to practitioners.[34]

Once an initial MBC staffing or network infrastructure is established, practices need a framework to sustain implementation, such as ongoing communication and training, continued attention to progress, and development of reassessment mechanisms.[10] Within a system fostering continual learning and improvement, comparison of practices to standardized benchmarks could facilitate improvements in assessment, treatment, and management. Tracking "real world" patient results in sufficient numbers across clinics through registry networks would provide multi-group outcomes data to assess measures, treatment algorithms, and generalizability of research to clinical practice. The mental health community must encourage MBC infrastructure investment, including registries, on a national scale.

5. Enhance connectivity among information technology systems. An information technology system within a single practice is not enough. Health information systems must connect to make health information available when and where it is needed. US health care system fragmentation[13] disconnects mental health from general health when more integration is required. While a credit card can contain the majority of one's financial information, health records remain virtually inaccessible. Aggregation of health information technology systems both at the point-of-care and at a policy level would expand MBC capabilities.

Enhancing connectivity creates possibilities for accessing and integrating information to improve individual patient care. With the patient in the office, the doctor could review other clinicians' notes, order or check laboratories, send a prescription to the pharmacy, and generate a follow-up report. While streamlined information sharing exists only within individual health systems or regional health information organizations,[35] significant efforts are underway in the United States to build a health information technology infrastructure, with both practice-based capacity and interoperable health records.[24]

When complex privacy and security issues are resolved, such as how health data are shared electronically and who can access private information, improved connectivity would allow for better monitoring of quality of care and benchmarking population outcomes across practice sites, including improvements to exiting quality of care measures. For instance, Health Effectiveness Data and Information Set (HEDIS) measures[36]—used by the majority of health plans to measure performance on important dimensions of care/service—for depression only monitor if 3 mental health visits occurred within 90 days after hospitalization discharge. Symptom measures assessed and monitored is unknown. If linked, easily searchable electronic health records could identify outcome measures while limiting practice workload. The mental health community's involvement in integrating health information from multiple sources and making it available when and where it is needed is essential, as well as developing methods of reimbursement to sustain this level of care.

6. Alter financial incentives. The existing fee-for-service system discourages MBC. Instead, financial incentives for mental health care must align with patient needs. Key MBC tasks are not presently compensated—administration of measures, phone follow-up, e-mails, care managers, and system maintenance—only visits. The current "perverse" payment system generates incentives for hospitalization and procedures while underemphasizing primary care and prevention. Innovative reimbursement models emphasizing prevention, care coordination, disease management, and outcomes approaches are needed.[37] Several methods to help achieve this include pay for care management, pay for performance, increased reporting of quality performance measures, and enhanced reimbursement.

Paying for care management[38] directly or indirectly as part of the medical home model (see section 4) realigns financial incentives. Central care coordination incentives, though requiring ingenuity to develop, encourage improved monitoring, reduced test replication, and costs. Payment through a medical home model may require significant medical practice redesign; however, reimbursing providers for aspects of care management, including routine use of tests and measures, could begin creating incentives for these practices.

Carefully designed pay-for-performance measures provide financial incentives for physicians to adhere to evidence-based practice models and standards of care, as well as avoid misuse of clinical resources.[39] While over 150 pay-for-performance programs cover 50 million health plan enrollees, behavioral health remains notably absent from the majority of these interventions. For instance, Bremer et al[40] identified only 24 existing pay-for-performance programs in behavioral and mental health.

US health care is increasingly utilizing incentives for systematic quality performance measure reporting.[41] For instance, the Depression Improvement Across Minnesota, Offering a New Direction, or DIAMOND, project[42] encourages the implementation of a coordinated collaborative care model for depression in medical groups and health plans across the state by rewarding development and use of longitudinal measurement, including patient registries.

Performance-based payment for depression care is phased in with establishing a MBC structure (ie, provider training and specialist support, Web-based registry, care management) as the initial component followed by increasing incentives based on process measures (eg, longitudinal PHQ-9 data across the practice population of depressed patients) and, ultimately, outcome measures (eg, improvement on PHQ-9 scores), thus establishing incentives for MBC in a graduated manner.

7. Change psychiatric training for residents. To expedite and sustain quality improvement efforts going forward, psychiatric residency must include MBC training. Patterns learned during professional development are often incorporated into lifelong clinical practices,[43] so residency training offers a unique opportunity to influence the adoption of evidence-based practices within the field.

The Accreditation Council for Graduate Medical Education mandates all residents "demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning."[44(p7)] Meeting this expectation suggests psychiatric training programs develop comprehensive programs in MBC with didactic lectures, skill-building exercises, and clinical experience. Given most teaching faculty are unfamiliar with MBC or quality improvement initiatives, a necessity may exist for adopting prepackaged curricula and educating faculty supervisors through continuing medical education (CME) workshops.

Resident evaluations should assess knowledge, skill, and clinical use of MBC. Although standardized tests, such as the Psychiatry Resident-In-Training Examination (PRITE) and board examinations, include questions on standardized patient assessments, they do not assess the complex decision making required for MBC, such as how assessment results impact treatment decisions. Alternative evaluation methods, such as vignettes, standardized patients, or chart review, could provide a more comprehensive assessment of resident knowledge, understanding, and application of MBC.

Ultimately, clinical incorporation of MBC treatment outcomes could help benchmark residents' growing competence and development during training.[45] Once key measures are identified, programs could design incentives for using measures, keeping registries, and showing improved outcomes. Although using financial encouragement to influence resident behavior is controversial, evidence suggests residents respond to such incentives.[46] Incorporating MBC fully into training will eventually require Residency Review Committee (RRC) and American Board of Psychiatry and Neurology (ABPN) involvement. Although the Accreditation Council for Graduate Medical Education promotes MBC and quality improvement initiatives, it does not detail how to implement or measure these tasks. The American Association of Directors of Psychiatric Residency Training, whose mission is promoting excellence in the education and training of future psychiatrists, could offer minimum requirement consensus and work with the ABPN and RRC to tie MBC to certification and accreditation requirements for psychiatric residency programs.

8. Help practicing doctors adapt to measurement-based care. Since MBC is primarily used in research, the current psychiatric workforce needs training. If psychiatry as a field values MBC, incorporation into the maintenance of certification process, including both cognitive expertise (ie, written examination) and practice performance assessment, would ensure wide adoption. The American Board of Internal Medicine already requires internists to submit clinical performance data from patient registries as part of the recertification process.[47] MBC fits well with the ABPN's quality improvement program phasing in by 2012, which includes chart and patient/peer review for best practice and guideline adherence as well improvement plan implementation.[41]

If MBC is integrated into maintenance of certification, demand will increase for MBC CME, with needed instruction in both content and process. Relating to content, practitioners will need training in identifying and appropriately using measures. MBC integration into CME could begin immediately. For instance, an anxiety disorders CME course could incorporate discussion of measures for diagnosing and monitoring obsessive-compulsive disorder symptoms. Relating to process, practitioners unfamiliar with the medical home model, managing interdisciplinary care teams, and registry use will need to gain the knowledge and skills necessary for participation.

A frequently updated American Psychiatric Association–sponsored common clearinghouse with downloadable or Web-based psychiatric measures could both expedite MBC implementation and further clinician education. While clinicians could simply locate desired measures and print them out for paper-and-pen office use (ie, *Psychiatric Times* [www.psychiatrictimes.com/clinical-scales/adhd/vadrs/] posted rating scales), ideally Web sites would offer guidance. For instance, searching *psychotic symptoms* could yield a list of measures with descriptions, user ratings, and result interpretation. An online clearinghouse would require authors to post or link their forms to a common site with fee systems determined. The site could offer ongoing CME credit for learning about specific measures.

A measurement clearinghouse could serve as a patient registry if it included a clinician "account" repository, whereby patient measures were filled out online and assigned a de-identified number that the clinician could note on the patient's chart and revisit over time for longitudinal follow-up. Clinicians could group patients in their accounts with similar diseases and even anonymously compare pooled accounts to other users' accounts for self-assessment. Endeavors already exist (ie, www.docsite.com/registry) that only require mental health tailoring. Such a system could bypass every practice setting developing health information technology and registries.

9. Developing and expanding the science base to inform measurement-based care. Implementing MBC into the

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8 areas previously discussed is the beginning. Mental health must continually develop and expand mechanisms to enhance the evidence base. Improving health care at the front lines with clinicians and patients is challenging and imperfect, but the status quo is untenable.[48] Measurement is the critical first step. The process must include a feedback loop that continuously strengthens and coordinates the methods of systematic improvement. Bremer et al[40] concluded that a significant obstacle in implementing quality improvement strategies in mental health as compared to general health care is the lack of well-accepted measures for disorders other than depression. Consensus is needed around a common set of performance measures informed by improved collection of behavioral health outcomes data. Other areas for ongoing research include best practices for measurement integration and decision support, consumer preferences, development of more specific practice guidelines, and more nuanced measures.

Health care resources are typically spent on biomedical research,[49] yet ongoing investments in health services research is needed to assess why integrating research findings into clinical care is so difficult. A huge data gap exists on the comparative effectiveness of the vast majority of existing treatments that patients with chronic illnesses take. In other words, there is little known about what works best for which patients under what circumstances. The information gained by implementing MBC in mental health care will help continuously inform the research agenda to close knowledge gaps.

10. Engage consumers and their families. The MBC capstone is patient and family involvement at all levels, from point of care to setting national priorities. Individuals can spearhead system change immediately with their own doctors. Consumers can ask for measurement-based symptom monitoring and actively follow their own progress in a systematic fashion. For instance, patients with depression could complete downloaded PHQ-9 and bring their results to their physicians, similar to home blood pressure monitoring.[50] Precisely observing treatment and baseline divergence helps create patient-centered partnerships and self-management as advocated by the chronic care model (see section 4). Both patient and provider are experts in shared decision making, with positive mental health effects.[51]

As a group, consumers have tremendous power to influence the use of MBC and impact the national research, advocacy, and policy agendas listed above. Although health outcomes vary by population illness severity, MBC is a first step to more objectively defined standards of care in mental health. Increased public awareness of MBC could "raise the quality bar" for providers and health systems.

CONCLUSION

Recommendations to more precisely state the aims of a diagnosis or treatment visit, to assess whether that aim was or is being achieved, and to tie an action plan to these assessments has been routine medical practice for over 50 years, common psychiatry research practice since the 1950s, and recommended clinical practice since 1993.[50] Evidence shows systematic management produces better results with depression[5] and other chronic medical conditions.[27,52] While the concept of MBC for mental health care is neither revolutionary nor new, it is yet to be adopted as the standard of care. Yet, if implemented, MBC could transform psychiatric practice. Measurement-based care, by making mental health care more systematic, offers an opportunity to close the gap between research and practice outcomes. Given the routine use of measures across the rest of medicine and an ever-increasing focus on evidence-based medicine, MBC could help move the field of psychiatry into the mainstream of modern medicine. Most importantly, hopefully MBC will help more people suffering with mental illnesses experience remission and recovery. While implementing the outlined policy changes would facilitate wide adoption of MBC, individual physicians and patients can make MBC routine starting immediately.

Drug names: duloxetine (Cymbalta), fluoxetine (Prozac and others).

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